

PROFITABLE RURAL WATER SERVICES: MYTH OR REALITY?

Evidence from Mali and Burkina Faso



IN BRIEF

Sustainable access to safe drinking water (SDG6) remains a critical development challenge, particularly in rural areas where 60% of the population lacks access to safely managed water services. This study examines the financial viability of different water provision models in rural Mali and Burkina Faso, offering valuable insights for policymakers and investors.

An analysis by Open Capital Advisors of Uduma's operations during 2023 indicates that it may be possible for private operators of publicly owned large water networks in rural areas to achieve operational profitability under long-term operation and maintenance (O&M) contracts. However, smaller-scale solutions such as manual pumps and solar-powered stations face significant profitability challenges without substantial scale and cross-subsidization from larger systems, and will require some level of grant funding to cover O&M costs and achieve sustainable services. Catalytic results-based funding (RBF) is an important source of supplemental revenue to help rural water utilities transition toward financial sustainability by enabling infrastructure improvements and growth in consumption in higher-density rural areas while optimizing and maintaining service delivery in less densely populated rural areas. In all situations, the financial viability of professional rural water services depends on key government decisions on tariff levels, public or private responsibility for investment and renewal of capital assets (pumps and pipe networks), and the length and terms of the concessions granted to private operators.

These insights underscore that professional rural water utilities must manage diverse system portfolios to enable cross-subsidization. At the same time, access to catalytic RBF is essential for improving overall profitability and enabling scale. This analysis provides valuable guidance for governments and funders on how to structure and support the establishment of an optimum mix of services, regulatory frameworks, affordable tariffs, and appropriate funding mechanisms to support sustainable rural water service delivery at scale.



BACKGROUND

Uduma operates as a private¹ rural water utility serving over 1.5 million people across Mali, Burkina Faso, Benin, and Cote d'Ivoire through long-term government concessions. Its operations encompass three distinct service models, as outlined in Figure 1 on the right.

In 2023, Open Capital Advisors conducted a profitability analysis of Uduma's 2023 operations in Mali and Burkina Faso to support their journey to scale and to identify approaches to improving profitability and attracting new public, impact, and private investment in the two countries. A second objective was to spur dialogue within the WASH sector on the real costs and financing needs to deliver water in rural settings in Africa.

Figure 1: Service models operated by Uduma



1. Manual Pump Systems – Mali

- a. Borehole-based pumps serving approximately 400 people per unit
- b. Revenue model based on monthly flat fees



2. Solar Water Stations – Mali

- a. Solar-powered systems with water tower storage
- b. Serves approximately 500 users through public standpipes
- c. Volume-based revenue model



3. Large Water Networks – Burkina Faso

- a. High-capacity systems serving 2,000-10,000 people
- b. Distribution through public standpipes and household connections
- c. Volume-based revenue model

OPERATIONAL CONTEXT

Rural water delivery in Mali and Burkina Faso operates within a semi-public framework where governments maintain responsibility for setting water tariffs, financing public infrastructure, and awarding service delivery contracts within designated areas. The regulatory structure provides for 10–15-year O&M contracts, with rural water utilities managing shorter-lifespan equipment maintenance while governments retain responsibility for longer-lifespan infrastructure. This arrangement aims to balance cost recovery through tariffs while maintaining affordability for users.

Both countries have been struggling with persistent insecurity and instability in the region. Coups in both countries and the expanding conflict have had devastating humanitarian



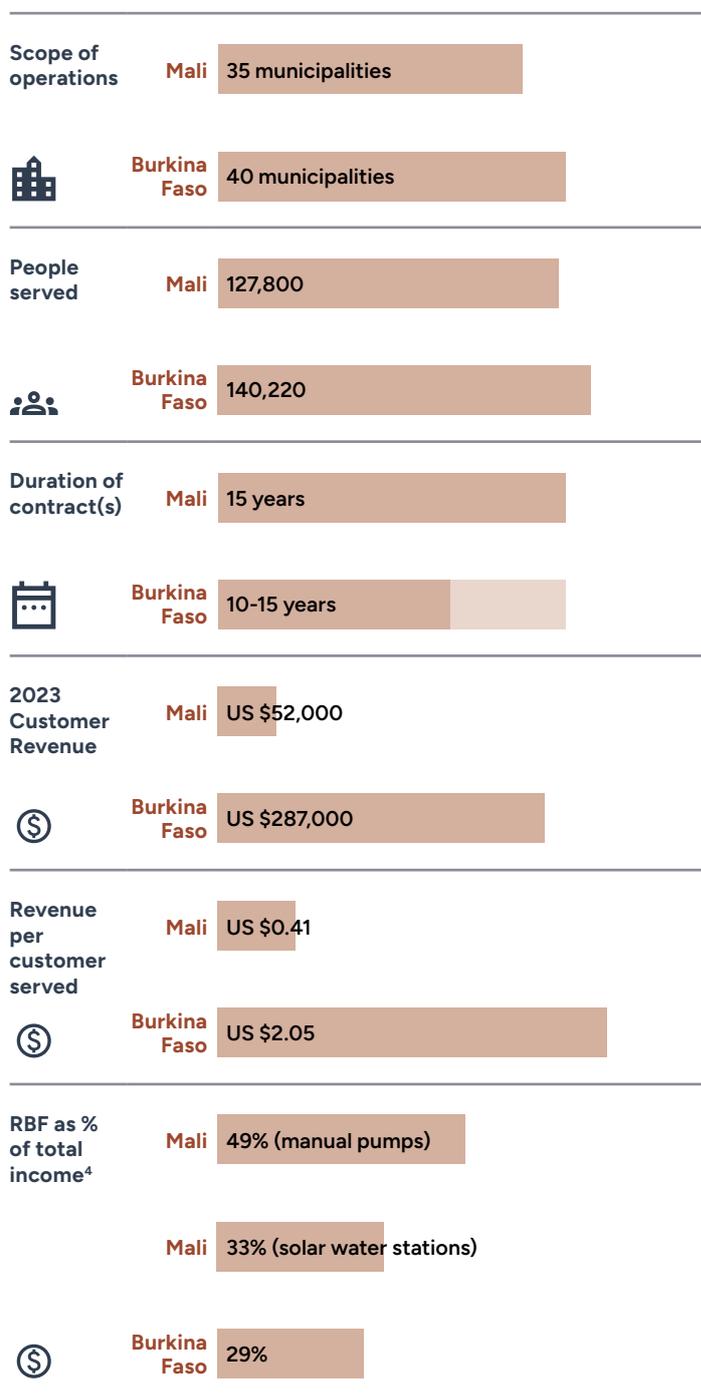
1. In this document a 'private' utility refers to one that is not publicly owned, which could be either for- or not-for-profit. In the case of Uduma, it is a for-profit private utility.

consequences, with millions of people internally displaced, thousands of schools closed, and access to basic services severely limited. The instability makes it extremely challenging for governments to invest public finance in water infrastructure and the context makes it even more difficult for private water utilities such as Uduma, operating exclusively in rural and costlier areas, to collect revenue and generate enough income to cover O&M costs.

Despite this, Uduma has been operating large publicly owned networks in dozens of municipalities in Burkina Faso since 2018. In 2023, Mali’s operations consisted solely of manual pumps and solar stations in 35 municipalities, with large network management planned for 2025. This reflects Mali’s newer private utility framework compared to Burkina Faso. Additionally, Uduma Mali’s unique build-operate-transfer (BOT) contract structure² means that Uduma owns the assets during the contract period, affecting depreciation calculations in profitability analysis. By comparison, depreciation was not included in the analysis for the systems managed under the O&M contracts in Burkina Faso due to their public ownership.

The scale disparity between operations in the two countries is significant, with Mali’s revenue in 2023 being less than one-fifth of Burkina Faso’s, as detailed in Figure 2. The analysis considered two sources of revenue in both countries: revenue from user fees and payments from results-based funding³ (RBF). The RBF is presented separately to properly highlight its impact. Grant funding used to support the respective governments in rehabilitating or upgrading public infrastructure to improve operational efficiency (e.g., reducing non-revenue water, prepaid meters, solar power, etc.) was not considered. This approach highlights the core operational economics while acknowledging that more stable markets like Côte d’Ivoire and Benin where Uduma also operates typically benefit from regular public infrastructure investment.

Figure 2: Comparison of Uduma operations in Mali and Burkina Faso in 2023



2. The assets were financed through a mix of grant and commercial capital.

3. RBF is a funding mechanism where payments are made only after pre-agreed results or outcomes are achieved and verified. Unlike traditional funding that’s provided upfront, RBF links payment directly to performance. In the case of Uduma, RBF is provided by Uptime.

4. Total income includes both customer revenue and RBF for the year under consideration.

PROFITABILITY ANALYSIS OF DIFFERENT SYSTEMS

The analysis summarized in Figure 3 shows that in 2023, with revenue from user fees alone, Uduma operated at a net loss in both countries. However, there was a net operating profit in Burkina Faso when also including revenue received from RBF contracts, which excludes depreciation of capital assets that are owned and renewed by the government.

Burkina Faso

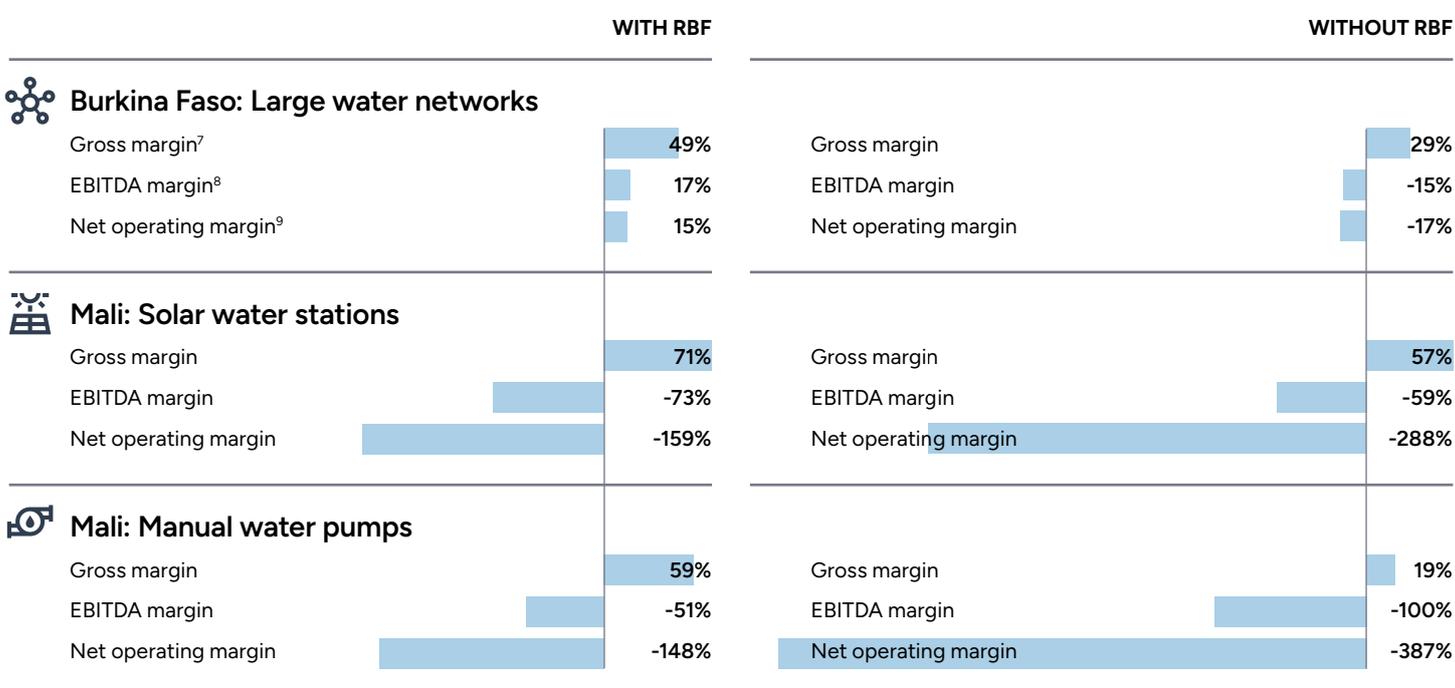
While the analysis provides a snapshot in time during 2023 in Burkina Faso, Uduma generated a net profit⁵ for three consecutive years, from 2019 to 2021, proving the profitability of O&M contracts for large water networks when managed at scale.

The increased insecurity in 2022 led to the damage or loss of access to several large systems, reducing customer revenue by 18% compared to 2021. By 2023, the number of people served dropped by over 40%, from a high of 235,000 people in 2021. During those challenging times, RBF played a critical role in sustaining the business.

The analysis allows for a comparison between the different types of systems, where the large networks in Burkina Faso had the best economics and were the most efficient for Uduma to operate compared to solar stations and manual pumps. Providing services via 47 large water networks in Burkina Faso led to economies of scale where indirect costs⁶ (only 36% of total costs) were spread across a larger number of systems and connections.

There remains significant potential to improve profitability of the existing networks through modernization (e.g., solarization, pre-paid meters, etc.) and adding household connections to increase consumption volume. Combined with the plans to add more large networks, this will allow Uduma to ensure the services become self-sustaining for O&M costs, and to channel any profits and RBF towards cross-subsidizing less profitable systems and areas.

Figure 3: Profitability comparison of different Uduma systems in Mali and Burkina Faso in 2023



5. Net profit is calculated by subtracting direct and indirect operating expenses, depreciation and amortization for assets owned by Uduma, as well as any taxes and interest incurred, from the net revenue collected by Uduma from user fees and RBF. The figure does not include depreciation and amortization for assets owned by the government and operated by Uduma.

6. Indirect costs include for instance fees to public authorities, office supplies and costs, country-level team costs (e.g., customer service, water quality officer, etc.), legal and financial services, etc.

7. Gross margin measures the profitability of a service in terms of the percentage of revenue left after deducting the direct costs of provision. It illustrates the efficiency of each service and the ability to generate profit from direct labor and materials.

8. EBITDA margin offers a broader perspective on the sustainability of the current scale of services by also factoring in indirect costs (or overheads). It reflects the percentage of revenue that remains after accounting for these operating expenses, but excluding the effects of interest, tax, depreciation and amortization.

Mali

As for Mali, the insecurity, comparatively small scale, and less profitable portfolio of infrastructure are shown to be contributing factors to the net loss in 2023. Although solar water stations and manual pumps were both determined to have positive gross margins – higher than for large networks – these services are nonetheless significantly loss-making at the EBITDA and net operating margin levels. This reflects the relatively small scale of operations in Mali, with a high impact of indirect costs (up to 84% of total costs) and depreciation due to Uduma's ownership of assets under the BOT contract.

While cost-saving technologies (e.g., smart meters, mobile payments, and automation of

water points) and increases in consumption can help improve the efficiency and profitability of these services to some degree, the combination of scale, cross-subsidy from more profitable systems, and impact-focused RBF¹⁰, are necessary for profitability and sustainable service delivery.

The most viable model seems to be one where public finance and / or grants are used to invest in cost-saving technologies and new large networks, coupled with a continued need for grants (like RBF) to cover O&M costs, to support rural water utilities in providing access to water under long-term O&M contracts.

CONCLUSIONS

Operating and scaling rural water services poses immense challenges, particularly in conflict-affected regions. The economics of large water networks operated by Uduma in Burkina Faso clearly shows the potential for profitable provision of O&M services, especially at scale, and under a contract where the capital costs of efficient infrastructure is publicly financed. Where public finance is not sufficient or possible, a certain level of grant funds (e.g., catalytic RBF) should be considered to support a rural water utility's transition to profitability.

However, large water networks are not practical solutions in less densely populated remote locations. Technologies that are most common for water provision in more remote locations – such as the manual pumps and solar water stations operated by Uduma in Mali – are loss-making unless

they are operated at a significant scale that allows for cross-subsidization and can generate additional revenue beyond user fees, such as impact-focused RBF. Public finance and/or grants are also necessary to fund the capital cost of the infrastructure in these areas.

To conclude, for rural water utilities like Uduma to scale access to safe water and drive SDG6, governments, and financing partners must understand the importance of operating a mix of large and small systems within a defined geographic service area to the operating profitability and, ultimately, the sustainability of water services. This support, particularly in conflict-affected areas, includes access to grant and patient capital, and long-term and financially sustainable management contracts.

9. Net operating margin (or EBIT margin) similarly accounts for both direct and indirect operating expenses but, unlike EBITDA margin, includes the effects of depreciation and amortization for assets owned by Uduma. The figure does not include depreciation and amortization for assets owned by the government and operated by Uduma. In the case of Burkina Faso, where the government owns the large systems operated by Uduma, an analysis of the full cost of such water service delivery should also look at the depreciation (and ultimate replacement) of systems.

10. We refer to impact-focused RBF as that which enables long-term (e.g., for the period of a contract) subsidies to reach very remote communities that are unlikely to ever become profitable.

Acknowledgements: This paper was written by Georges Mikhael (Uduma) and Laurens Coeveld (Open Capital Advisors), with editing by Dan Gray and translation by Eléonore Motte, based on a report prepared by Open Capital Advisors. The authors would like to thank Louis Boorstin and Susan Dundon from the Osprey Foundation for their valuable feedback. They would also like to thank Mikael Dupuis and Lucile Maout (Uduma), and Dolapo Adeniregun, Sharon Macharia and Alhi N'Guessan (Open Capital Advisors) for their contribution to the initial report.

Graphic Design: Julia Woollams.

How to cite: Uduma, Open Capital Advisors & Osprey Foundation (2025), Profitable Rural Water Services: Myth or Reality? Evidence from Mali and Burkina Faso.

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