

**PUBLIC UTILITIES
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Innovative Financing Models
and Strategies to Improve
Investment in Water Utilities

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KEY HIGHLIGHTS

- Innovative water financing facilities such as public private partnerships, performance-based contracts, and utility-scale water trading platforms have the potential to mobilize the much-needed funding for the sector and create financial sustainability.
- African countries such as South Africa and Uganda have benefitted from the utilization of various innovative sector financing and enabled water utilities to achieve operational efficiency and financial sustainability.
- Developing and strengthening regulatory frameworks is crucial for attracting the needed investment in the water utility sector.

1. Introduction

This issue of the Regulatory Brief explores global best practices on innovative strategies and models adopted in attracting investment to a country's water utility sector. The brief focuses on identifying successful water utility financing models, opportunities in the sector, the role of regulation, and how these could be leveraged and adapted to improve Ghana's water utility.

The brief, among other things, also sampled case studies of successful financing models applied to some water utilities in Africa to provide a comprehensive understanding of the concepts and lessons learned

2. Background

Water has become increasingly important in meeting the many development and environmental goals, especially as industrialisation progresses and climate change beckons. Goal 6 of the United Nations (UN) Sustainable Development Goals (SDGs) aims to ensure universal access to clean water and sanitation that is safe, reliable, affordable, and sustainable. To achieve this goal by 2030, future investment needs of utilities are required to be incredibly high.

Voegele (2024) estimates that USD 6.7 trillion of investment is needed to meet this universal access. According to the World Bank (2023), global investment needs in the water sector exceeds \$1.37 trillion, thus, to achieve Goal 6, current investments must increase sixfold. Additionally, to achieve the SDGs, emerging markets and developing economies must provide three times as much funding as they already do (World Bank, 2024). These statistics denote the need to intensify private financing in the sector.

Investments in the water sector, for years now, have had to compete with other sectors as financiers are primarily driven by the attractiveness of utilities' risk-return profile.¹ The high-risk profiles of many water utilities, coupled with their poor creditworthiness, limit the potential of private finance (Khemka, 2023). In most developing countries, water utilities are commonly state-owned, with limited capacity to finance the needed investments in the sector using traditional approaches such as government budget allocations, tariffs and grants, among others (Reza, 2021).

Public funds have been the primary source of funding for the water utility sector. The Ghana Water Limited (GWL), Ghana's only state-owned urban water utility, relies on government support for capital investments. Water utilities face significant challenges in obtaining appropriate funding from the public sector due to competing needs of other sectors. Insufficient sector investments over the last 10 years has

greatly impeded the operations of GWL. According to the National Water Sector Strategic Development Plan (WSSDP), the sector requires an annual capital investment of US\$327 million to achieve universal access to basic water services by 2025, meanwhile, the current capital investment of US\$114 million stands significantly below the required level².

According to Chan and Ameyaw (2013), the Ghanaian water utility sector “mirrors the classic challenges of public sector utilities in developing countries”. Ghana’s water utility sector is significantly marked by high non-revenue water (46% on average), low investments, low water access and water rationing, low recovery costs, and unreliable supply. The sector relies heavily on loans and international financing to build water delivery infrastructure, with limited government support (Ghana Water Limited, 2022). Over time, the issues of the sector have led to a demand for private-sector engagement to reduce government obligations.

One such engagement was a 5-year management contract signed between Ghana Water Limited (GWL) and Vitens Rand Water Service BV of Netherlands in November 2005. Under the contract, Vitens Rand, through its subsidiary Aqua Vitens Rand Limited (AVRL), operated the urban water systems until 2011. Results from the partnership however, fell short of the expected positive improvement in the urban water sector. According to GWL, at the end of the management contract period on June 5, 2011, all the performance indicators indicated that, private involvement in the operations of the utility had failed to bring about the expected positive improvement in urban water supply in Ghana.³

Although private sector involvement has expanded over the last decade in the water sector globally, the sector has not been able to fully harness private investment portfolios to improve water utilities.⁴ For instance, private sector financing only made up 9% of the annual overall investment in water supply and sanitation in 2017 (World Bank, 2017).

Innovative financing models therefore offer better financial solutions for Ghana’s water utility sector. By implementing these models, the sector will be exposed to new technologies and practices, which, with traditional funding, might otherwise be infeasible. Additionally, the sector can tap into the expertise of financial facilities to enhance operational efficiency and longer-term sustainability of services. Thus, innovative financing solutions can be a game-changer for the Ghanaian water sector by creating a financially sound, resilient, and sustainable water delivery system.

3. Water Utility financing

Water utility financing entails acquiring the finances required to construct, maintain and operate water and sanitation systems (OECD, 2011). This is critical for maintaining consistent access to clean water and sanitation services. Costs involved in delivering water supply services consist of the initial and ongoing costs of infrastructure.⁵ These costs are classified under two main categories: Capital Expenditure (the capital invested in constructing fixed assets, largely infrastructure) and Operations and Minor Maintenance Expenditure (the recurrent costs for operating water systems).

As noted by USAID (2021), to finance these costs, utilities employ different forms of funding from various sources including but not limited to;⁶

- Tariffs: which are paid by households, businesses, and public institutions to service providers, as well as household investments in self-supply solutions,
- Taxes: Funds originating from domestic taxes that are channeled to the sector by central, regional, and local governments and,
- Transfers (external grants): Funds from international donors and charitable foundations, including non-governmental organizations (NGOs).

Aside these primary sources of funding, it is essential to note that, financing of water utilities tends to be dominated by investment needs for recurring expenditure on operations, maintenance, administrative overheads, routine repairs and periodic replacements for which the normal stream of revenue for utilities is often in deficit. Therefore, utilities employ different Water Financing Facilities (WFF) using repayment finance to augment this expenditure.⁷ With repayable finance, utilities are required to pay back monies which come in the form of commercial loans, bonds, equity or concessional loans. These are not considered separate sources of funding as they depend on revenue generation from tariffs or government tax revenue for debt servicing. Funding from this source is mainly applied towards the financing of capital expenditure or replacement infrastructure, which aids in mobilizing additional finance for the sector. In countries such as India and Columbia, utilities have secured longer-term loans at considerably lower interest rates with reduced investment risks through financing facilities.⁸

Investors often consider various factors before they decide to invest. These considerations include a utility's growth history in terms of revenue and earnings, operational efficiency, financial balance sheet deficits, management strength and position, and, most importantly, the creditworthiness of water utilities (Pories, 2019). Once these indicators are strong, an enabling environment is established to attract investors and ensure financial sustainability.

4. Innovative Financing Models and Strategies of Investment in a Water Utility

This section explores some innovative strategies and financial investment models that could be applied effectively in financing a country's water utility.

4.1 Public-Private Partnership

In a Public-Private Partnership (PPP) arrangement, both the public and private sectors combine elements of financing, operation, risk-sharing structures and management to leverage the strength of both parties. This financing strategy combines concessionary public funding with private sector funds to finance and manage water infrastructure and services. PPPs are particularly effective in financing large-scale water infrastructure projects, such as distribution networks and water treatment plants, which require substantial capital investment and technical expertise.

PPP's are categorized into various contract types according to variations in the roles of the public and private partners. They typically include, Build-Own-Operate (BOO), Build-Operate-Transfer (BOT), also known as Build-Operate-Own-Transfer (BOOT), and Design-Build-Operate-Transfer (DBOT). In a BOT arrangement for instance, investors are responsible for the entire life cycle of the project and own the infrastructure for a specified period. The private partner recovers its investment through service fees paid by consumers. Contract tenures for BOT are usually between 15-30 years before ownership of the project is transferred to the public sector. This contract type has been widely used in the development of desalination and wastewater treatment plants in countries such as Brazil, China, Mexico and others (Delmon, nd).

The DBOT form of PPP involves the public sector providing land, regulatory support or financing, while the private sector contributes a majority of capital and operational expertise. By employing this financing model, water utility projects in India are now being prepared and bid out relatively quickly as the market is becoming comfortable with risk allocation.⁹

In addition to the above-mentioned PPP contracts, some key PPP financing models include supply and management contracts, concessions, and lease contracts.

Supply and Management Contracts

These contracts refer to an agreement where a private entity is responsible for supplying goods or services and managing certain functions of a water utility sector. This type of contract typically involves the private sector partner taking on the responsibility for procurement, operations, and management of specific aspects of a public service or infrastructure project, in exchange for a payment or revenue-sharing arrangement from the public sector. Supply and management contract can give operational and the supply of services (equipment, materials, procurement of water) responsibility to the private sector, while ownership of water assets remains with the public sector. It is the least complex of all PPP models.

In some countries, supply and management contracts are politically and socially more acceptable especially for water projects. Here are some examples of countries that have implemented lease contracts in the water sector: South Africa, Egypt, Tunisia, France, Mexico, Philippines, India, and Chile.

Lease Contracts

Under a lease agreement, the private sector is made responsible for the maintenance, operation and investment in water systems depending on the terms of the lease for a set period. The government or public entity retains ownership of the water infrastructure (e.g., water supply, distribution, treatment facilities, pipelines etc.) while the private partner is granted the right to manage, operate, and maintain the infrastructure, typically for a long-term period (e.g., 10-30 years), but they do not own the assets. The private sector is also mandated to pay the public sector a fixed annual fee or a share of generated project revenue.

Several countries around the world have adopted lease contracts in the water utility sector as a part of Public-Private Partnership (PPP) arrangements. These include Portugal, Czech Republic, South Africa, Jordan, India, Mexico, Chile, Ecuador, and Algeria.

Concessions

These are long-term contractual agreements, often between 20 to 30 years where the public sector grants a private company the rights to operate, manage, and sometimes invest in water utility services (such as water treatment, distribution, and wastewater management) for a specified period. In exchange, the private company is granted the right to collect revenues from the water services, usually through user fees or tariffs, and is often responsible for the infrastructure, operation, and maintenance of the system. Under concessions, the public sector benefits from the expertise and capital investment of private partners to improve the sector.

Countries that have successfully implemented the concession model of Public-Private Partnerships (PPPs) in the water utility sector include France, Cote d'Ivoire, Gabon, Morocco, Sri Lanka, Chile, Hungary, India, United Kingdom,

PPPs have the potential to provide access to capital, improve efficiency, and promote long-term sustainability. However, these arrangements require careful planning, strong governance, and transparency to ensure they deliver affordable, high-quality services to the public while managing the complex risks involved.

4.2 Performance-Based Contracts (PBCs) and Outcome-Based Financing

Incentivization is one of the proven ways to improve the efficiency of water utilities, especially in mitigating non-revenue losses. Performance-based financing incentivizes water utilities and service providers to meet pre-defined performance metrics for water management in exchange for financial rewards. Other performance-based contracts come as cash transfers or impact bonds. By providing such financing, investors are assured that their investments lead to actual improvements in service delivery as the risk of wasted investment and underperformance by utilities is reduced. This mutually beneficial investment also allows utilities to access technical expertise and equipment they lack.¹⁰

Elements of performance-based funding generally include targets for agreed-upon outputs, payment amount for each outcome, and some form of independent verification of achieved outcome prior to payment disbursement (REAL-Water, 2023). This type of utility investment is being practised globally and yields great rewards. For instance, in 2016, the Washington DC water utility issued an Environmental Impact with a coupon step-up and step-down structure based on mitigating stormwater runoff to make utilities more efficient. A water utility met this target, which resulted in no coupon adjustment for this utility. However, had it exceeded the targets, it would have received US\$3 million from investors on a US\$25 million bond, a relatively substantial discount.

Under performance-based financing, utilities retain control of their operations and assets, making it slightly different from traditional forms of private sector participation. It is, however, essential to note that this form of funding may not be an appropriate mechanism for all utilities, especially poor, non-performing ones, and must be carefully implemented and managed according to local circumstances.

4.3 Utility-Scale Water Trading Platforms

Water financing markets create a financial incentive to conserve and optimize water allocation in areas where water is scarce. Investors fund the development of these markets through trading platforms that enable efficient buying and selling of water rights and resources on a large scale or with water allocation permits. The platforms raise capital from the private and public sectors, and governments often play an important role as they provide the initial seed funding through grants, loans, tax incentives, subsidies or favourable regulatory frameworks to encourage investment in trading platforms. This is crucial, particularly in regions where water markets are still in the early stages or need expansion.

Trading platforms adopt various financial models to generate revenue depending on the platform's purpose, geography, and stakeholders involved. Revenue generation is mainly done through the payment of transaction fees, government support, subscription models, water rights leasing, and investment funds. To make these platforms more efficient, implementing innovative water pricing models (e.g., tiered pricing or dynamic pricing) can signal to investors the actual cost of water and encourage investment in infrastructure upgrades. A well-structured platform with clear regulatory frameworks and efficient technology potentially attracts more investment and contributes to sustainable water use in the future.

5. Challenges in implementing innovative investment solutions

Water utilities in developing nations often face major challenges in maintaining the financial sustainability of operations. This is especially true for utilities in developing countries that rely on government transfers to cover their operational costs.¹¹ For utilities to position themselves to attract investors through any of the above-discussed financing strategies, the following challenges are noteworthy.

Risk allocation

The success of a PPP strategy requires clear agreements on risk allocation between public and private partners. Misaligned incentives and unclear risk-sharing arrangements are common features among water utilities in developing countries, and these can lead to project failures.¹²

Experience with private investment

Though PPPs have been explored in the water sector, Ghana lacks a long history of successful PPPs in water infrastructure. This lack of experience can make it difficult for private investors to assess the risks and returns of such ventures, making investors wary of entering the sector due to concerns over low returns on investment. There have also been instances in developing countries where governments and citizens have fiercely resisted private sector involvement in water utilities due to concerns about profit motives and service quality. Thus, the success of implementing the PPP strategy lies in building public trust and acceptance.¹³

Obsolete utility infrastructure

The ageing infrastructure of water utilities increases the costs and risks associated with financing water utilities. This challenge deters most investors and downplays efforts to implement a successful financing strategy. Upgrading infrastructure to meet modern standards is often a significant financial burden (Dithebe, 2019). Much of Ghana's water infrastructure is aged and inefficient, thus requiring significant investment to upgrade before new investments can be fully effective. This, coupled with the slow adoption of new technologies such as smart meters or data analytics tools for improving operational efficiency, may likely deter interested investors from investing.

Lack of Regulatory Framework

The lack of a clear and concise regulatory framework that spells out technical standards and codes of practice of Ghana's water utility sector impedes effective investment. This absence creates an unpredictable environment for private investors, which can deter long-term investments in water infrastructure, especially for large-scale projects that require stability.

6. The Role of the Water Regulator

Understanding the role of regulation is crucial for attracting investment to a water utility. Regulators worldwide play a significant part in shaping the landscape of water investment, and their policies can either encourage or hinder private sector participation (Cloe, 2024). Regulators often set benchmarks for water quality, usage, and conservation, directly impacting the types of technologies and infrastructure investors are willing to support. For example, investors may be inclined to invest in advanced filtration systems or innovative treatment technologies if a regulator sets stricter water quality standards (Cloe, 2024). On the other hand, if regulations are too loose, investors might shy away from projects that may be considered risky or unsustainable in the long run.¹⁴

Establishing a transparent and stable regulatory framework is one of the mechanisms regulators can employ to create an enabling environment for investors. A transparent regulatory framework sets clear guidelines on tariffs, pricing structures, and rates of return, which helps investors anticipate future revenues. Thus, investors gain confidence that the security of their investment portfolios will be secured and not undermined by sudden changes in pricing, policies, or regulatory approaches. Moreover, investors are protected from costly due diligence processes as regulatory frameworks set clear rules about the requirements for investing in water utilities, including licensing, compliance with environmental standards, and operational requirements. By creating such an enabling environment, financial organizations are more likely to support investments in this sector.

Also, regulators can attract investment in the sector by creating clear and favourable regulations, including fair pricing mechanisms and water rights frameworks. Additionally, regulators pave the way for investment in the sector by undertaking routine monitoring and robust data collection to provide accurate information on water resources, consumption patterns, and infrastructure performance. By creating such transparency, investors are able to assess their risks and make informed decisions.

7. Successful Water Utilities Financing in Africa

The Case of Uganda

Water and sanitation sector (WSS) reforms have been in place in Uganda since 1998. This has strengthened the water regulatory framework and has provided a basis for cost recovery through the introduction of the National Water policy. The framework has also promoted private-sector involvement in service delivery with the implementation of the 2000-2015 investment plan. Following these reforms, the water and sanitation sector's credit profile was raised, increasing investors' confidence.

Funding for the sector tripled, largely owing to an increase in the government's contribution, from US\$2 million to US\$20 million, creating an attractive environment for investors. This increase demonstrated the government's commitment to fund the sector, as the total investor funding for the sector grew by an average of 30% per annum.

Since mid-2001, urban WSS in 8 small towns have been operating under management contracts and all but two were at or near full cost recovery for operation and maintenance. More recently, the Country's National Water and Sewerage Corporation has become more efficient and financially sustainable by utilizing local financiers to reduce their non-revenue water, expand water services, and cut energy costs (Voegelé, 2024).

The Case of South Africa

To expand water and sanitation access to underserved areas following the fall of the apartheid regime in 1994, South Africa turned to water sector financing through PPP models. Thus, private sector involvement in water delivery was initiated in quick succession, resulting in large, long-term PPP concessions. One such concession is the Mbombela municipality concession, which is one of the longest-running (25 years now) water concessions in the global south. This concession, signed in 1999, was intended to rehabilitate, extend, operate and maintain an existing water infrastructure system with all fixed assets, with the exception of the property of the municipality.

Under the concessional agreement, the concessionaire, in addition to providing initial capital investment, was also responsible for establishing a financial guarantee with a local bank. This was to protect the government against the concessionaire defaulting or breaching the contract. Also, the concessionaire paid a contract implementation fee and continually pays an annual concession fee to compensate the government for the costs of managing the concession.

Over the past 20 years, water and sanitation services in the urban areas managed by the concessionaire in terms of water quality and treated water waste have been rated as among the best in South Africa¹⁵. Also, there has been a significant expansion of water supply systems to accommodate the rapidly growing urban area in South Africa under this concessional agreement, even though expansion to poor peri-urban and rural areas has not been as successful.

A 2020 review of the concession indicated that the concessionaire had so far invested 24% of its total capital investment necessary to expand services. Even though the concessions investment levels have been declining, the concessionaire's cash flow has been recovered, and the project was profitable. To continue to expand the water and sanitation sector, South Africa in 2024 passed a National Water Resources Infrastructure Agency bill aimed at establishing the South African National Water Resources Infrastructure Agency. This bill, thus, provides the platform for the Agency to raise commercial and development finance, to secure increased finance in the sector in an efficient and cost-effective manner. The bill further affords the Agency the opportunity to enter public-private partnerships without complete dependence on allocation and guarantees from the National Treasury (Nchabeleng & Makgatho, 2024). Thus, innovative financial models are pushing South Africa's water sector towards financial sustainability.

8. Conclusion and Recommendation

Based on the findings, the report provides several recommendations for Ghana to attract investors and enhance its water sector:

Strengthening Regulatory Frameworks

Ghana's policy makers and regulator of the water utility sector should develop concise regulatory frameworks that will guide the operations of the sector. Clear frameworks ensure investors are privy to rules regarding water markets, enabling them to make concise investment decisions. This will allow investors to determine the appropriate financing model, making water utilities financing more attractive.

Promoting Public-Private Partnerships (PPPs)

To achieve universal access to water by 2030, there is an urgent need for more and innovative investments in the water sector. Therefore, policy makers are advised to establish enabling conditions and reforms to facilitate a greater flow of public and private finance for water sector investments. Reaching such a level of investment requires the right environment as investors seek avenues to recoup their capital with a focus on a utility's creditworthiness. Thus, the water utility must identify areas requiring private capital, and develop a pipeline of bankable projects to attract this capital. Again, comprehensive risk sharing mechanisms must be developed by the utility to build trust in investment portfolios and encourage more public and private partnerships.

Effective Public sector funding and Enhanced Community Engagement

The public sector is the primary source of funding for water utilities, and funding from this sector is crucial. By ensuring efficiency in the use of public resources, improving sector governance and efficiency, and adopting modern technologies in water allocations, pricing, revenue collection and capital planning, utilities will be best placed to attract additional funding for their operations. Also, in making investment decisions, the public sector needs to involve local communities in these decisions and ensure that services rendered by private partners are financially viable and meet the needs of the population. This will help to avoid public rejection of such partnerships which may be a contributory factor to the failure of such partnerships.

The water sector has emerged as a critical area for investment as global demand for clean water continues to rise while financing water utilities is a complex but essential task for ensuring sustainable water services. By adopting global best practices and innovative financing models, Ghana can attract investors and enhance its water sector. The recommendations provided in this report offer a roadmap for achieving financial sustainability and improving water service delivery in Ghana.

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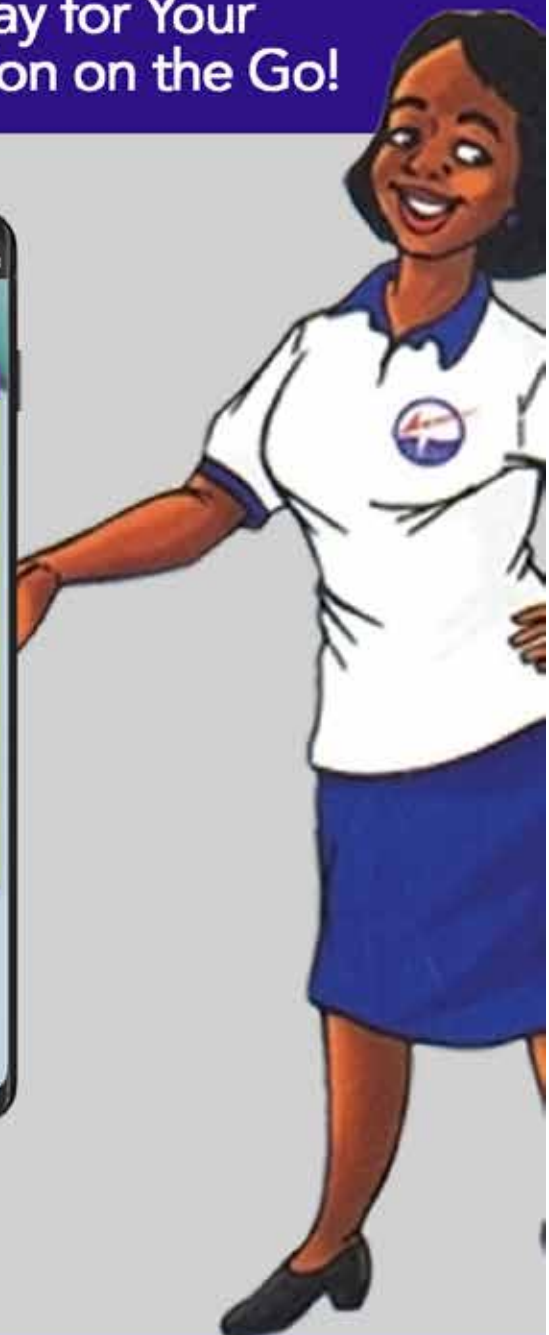
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P. O. Box CC 453
Cape Coast, Central Region
Tel: (+233) 332 137926
WhatsApp: (+233) 540 126208

WA

Katee Plaza, Wa Polytechnic Road
Adjacent Winners Chapel
P. O. Box 445
Wa, Upper West Region
Tel: (+233) 392 024275
WhatsApp: (+233) 540 126209

BOLGATANGA

Ground Floor, NCA Building
Opposite the Regional Hospital
P. O. Box BG 273
Bolgatanga, Upper East Region
Tel: (+233) 382 024524
WhatsApp: (+233) 540 126210

KOFORIDUA

Ground Floor, PURC Building
Galloway, Near Jubilee Park
P. O. Box KF 2781
Koforidua, Eastern Region
Tel: (+233) 342 020770
WhatsApp: (+233) 540 126205



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