

Delegated Management of Drinking Water Services in Semi-Urban Areas of Togo: Institutional Lessons from the Lease Arrangements in Kovié and Noépé

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Abstract

Access to drinking water in Togo's semi-urban areas remains inadequate due to the mismatch between community management models and the technical and financial challenges of drinking water supply systems. Drawing on the analytical framework of polycentric governance, this article examines the extent to which the model of water service delegation, in the form of leasing, constitutes a viable and sustainable alternative in the towns of Kovié and Noépé in Togo. The research adopts a comparative case study design using mixed methods, combining a quantitative survey ($n = 712$) with qualitative data collected through semi-structured interviews ($n = 14$) and focus groups ($n = 5$). The results reveal near-unanimous dissatisfaction with community-based management (96.9% in Kovié, 97.7% in Noépé) and widespread distrust of its ability to ensure sustainable access to water (more than 84% in both localities). The results reveal that the leasehold experiment was associated with operational improvements in Kovié, with an operator-reported collection rate of 85% - 90% and a 4-km expansion of the network. A counterintuitive finding highlights that households furthest from the network consume more (Spearman's $\rho = 0.307$; $p < 0.001$) in a bivariate analysis, later tested against source combinations and household characteristics, revealing a diversity of service patterns. However, the model's sustainability remains fragile: low technical capacity of

the delegating municipalities, structural fragility of small private operators, insufficient regulation, and dependence on external support. From a theoretical perspective, these results qualify the promises of polycentric governance applied to contexts of fragile decentralization, showing that the multiplicity of control centers does not automatically compensate for the asymmetry of institutional capacities.

Keywords

Drinking Water, Service Delegation, Leasing, Kovié, Noépé, Togo

1. Introduction

Access to safe, equitable, and sustainable drinking water is a major challenge in small and medium-sized African urban centers, which are experiencing rapid population growth without adequate infrastructure (World Health Organization (WHO) & United Nations Children's Fund (UNICEF), 2021). These centers represent a fundamental challenge for the achievement of Sustainable Development Goal 6 (SDG 6). Often on the periphery of metropolitan dynamics (Sondou et al., 2024), they face fragmented governance, limited technical capacity among local authorities, and increased dependence on external interventions (Sondou et al., 2025).

In Togo, the rate of access to drinking water in small towns ranges from 30% to 50%. This concerning situation stems from the failure of traditional community management models (the Associations of Users of Drinking Water and Sanitation Services, or AUSEPA), which are ill-suited to the technical and financial requirements of drinking water supply systems in these peri-urban areas (Atigaku et al., 2025). Despite the efforts made, many communities face persistent water insecurity, exacerbated by institutional, technical, and socioeconomic factors (Yomo et al., 2019). In this context, public service delegation (PSD) is emerging as a potential solution for improving the performance and sustainability of water services in small towns (Lima et al., 2021). The lease model, in which a private operator runs the service while the public authority retains ownership of the infrastructure and bears the cost of major investments, has been promoted as a middle ground between public management and full privatization (Atigaku et al., 2025; Russell, 2013). Its application in the Togolese context, however, raises specific questions related to institutional fragility, limited regulatory capacity, and the underdeveloped local market for operators.

This study focuses on semi-urban centers in Togo, within a context of recent decentralization where municipalities have limited institutional and financial capacities. The Project to Improve Drinking Water and Sanitation Management in Small Towns (PAGEPC), implemented between 2021 and 2024 in the municipalities of Zio 2 and Avé 2 with support from PADIE and Experts Solidaires, in collaboration with the municipalities of Avé 2 and Zio and the ministry responsible

for water, serves as a relevant case study for analyzing the conditions for success and failure of delegated management in a context of decentralization. The research question is as follows: to what extent does the public service delegation model, in the form of a lease, constitute a viable and sustainable solution for improving the governance of water services in semi-urban areas of Togo? What are the institutional, technical, and financial conditions necessary for its success? To answer this question, this article is structured into six sections: a literature review with the theoretical framework of polycentric governance (2), methodology (3), empirical results (4), theoretical and practical discussion (5), and conclusion (6). Terminology “lease” designates the contract signed in both municipalities and is the only contractual term used from here on; “concession” refers to the legal category defined in Law No. 2010-006 (Section 2.2).

2. Literature Review

2.1. Water Services Governance in Africa

The concept of water governance refers to the set of political, social, economic, and administrative systems that regulate the development and management of water resources (Rogers & Hall, 2003). This definition remains an essential reference. However, contemporary approaches, such as the African Water Vision 2063 promoted by the African Union and AMCOW (African Ministers' Council on Water (AMCOW) & African Union Commission (AUC), 2026), broaden this definition by incorporating the issues of climate resilience, cross-border cooperation, and diversified financing.

Water governance is therefore no longer limited to institutional and organizational dimensions alone: it now includes the capacity of states and communities to anticipate crises, mobilize autonomous operators, strengthen independent regulation, and actively involve users. This evolution demonstrates that water governance in Africa is approached with a forward-looking and inclusive mindset, where the combination of strong regulators, efficient operators, engaged citizens, and diverse funding sources is the key to sustainable and equitable management of water resources.

Water service provision in Africa oscillates between public, private, and hybrid models, following a historical trajectory marked by four phases: 1) centralized and technocratic management during the colonial and postcolonial periods; 2) the crisis of public models and the privatizations imposed by structural adjustment programs in the 1980s and 1990s; 3) the emergence of public-private partnerships and decentralized management in the 2000s; 4) the search for hybrid models adapted to local contexts in the post-2015 period (Ahlers et al., 2014).

The most common water governance models in Africa are public management, public service delegation (PSD), community-based governance, and independent regulation. These four models reflect the diversity of the continent's institutional and socioeconomic contexts. Each has its advantages and limitations: public management ensures state control but often suffers from administrative red tape; pub-

lic service delegation harnesses the efficiency of the private sector but can exacerbate inequalities in access; community-based governance promotes local ownership but remains vulnerable to financial and technical challenges; finally, independent regulation ensures greater transparency but depends on institutional strength.

Jaglin's seminal work (Jaglin, 2012, 2014) on African cities has demonstrated that this plurality of formal and informal service delivery regimes constitutes a structural characteristic of urban water systems, rather than a temporary dysfunction. This pluralism requires a governance framework capable of coordinating actors with diverse rationales. Indeed, no single model offers a universal solution: the most promising approaches are those that combine a strong regulator, autonomous operators, engaged users, and diversified financing mechanisms, thereby reducing exclusive dependence on the state and strengthening the resilience of water management systems. In the context of secondary cities in French-speaking West Africa, there is a need to align the professionalization of operators with a simultaneous strengthening of the capacities of local governments as delegated project owners, emphasizing the political dimension of this reform.

2.2. Models of Public Service Delegation in the Water Sector

Public service delegation is defined as a contract whereby a public authority (the delegating authority) entrusts an operator (the delegate) with the management of a public service for which it retains responsibility, for a fixed term and in exchange for compensation substantially linked to operational results. Togolese Law No. 2010-006 of June 18, 2010, on the organization of public drinking water services, defines three main forms of delegation: concession, lease, and public management with profit-sharing. Each is distinguished by the level of risk-sharing and operational responsibilities. Article 2 of the law distinguishes the forms by the obligations placed on the delegate. Under a concession, the delegate operates the service at its own cost and risk and must also develop the facilities, including asset management and investments. Under a lease, it operates at its own cost and risk and keeps existing facilities in working order, while investment stays with delegating authority. The contracts studied here are leases.

Leasing, the form adopted under PAGEPC, is a contract whereby the delegating authority entrusts the operation of the service to an operator (the lessee), who provides the service at its own expense and risk, collecting tariff revenues while paying a royalty to the municipality. In a hybrid system, the authority retains ownership of the infrastructure and bears the cost of major investments. This model has the advantage of limiting the lessee's financial commitments while introducing performance incentives.

Public service delegation (PSD) in the water sector in sub-Saharan Africa illustrates a hybrid model in which the public authority retains ownership of the infrastructure and covers major investments, while operations are entrusted to private operators. This model limits the lessee's financial commitments, introduces perfor-

mance-based incentives, and promotes greater accountability among local stakeholders. Experiences in Niger, Burkina Faso, and Chad show that public-private partnerships (PPPs) can be a viable solution for small towns, provided they are accompanied by strong regulation and rigorous institutional oversight (Nkolola & Phiri, 2025; Nzengya, 2018).

The logic of shared responsibilities in the lease agreement is based on three pillars: 1) the lessee is responsible for technical and commercial operations (production, distribution, routine maintenance, customer management, and bill collection) and is compensated exclusively from tariff revenues; 2) the municipality, as the contracting authority, guarantees investments, monitors contract performance, and develops the investment program submitted to the regulator; 3) the Regulatory Authority for the Drinking Water and Electricity Sectors (ARSE) ensures independent regulation of the sector, approves rates, and imposes penalties for breaches of contract (Law No. 2011-024 of July 4, 2011). This structure aims to align the incentives of the parties while maintaining the public service mission.

The concept of the secondary city—understood as an intermediate urban agglomeration linking metropolitan areas and rural areas (Sondou et al., 2025)—has seen a resurgence of analytical interest following the work of Roberts and Tacoli (Roberts, 2014; Tacoli et al., 2015) on urban growth in sub-Saharan Africa. These cities are characterized by weak local institutional capacities, insufficient economies of scale for networked services, a high proportion of low-income households, and structural diversity in supply sources.

In Togo, national policy classifies Noépé and Kovié as semi-urban areas (populations exceeding 1500 inhabitants that are not prefectural capitals), which determines the applicable institutional framework.

2.3. Challenges of Delegation in African Semi-Urban Centers

Applying delegation models from large cities to small African urban centers poses specific challenges documented by several authors (Marson & Savin, 2015). From a financial perspective, service sustainability is difficult to achieve due to lower population densities, limited connection rates, reduced payment capacity, and insufficient economies of scale (Armstrong et al., 2022). They emphasize the need for sufficient regulatory capacity to prevent regulatory capture. The financial sustainability of water services no longer depends solely on the tariff structure and collection rates, but also on the financial credibility and capacity of institutions to mobilize diversified financing. Nansi (2025) shows that a combination of appropriate pricing, targeted cross-subsidies, effective collection, and transparent governance is essential to attract donors and ensure the sustainability of services.

At the institutional level, the capacity of local delegating authorities generally remains weak: a lack of qualified human resources, a deficit in technical legitimacy, and difficulties in ensuring oversight and regulation (Mlula, 2025). On the supply

side, local private operators are poorly structured, undercapitalized, and have limited access to financing (Armstrong et al., 2022). The fragmentation of responsibilities among the central government, local authorities, and parastatal entities leads to conflicts of jurisdiction and gray areas that undermine service effectiveness. They highlight the critical role of social intermediation in the phase where communities adopt the new model.

2.4. Togolese Context: Decentralization and Water Sector Reform

In Togo, the water and sanitation sector has undergone several institutional reforms since the 1990s. Law No. 2010-004 of June 14, 2010, establishing the Water Code, introduced an institutional framework aimed at clarifying responsibilities among the central government (sectoral policy, regulation), local governments (organizing authority), and operators (operation). Interministerial Decree No.013/MEHV/MATDDT of September 20, 2022, marked another milestone by authorizing municipalities to act as delegating authorities for public drinking water and sanitation services, paving the way for the effective decentralization of governance in the sector.

There is a clear distinction between urban management, handled by *Togolaise des Eaux* (TdE), and small towns, for which municipalities have been responsible since the 2019 decentralization reform. However, most of these small towns still lack a stable management model: community-based management is considered structurally deficient there (Atigaku et al., 2025), while the national operator's operating costs appear disproportionate to their scale. Delegation to a private operator is being piloted as a third option, particularly in the Maritime region in the south of the country, with the support of specialized non-governmental organizations. The PAGEPC initiative is taking place within this transitional institutional framework. The municipalities of Zio 2 (Kovié) and Avé 2 (Noépé) represent the first concrete applications of the new legal framework in small Togolese urban centers.

2.5. Theoretical Framework: Polycentric Governance as an Analytical Framework

The theory of polycentric governance, conceptualized by Elinor Ostrom, posits that institutional arrangements involving multiple autonomous decision-making centers can produce better results than those of a monopolistic or exclusively community-based management system (Sabatier, 1992). In a polycentric system, multiple authorities (state, municipal, community, private, and technical and financial partners) simultaneously participate in the provision and regulation of a public service, creating effects of functional redundancy, mutual learning, and shared responsibility (Ostrom, 2010). This framework proves particularly relevant for analyzing the water sector in Togolese secondary cities, where the diversity of actors—the state (asset management company), SP-EAU (operating company), TdE (national operator), ARSE (regulator), municipalities and community associations, and

private operators—constitutes not an anomaly but a structural reality that governance must organize. Araral and Wu (2016) demonstrated, from an international comparative perspective, that water service users are better served by pluralistic institutions than by public monopolies or unregulated markets.

From an operational perspective, this study draws on three analytical dimensions derived from Ostrom's (1990) work on institutional rules: 1) constitutional rules, which define who can participate in decisions regarding water services and under what terms (national legal framework, municipal ordinances); 2) collective rules, which govern delegation procedures, contracts, and oversight mechanisms; 3) operational rules, which govern the day-to-day interactions between the farmer, the municipality, the ARSE, and users (pricing, billing, maintenance, complaints). This framework allows for a systematic analysis of the points of failure observed in the two cases studied. Pahl-Wostl (2009) expanded this framework by highlighting the learning capacity of polycentric governance systems and their adaptability to change. In the Togolese context, this dimension is crucial: the transition from a community-based model to a leasehold model is not merely a change in operator, but a transformation of the institutional rules of the game that requires collective learning on the part of all stakeholders.

3. Methods

The research adopts a comparative case study design using mixed methods (Yin, 2018), which is particularly well-suited for in-depth analysis of complex phenomena within their real-world context. The complementary use of quantitative and qualitative methods aims to produce an understanding of the governance dynamics of water services in the two study areas that are both statistically robust and contextually grounded. Our case study focuses on the PAGEPC initiative in two adjacent municipalities in Togo's Maritime Region: Zio 2 and Avé 2 (Figure 1). The municipality of Zio 2, whose administrative center is Mission-Tové, has a population of approximately 78,000 spreads across four cantons, including Kovié. The municipality of Avé 2, whose administrative center is Noépé, has a population of approximately 42,000; the localities of Noépé and Aképé constitute the second intervention site. Located less than 30 kilometers from Lomé, these two municipalities share a peri-urban geographic location, outside the operational area of Togo-lesse des Eaux (TdE).

The quantitative survey was conducted among a sample of 712 households, divided between Kovié ($n = 359$, or 50.4%) and Noépé ($n = 353$, or 49.6%). The sample size was calculated using Cochran's (1977) formula adapted for finite populations (Formula (1)), with a 95% confidence level ($t = 1.96$), a 5% margin of error, and an estimated proportion $p = 0.5$ to maximize variance. The number of households in each locality was estimated using data from the RGPH-5, assuming an average household size of 4.6 people. The sample was drawn using a stratified random sampling procedure with "constant step size" by sector to ensure spatial representativeness.

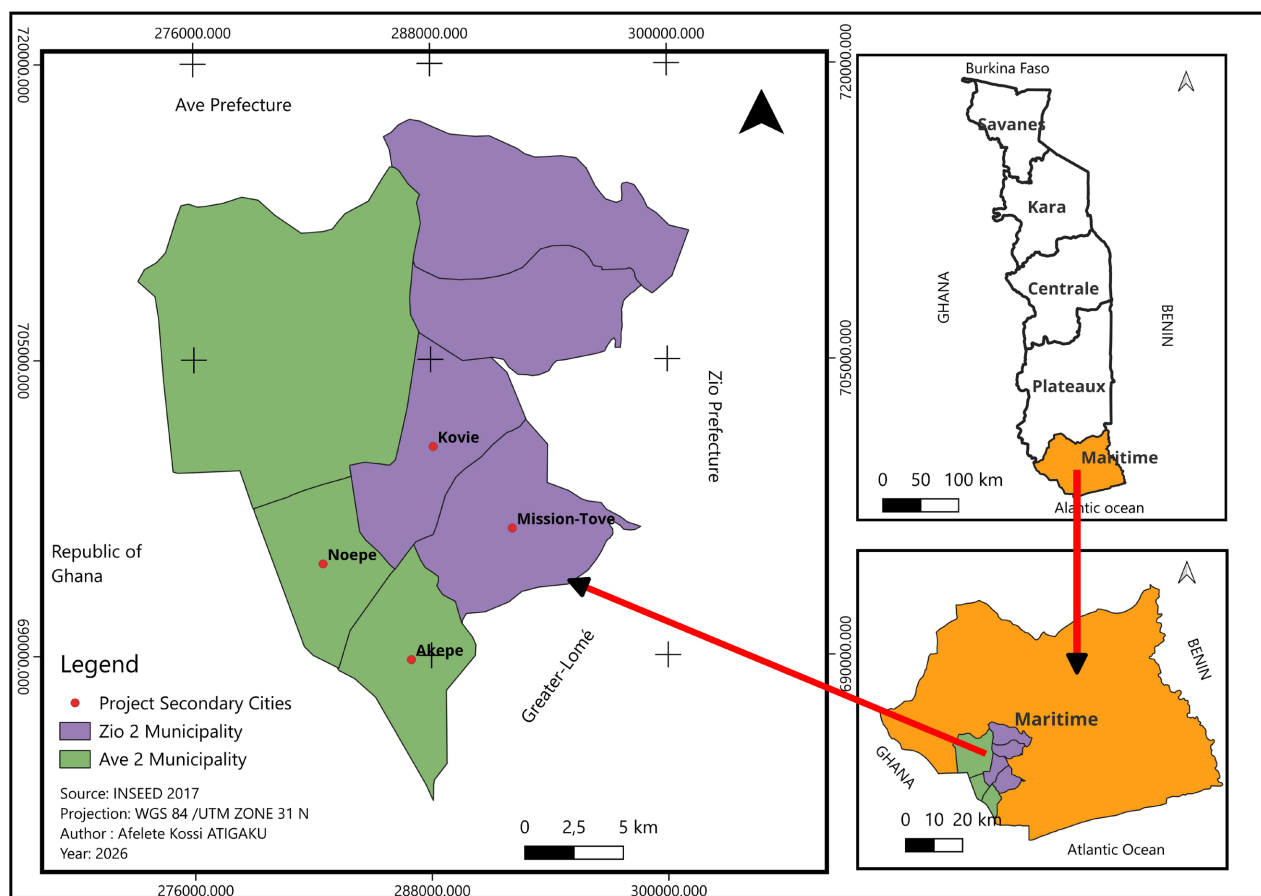


Figure 1. Map showing the locations of the pilot municipalities in the PAGEPC project.

$$n = \frac{t^2 * p(1-p) * N}{t^2 * p(1-p) + (n-1) * e^2} \quad (1)$$

The questionnaire covered: water sources used, distances to and travel times to water points, daily water consumption, water treatment practices, awareness of management bodies, satisfaction with the service, and perceptions of community management's ability to ensure sustainable access.

Fieldwork took place from January to February 2025. The sampling frame was of RGPH-5 enumeration-area counts, which counted 1.066 households in Kovie and 1061 in Noépé. The sample was allocated to the sectors of each locality in proportion to their share of the frame (**Table A1**). Within each sector, households were drawn by systematic random sampling: after a random start, every k th household along the walking route was approached, with k equal to the number of households in the sector divided by its allocated sample (k from 2 to 4; **Table A1**). Of 733 households approached, 712 completed the questionnaire, a response rate of 97.1% (refusals 2.0%, absent after a visit 0.8%; figures by sector in **Table A1**). Within each household, the respondent was the household head or the adult in charge of water collection and payment, aged 18 or over. Interviews were conducted in Ewé and French languages by 6 trained enumerators using a mobile data-collection appli-

cation (KoboToolbox).

The qualitative survey involved semi-structured interviews, in October to November 2025, with 42 representatives of fourteen institutions: Ministry in charge of water and sanitation (MCEA), Ministry of Territorial Administration Local Governance and Customary Affairs, SP-EAU, TdE, ARSE, the Directorate of Drinking Water Supply (DAEP), the Maritime Region's Regional Water Directorate, the municipalities of Avé 2 and Zio 2, the NGO PADIE, Experts Solidaires, the consulting firm ARWP, and the delegated operators CHAT-EAU and ACA-BTP. Five focus group discussions (FGDs) brought together a total of 52 users representing different profiles in Kovié-Kota, Kovié-Séva, Mission-Tové, Aképé, and Noépé. The interviews and discussions were recorded with the participants' consent, transcribed, and subjected to an inductive-deductive thematic analysis. The fourteen interviews were distributed as follows: one of interviewees per institution, their positions and the interview dates, as in **Table A4**.

Quantitative data were processed using SPSS and Excel for descriptive analyses (frequencies, means, distributions), cross-tabulations accompanied by chi-square tests, and Spearman's correlation analyses for ordinal variables. The analysis of the qualitative data was conducted using NVivo, in three stages: inductive-deductive thematic coding, systematic triangulation of sources, and interpretation considering the polycentric theoretical framework.

Ethical considerations. The study protocol was approved by the University of Lomé's ethics committee on November 20, 2024. Prior to each household survey, interview, or focus group, participants were informed of the study's objective, its funding, the voluntary nature of participation, the right to refuse or withdraw at any time without consequence, and the procedures for data storage and use. Consent was obtained orally and recorded on the questionnaire for the household survey, and in writing for interviews and focus groups, with separate consent obtained for audio recording. The survey dataset contains neither names nor addresses; transcripts were pseudonymized, and not all interviewees participating in their professional capacity agreed to be identified by their institution. Fieldwork was authorized by the municipalities of Zio 2 and Avé 2 and the Regional Center of Excellence on Sustainable Cities in Africa (CERVIDA-DOUNEDON) at the University of Lomé.

Three limitations should be noted. First, the focus on two municipalities within the same region limits the scope of generalizability. Second, the study was conducted shortly after the conclusion of the PAGEPC project (2024), which limits the assessment of medium-term sustainability. Finally, certain sensitive financial data could not be obtained in full due to institutional reluctance and gaps in information systems. Fourth, the survey is cross-sectional and records one main source per household with a two-class distance measure, so the link between distance and consumption is an association and the diversification mechanism could not be tested (Section 4.2). Fifth, operational indicators come mainly from operator reports and platform records that we could not audit independently (**Table 3**), and the AUSEPA

baseline is documented less precisely than the lease period. Sixth, the finding on institutional capture rests on interview and documentary evidence, without direct observation of council deliberations and with the accounts of the councilors concerned (Section 4.5).

4. Results

4.1. Institutional Framework and Relevance of the Lease Model

The literature review reveals that the choice of leasing aligns with national strategic guidelines. At the local level, both municipalities had identified improving access to water as a priority in their municipal development plans. The leasing contracts signed in both municipalities share the following characteristics: a six-year term, an exclusive operating area, revenue sharing (3% to the municipality, 2% to the ARSE), and joint monitoring by the municipality, the DAEP, and the ARSE. The operator CHAT-EAU manages the Kovié-Mission-Tové network, which resulted from the transformation of the former AUSEPA into a limited liability company (December 2021); ACA-BTP manages the Aképé-Noépé network (**Table 1**).

Table 1. Comparison of lease contract characteristics in Kovié and Noépé.

Indicator	Aképe-Noépé (Avé 2)	Kovié-Mission Tové (Zio 2)
Contract Type	Experimental lease	Experimental lease
Duration	6 years	6 years
Operator	ACA-BTP	CHAT-EAU Sarl
Common royalty	3% of revenue	3% of revenue
Collection rate	82% (April 2025)	85% - 90% (2023-2025)
Network expansion	In progress	+ 4 km (2021-2024)
Technical monitoring	Field reports	Field reports and mWater platform

Source: Data collect 2025, and Commune d'Avé 2, 2026; Commune de Zio 2 & CHAT-EAU Sarl, 2026.

4.2. Water Consumption and Diverse Service Schemes

The distribution of daily water consumption reveals significant variation among households and between localities. The analysis reveals a bimodal distribution (**Figure 2**): a concentration in both the low ranges (<60 liters/day: 25.9% in Kovié, 37.1% in Noépé) and the high ranges (>150 liters/day: 29.2% in Kovié, 32.9% in Noépé). These differences are statistically significant between the two localities (chi-square (5, $n = 707$) = 22.7; $p < 0.001$).

This bimodal profile reflects the existence of two distinct consumption patterns: on the one hand, households constrained by distance, cost, or outages in the formal water supply network; on the other, households with access to free alternative sources (rice paddy canals, rainwater, boreholes). This finding is paradoxically confirmed

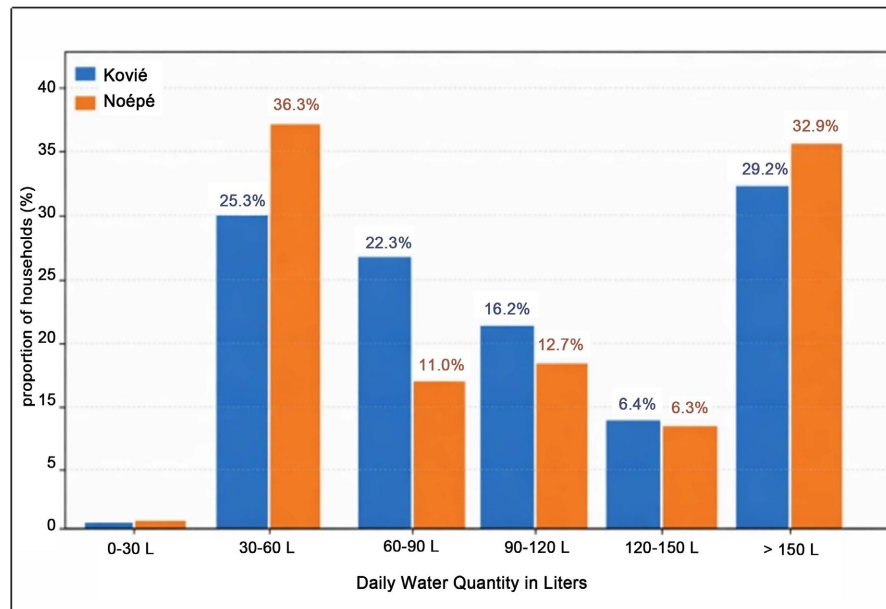


Figure 2. Daily water consumption per household.

by the Spearman correlation between quantity consumed and distance ($\rho = 0.307$; $p < 0.001$): households living more than 500 m from their drinking-water source consume more than those living closer ($n = 707$; distance is coded in two classes). Distance, however, largely separates source types, and the survey records a single main source per household, so the diversification explanation could not be tested. This counterintuitive finding can be explained by the diversification of water sources among distant households, which combine multiple supply sources to meet their needs. This result is consistent with the concept of the structural plurality of water supply systems identified by Jaglin (2012) and argues for water policies that incorporate informal practices rather than ignoring them.

Mechanism tests (Table A2 and Table A3). Distance is coded into two categories (less than or greater than 500 m) and refers to the primary drinking water source reported by the household, rather than the formal network. As the questionnaire records only one primary source per household, it is impossible to reconstruct source combinations or directly test for diversification. The data show that 80% of households located more than 500 m from their source use a free source (rice field canal, Akatsè dam, rainwater tank), compared to 20% of those located less than 500 m away (chi-square (2) = 332.9; $p < 0.001$). Among users of network water points (public standpipe or private connection; $n = 213$), there is no link between distance and consumption ($\rho = -0.01$; $p = 0.94$). This association appears among users of free sources ($\rho = 0.18$; $p < 0.001$; $n = 420$) and those using boreholes ($\rho = 0.43$; $p < 0.001$; $n = 74$, of which only 10 live more than 500 m away). It is more pronounced in Noépé ($\rho = 0.48$; $p < 0.001$) than in Kovié ($\rho = 0.10$; $p = 0.07$). In an ordinal logistic regression model, distance remains significant after adjusting for location and source type (OR = 2.02; 95% CI: 1.38 - 2.95; Table A3, Model 3), and users of free sources consume more than those using the piped

network (OR = 1.93; 95% CI: 1.29 - 2.89). As household size and occupancy status were not recorded, it is not possible to adjust for these variables or for per capita consumption. We interpret this result as reflecting a difference in supply patterns: households located far from a paid distribution point obtain water from free, unmetered sources—where no tariff limits consumption volumes—without necessarily enjoying better service.

Furthermore, the survey data also reveal a significant gender burden in water collection: women and girls shoulder most water collection tasks, accounting for more than two-thirds of those responsible for this activity in the households surveyed. This aspect must be incorporated into the design of pricing policies and mechanisms for access to water points. Women are named among the people who fetch water in 597 of 712 households (83.8%), children in 12.5% and men in 3.7%.

4.3. User Satisfaction and Rejection of the Community Model

The satisfaction results in **Figure 3** are striking: 96.9% of households in Kovié and 97.7% of those in Noépé report being dissatisfied with the community-based management of their water point. This near-unanimous dissatisfaction shows no statistically significant difference between the two localities ($\chi^2 = 0.18$; $p = 0.67$), indicating that it is common to both cases, regardless of the management model in place.

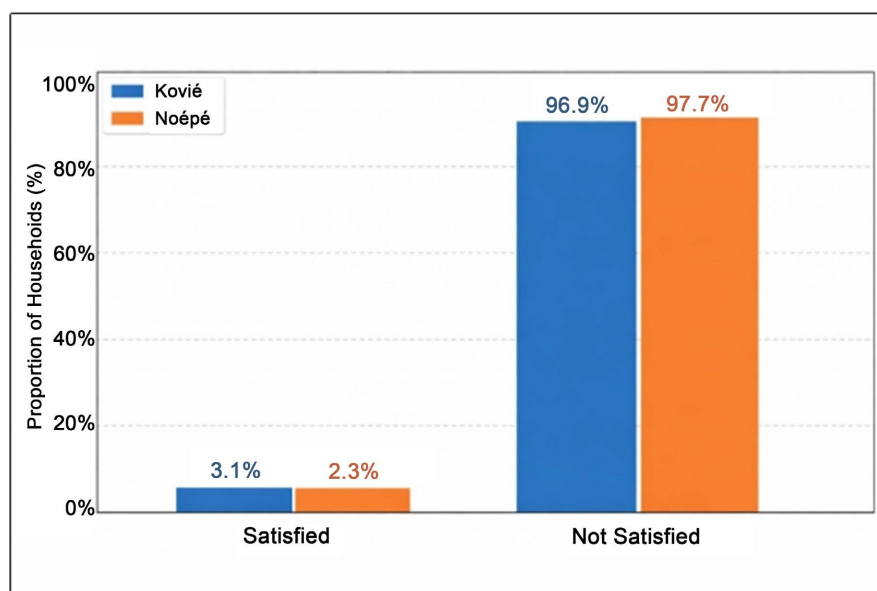


Figure 3. Satisfaction with the community-based management of the water service.

The perception of community-based management's ability to ensure sustainable access to water, as shown in **Figure 4**, is also very negative: 87.2% of households in Kovié and 84.7% in Noépé believe that this management model cannot guarantee the sustainability of the service. This opinion does not differ significantly between

the two localities ($\chi^2(2) = 0.95$; $p = 0.62$), confirming that rejection of the community-based model is a shared view, independent of local experience with the DSP. The recurring reasons identified in the focus groups are internal conflicts related to fund management, lack of control over leaks and illegal connections, irregular service, low flow rates, organizational instability, and lack of investment in network development.

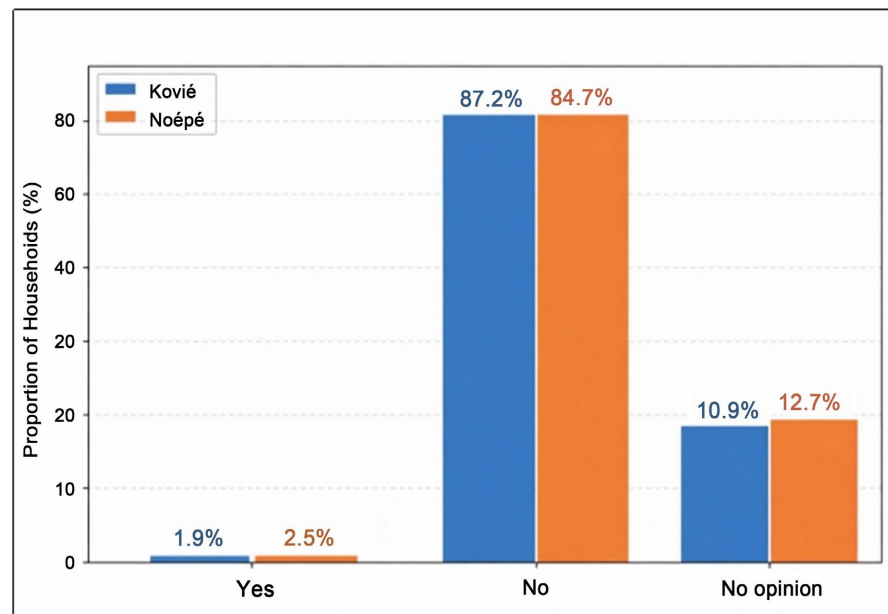


Figure 4. Perception of community management as a guarantee of sustainable access.

Table 2 reveals an analytically significant dissociation between institutional visibility and trust. On the one hand, awareness of the management body differs significantly by locality ($\chi^2(2, n = 712) = 12.7$; $p = 0.002$; Cramér's $V = 0.13$): in Kovié, 44.8% of households report that a management body exists, compared to 39.4% in Noépé. Even more striking, half of the households in Noépé (50.7%) and 38.7% of those in Kovié say they do not know whether such a body exists, despite a delegated operator at both sites (CHAT-EAU in Kovié since March 2023). This lack of awareness can be partly explained by the fact that CHAT-EAU was created through the transformation of the former AUSEPA team into a private company. Users therefore equate the new operator with the old community-based system, revealing a lack of communication and a failure on the part of the lessee to reposition its identity. Of the 161 Kovié households that report a management body, 93 cannot say which one, 52 name the AUSEPA or the water committee, and only 13 name the company. In Noépé, of 135 answers, 93 cannot say which body, 40 name the AUSEPA or the committee, and none name the company. On the other hand, distrust of the community-based model is consistent across both sites ($\chi^2(2) = 0.95$; $p = 0.622$), confirming that this rejection is structural and independent of knowledge of the DSP system.

Table 2. Awareness of the managing body and trust in community-based management.

Variable	Yes	No	Don't know	Statistical test
Awareness of the management body in Kovié	44.8%	16.4%	38.7%	Chi-square (2) = 12.7; $p = 0.002$ (Kovié vs Noépé)
Awareness of the management body in Noépé	39.4%	9.9%	50.7%	Same test as above
Sustainable community management in Kovié	1.9%	87.2%	10.9%	Chi-square (2) = 0.95; $p = 0.622$ (Kovié vs Noépé)
Sustainable community management in Noépé	2.5%	84.7%	12.7%	Same test as above

4.4. Operational Performance of the Lease Model

Despite the documented institutional challenges, the DSP pilot through the PAGEPC has yielded encouraging operational results, particularly in Kovié. CHAT-EAU reports a collection rate of 85 to 90 percent, compared to a rate of virtually zero under AUSEPA management, and provides continuous water availability throughout the year. The network was expanded by an additional 4 kilometers between 2021 and 2024. An analysis of the network's performance (**Figure 5**) shows an average network efficiency (billed volume divided by produced volume) of 67.16% for the 2024-2025 period in Kovié: the volume produced averages 4765 m³, while the average billed volume is 3213 m³. Service interruptions average 46 hours per month, with exceptional peaks of 5 to 7 days in May-August 2024.

In Noépé, the operator ACA-BTP reports a collection rate of 82% (April 2025) and network recovery rates ranging from 48% (April) to 84% (August), with an estimated annual average of approximately 65%. While these performance metrics remain superior to those of the AUSEPA, they reveal only partial adoption of the digital system: ACA-BTP continues to submit physical reports due to a lack of proficiency with the mWater platform, unlike CHAT-EAU, which makes full use of it. This disparity in digital adoption highlights the importance of technological capabilities in the governance of mini grids.

Table 3 gives the source, period and calculation method of each operational indicator and separates operator-reported figures from independently verified ones.

4.5. Governance Failures at Multiple Levels

Qualitative data document failures at every level of the polycentric institutional architecture. At the national level, ARSE reports non-compliance with the PPP law, the absence of a formal tariff policy, and the non-payment of fees. At the asset operator level, SP-EAU faces chronic non-collection of its receivables from TdE,

leading to a situation of mutual insolvency. At the municipal level, the municipalities of Zio 2 and Avé 2 lack specialized human resources to fulfill their role as delegated project owners.

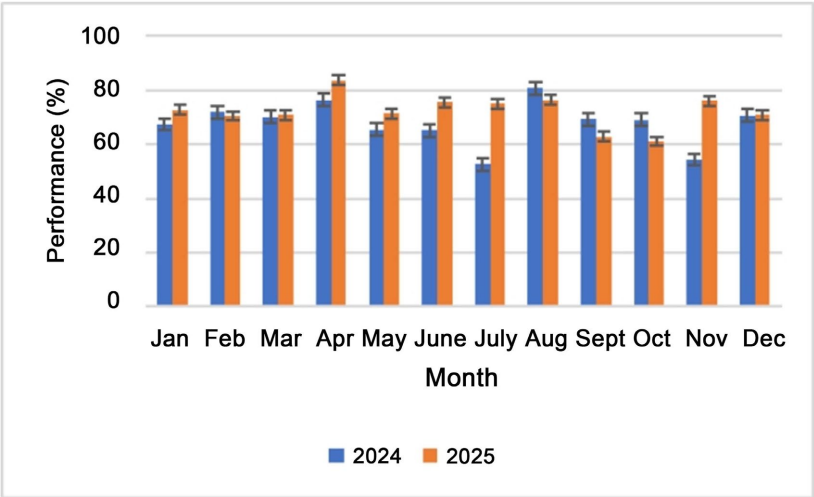


Figure 5. Management performance of the Mission-Tové-Kovié (MTK) drinking water network.

Table 3. Operational indicators: source, period, calculation method and verification status.

Indicator (site)	Reported value	Source and record type	Period	Calculation method and verification
Collection rate (Kovié, CHAT-EAU)	85% - 90%	Operator reports, data collect in 2025	2023-2025	Calculated as total revenue collected divided by total revenue billed. The value was reported as an annual range rather than a monthly time series. Figures were obtained from the operator and could not be independently verified through external records.
Collection rate (Noépé, ACA-BTP)	82%	Operator operational and financial reports	April 2025	Calculated as revenue collected divided by revenue billed during the reporting month. The indicator is based on a single monthly observation and was not independently verified.
Network efficiency (Kovié)	67.16% (4765 m ³ produced; 3213 m ³ billed)	mWater production and billing records	2024-2025	Computed as billed water volume divided by produced water volume. The estimate is based on monthly production records and customer meter readings available in the mWater database.

Continued

Network recovery rate (Noépé)	48% (April) to 84% (August); estimated annual mean $\approx$ 65%	Operator reports and operational records	April-August 2025	Monthly recovery rates were calculated from production and billing data. The annual mean was estimated as the arithmetic average of the available monthly values. Independent verification was not possible due to limited access to supporting records.
Service interruptions (Kovié)	Average of 46 hours per month; peaks of 5 - 7 consecutive days during May-August 2024	Semi-structured interviews, focus group discussions, and operator testimonies	2021-2024	Interruptions were documented through stakeholder interviews and triangulated across respondent groups. The indicator reflects reported service outages rather than systematically monitored downtime records.
Network extension (Kovié)	+4 km of distribution network	PAGEPC project completion and infrastructure acceptance records	2021-2024	Measured as the cumulative length of new distribution pipelines installed under PAGEPC-supported investments. This reflects infrastructure development rather than operator performance.
AUSEPA baseline (both sites)	Baseline situation established prior to assessment	Semi-structured interviews and community consultations	October-November 2025	Baseline information was derived from stakeholder perceptions, institutional interviews, and community consultations. The indicator serves as a qualitative reference point for assessing changes in service delivery and water governance. Findings were not independently verified through administrative datasets.

In Noépé, a phenomenon of institutional capture was observed: former members of AUSEPA, who had become municipal councilors, blocked the implementation of the DSP to protect their interests in the existing community-based system. This phenomenon, documented in the literature on decentralization in Africa (Mohammed et al., 2024; Rugeiyamu & Msendo, 2025; Wilfahrt, 2018), constitutes a major obstacle to water governance reform and raises the question of the scale at which this capture operates—in this case, at the sub-municipal level, rather than at the national or sectoral levels as previously assumed in the literature.

By institutional capture we mean the use of an elected office to steer a public decision toward interests formed in a previous role, as opposed to the capture of a regulator by the firm it regulates. The Noépé finding rests on 9 of the 14 interviews, on 3 in the Noépé focus group and on documents: council minutes, correspondence. The accounts identify refusal to sign the deliberation approving the

lease, non-adoption of the tariff decision, and blocked payment of the operator by councilors who had sat on the AUSEPA committee. We coded an episode as intentional obstruction only when three conditions held: a specific act or refusal was attributed to identifiable actors; at least two independent sources corroborated it (two interviewees from different institutions, or an interview and a document); and the accounts or documents tied the act to the actors' stake in the former AUSEPA. Opposition was voiced through ordinary council debate and vote was coded as routine political disagreement, and postponements explained by procedure, budget or missing skills as implementation delay. Episodes meeting only one or two conditions are reported as allegations. The councilors concerned were interviewed. Their motives are therefore inferred from accounts and documents, not observed directly.

5. Discussion

5.1. Myth of the Automatic Efficiency of Delegation

The results call for a more nuanced view of the prevailing narrative regarding the superiority of private management of water services. While delegation has led to improvements in certain aspects of service (reliability, expansion, and revenue collection), it has not produced the radical transformation that was expected. This situation confirms critical analyses suggesting that simply replacing a public manager with a private one does not guarantee efficiency: efficiency depends on the quality of the institutional framework, regulation, the contract, and the balance of power (McDonald & Ruiters, 2012). A significant proportion of the private operators involved in the delegated management of mini grids come from the informal sector and lack experience in navigating the sector's contractual and technical rules. This lack of professionalization is a recurring factor contributing to the fragility of the systems, particularly in Néopé.

5.2. Delegating Authority: The Weak Link in the Polycentric Model

A key lesson concerns the difficulty of establishing an effective delegating authority at the municipal level in small African towns. The study of OECD and AMCOW (African Ministers' Council on Water (AMCOW) & African Union Commission (AUC), 2026; OCDE, 2021) confirms that regulatory challenges in developing countries are not limited to national agencies.

When decentralized to the local level, regulation faces additional constraints: limited technical capacity, institutional fragmentation, a lack of financial resources, and difficulties in coordinating among stakeholders. This research shows that while local regulation promotes proximity and adaptation to local realities, it requires strengthened mechanisms for transparency, financing, and oversight to prevent the proliferation of challenges already identified at the national level.

However, in an ideal polycentric system as defined by Ostrom, the multiplicity of control centers (municipalities, ARSE, SP-EAU, technical partners) should

compensate for the weakness of each actor taken individually, thanks to the effects of functional redundancy and mutual learning. Our results show that this mechanism does not work here: the asymmetry in institutional capacities is too pronounced for redundancy to be effective. Municipalities lack the qualified human resources, financial resources, and technical legitimacy to fully carry out their role. Information asymmetry favors the operators ([African Ministers' Council on Water \(AMCOW\) & African Union Commission \(AUC\), 2026](#)), creating a risk of regulatory capture. This observation constitutes a theoretical contribution to the literature on polycentric governance: polycentricity is not in itself a guarantee of effectiveness when the capacities of decision-making centers are fundamentally unequal.

5.3. Small Private Operators: Between Entrepreneurship and Structural Fragility

Experience highlights the ambivalence of small local private operators. Their deep roots in the local community facilitate close ties with users and an understanding of local social dynamics. However, their structural fragility (low capitalization, lax management systems, short-term focus, and risk aversion) significantly limits their performance and their ability to invest in sustainable infrastructure or training ([Armstrong et al., 2022](#)). This fragility raises questions about the model's sustainability in the medium term without ongoing support.

Furthermore, private operators in these two localities are driven more by a profit motive than by commitment to public service, which limits the program's impact on local development. The failure of certain operators to integrate into the local social fabric creates lasting problems, sometimes leading to the use of alternative sources.

5.4. Difficult Equation of Social Pricing

How can social accessibility be reconciled with financial viability? This equation, already complex in large cities, becomes virtually unsolvable in small towns where consumption volumes are low and unit costs are high. The literature on water pricing in developing countries has consistently emphasized the need for well-targeted subsidy and equalization mechanisms to reconcile equity, affordability and financial sustainability ([Fuente, 2019](#); [Torio & Harris, 2025](#)). In our cases, no institutional subsidy or equalization system has been established on a sustainable basis. The social rates currently in place are viable only in the short term thanks to project subsidies; in the medium term, either rates will have to increase significantly—with the risk of exclusion—or a sustainable public subsidy mechanism will have to be established.

5.5. Crucial but Ambivalent Role of External Support

Long-term technical and institutional support has proven essential. Local actors cannot take ownership of such a complex governance model without substantial

external support, which is not limited to the transfer of technical skills but also encompasses facilitation, mediation among actors, and, temporarily, the assumption of substitute functions in critical areas. However, this support carries a risk of dependency—an “autopilot syndrome”—that delays the genuine empowerment of local actors (Andrews et al., 2017). The design of support projects should incorporate explicit indicators of empowerment: the proportion of the operating budget that is self-financed, the rate of decisions made without external intervention, and the ability to resolve contractual conflicts without third-party mediation.

5.6. The Lessee’s Management in the Face of Local Resistance

The transfer of drinking water management from community associations to private operators, in the form of a lease, in Togolese peri-urban areas such as Aképé and Mission Tové, illustrates a structural tension between technical efficiency and social legitimacy. From the perspective of common-pool resources theory (Saba-tier, 1992), community management committees were based on locally developed rules for access and maintenance, tailored to households’ ability to contribute and the rhythms of village life; their replacement by a private operator disrupts this polycentric governance by imposing standardized pricing and maintenance standards, which are often disconnected from previous customary arrangements. While this technical rationalization does indeed improve certain performance indicators (service continuity, water quality, reduction in breakdowns left unrepaired due to a lack of local expertise), it also transforms the mechanisms through which access to water is secured. Rather than relying primarily on collectively negotiated rights and community-based governance, access increasingly depends on households’ ability to pay user fees, reinforcing market-based allocation mechanisms and reshaping local power relations and social inequalities (Fielmua, 2021; Grillos et al., 2021). This evolution is consistent with Ribot and Peluso (2003) theory of access mechanisms, which emphasizes that access is determined not only by formal rights but also by ability to derive benefits from resources. The most vulnerable households, which previously benefited from informal solidarity arrangements or payment extensions tolerated by village committees, now face strict tariff exclusion. This restructuring has sparked localized resistance: challenges to the legitimacy of the operator, who is perceived as an outsider; questioning of traditional authority, which is now bypassed in mediating access to water; and, in some cases, the reactivation of informal water points outside the delegated system.

This phenomenon is reinforced by an institutional dynamic documented in Noépé: former leaders of the AUSEPA committees, far from being side-lined by decentralization, have, in Noépé, repositioned themselves within the newly elected municipal councils, converting their former authority in community management into local political capital. This personal continuity transforms resistance into internal institutional obstruction. Rather than manifesting on the fringes of the system, opposition to the delegation now resides at the very heart of the body supposed to oversee and monitor it, as certain municipal councilors from the former

AUSEPA refuse to endorse or facilitate the implementation of the contract with the delegate.

The Togolese DSP in this sector thus illustrates a recurring paradox of delegated management reforms in West Africa. The gain in technical performance comes at the cost of an erosion of community control over a resource historically managed as a common, revealing that managerial efficiency and the social embeddedness of the service do not necessarily progress hand in hand.

5.7. Theoretical Implications: Original Contributions to Literature

Four original theoretical contributions emerge from this analysis.

First contribution: polycentricity in the context of fragile decentralization. Polycentric governance, as defined by Ostrom, predicts that the proliferation of decision-making centers improves the efficiency and resilience of systems (Sabatier, 1992). Our results show that this prediction does not hold when the institutional capacities of the various centers are fundamentally asymmetrical. In such a context, polycentricity can paradoxically generate more conflicts of jurisdiction than synergies. This nuance enriches the work of Araral and Wu (2016) by emphasizing that the effectiveness of polycentricity is contingent upon a minimum level of capacity at each decision-making center.

Second contribution: institutional capture at the sub-municipal level. The phenomenon of institutional capture has been documented in literature primarily at the national or sectoral level (Mohammed et al., 2024; Rugeiyamu & Msendo, 2025; Wilfahrt, 2018). Our results from Noépé, based on the evidence in Section 4.5, indicate that it can also operate at the sub-municipal level: former community managers, now serving as local elected officials, have used their positions to block governance reforms to protect their interests. This local-level capture is potentially more difficult to detect and counter than national institutional capture, as it blends in with legitimate local political dynamics.

Third contribution: the consumption paradox and the plurality of water supply regimes. The positive and significant correlation between distance from the formal network and the amount of water consumed ($\rho = 0.307$; $p < 0.001$) is a counterintuitive result that calls for reinterpretation through the accessory of Ribot and Peluso (2003). Effective access to water resources does not depend solely on physical proximity to the formal water supply network, but on a set of access mechanisms (relational, economic, institutional) that enable households far from a paid water point to draw large volumes from free sources. This finding calls for a reconceptualization of “coverage” of water services, incorporating the diversity of service regimes as defined by Jaglin (2012). This reading rests on the source-type analysis in Section 4.2 (Table A2 and Table A3). The cross-sectional design supports an association, not a causal claim, and higher volumes from free sources do not imply better service.

Fourth contribution: The analysis shows that the transition from the community model to the DSP represents an institutional paradigm shift. The DSP em-

bodies the theory of New Public Management and the partial privatization of public services, in which technical and financial efficiency is sought through the involvement of a private operator. Thus, the improvements observed—such as network expansion, private connections, standpipes, and improved collection rates—are not merely practical outcomes but also concrete manifestations of a theoretical framework: one that posits that outsourcing management improves service performance and sustainability. However, the study also highlights the limitations of this theoretical framework: sustainability remains fragile, and private operators do not always possess sufficient institutional and technical capacity. This qualifies the theoretical scope and prompts a discussion of the model's validity in rural or semi-urban contexts.

6. Conclusion

The objective of this article was to analyze the extent to which the delegation of public services through leasing constitutes a viable and sustainable solution for improving the governance of drinking water services in semi-urban areas of Togo. The pilot project conducted in Kovié and Noépé as part of the PAGEPC demonstrates that this model represents a credible alternative to the widely documented limitations of traditional community-based management. The progress achieved—including the professionalization of operations, improved revenue collection, network expansion, and service continuity—is real and significant.

However, delegation is not an automatic solution. Its effectiveness depends heavily on the strength of the institutional framework, the municipalities' capacity to fulfil their role as delegating authorities, the quality of contractual oversight, the competence of private operators, and community buy-in. The weaknesses observed serve as a reminder that the model's success depends as much on governance as on infrastructure.

Compared to the existing literature, this article makes three contributions: it demonstrates the limitations of polycentric governance in the context of pronounced institutional asymmetry; it identifies, in the Noépé case, a sub-municipal scale of institutional capture; and it empirically documents the structural plurality of service delivery regimes in small semi-urban African centers through a counterintuitive finding regarding consumption practices.

We make the following recommendations to the government and the ARSE:

- Develop a performance framework specific to semi-urban mini-water supply systems, distinct from the framework applicable to large cities, incorporating thresholds tailored to collection rates, network efficiency, and service continuity.
- Establish a sustainable cross-subsidy mechanism to maintain subsidized rates for the most vulnerable households without compromising the financial viability of operators.
- Formalize training and certification protocols for small local private operators, including financial management, technical maintenance, and the use of digital

monitoring tools (mWater or equivalent).

For municipalities:

- Strengthen the municipal technical units responsible for contract oversight by including, at a minimum, one technician specializing in water and sanitation and one financial control officer.
- Establish mechanisms for transparency and regular communication with users regarding the identity of the lease operator, the rates charged, and service performance, to reduce the lack of institutional visibility.

For technical and financial partners:

- Design support projects with explicit indicators of local actors' empowerment (rate of autonomous decisions, proportion of self-financed budget), accompanied by a phased exit plan and a minimum duration of five years.
- Ultimately, the experience in Kovié and Noépé highlights that hybrid models involving municipalities, private operators, regulators, and communities can open promising prospects for sustainable access to drinking water in secondary African cities—provided they are supported by sustained political will, sufficient institutional resources, and a realistic learning period.

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Author Contributions

Conceptualization, A.K.A., K.M.E., K.C.N. and T.S.; methodology, A.K.A.; software, X.X.; validation, A.K.A., T.S., I.T., K.K.A. and J.P.M.; formal analysis, A.K.A., K.M.E., K.C.N. and T.S.; investigation, K.M.E., K.C.N. and A.K.A.; resources, A.K.A.; data curation, K.M.E.; writing—original draft preparation, A.K.A., K.M.E. and T.S.; writing—review and editing, A.K.A., K.M.E., K.C.N. and T.S.; visualization, A.K.A., T.S., I.T., K.K.A. and J.P.M.; supervision, A.K.A., T.S., I.T. and K.K.A.; project administration, A.K.A., I.T. and K.K.A.; funding acquisition, A.K.A. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix. Supplementary Tables

Table A1. Sample allocation, sampling interval (k) and non-response by sector.

Sector	Frame (households' estimation)	Allocated n	k	Approached	Completed	Non-response (%)
Kovié: Sector 1 (Mission-Tové)	330	110	3	118	110	6.8
Kovié: Sector 2 (Kovié-Kota)	190	95	2	101	95	5.9
Kovié: Sector 3 (Tové)	336	84	4	91	84	7.7
Kovié: Sector 4 (Kovié-Séva)	210	70	3	75	70	6.7
Total Kovié	1066	359	2 - 4	385	359	6.8
Noépé: Sector 1 (Aképé)	491	160	4	171	160	6.4
Noépé: Sector 2 (Noépé)	570	193	3	205	193	5.9
Total Noépé	1061	353	2 - 4	376	353	6.1
Total	2127	712	2 - 4	761	712	6.4

Table A2. Distance to the water source used, source type and daily consumption per household (n = 707).

Source group	n	Under 500 m, n (%)	Over 500 m, n (%)	Median band, under 500 m	Median band, over 500 m	Spearman rho (distance, consumption)
Network (standpipe, private connection)	213	175 (82.2)	38 (17.8)	30 - 60 L	60 - 90 L	-0.01 ($p = 0.94$)
Borehole	74	64 (86.5)	10 (13.5)	30 - 60 L	90 - 120 L	0.43 ($p < 0.001$)
Free source (canal, dam, rainwater)	420	60 (14.3)	360 (85.7)	60 - 90 L	90 - 120 L	0.18 ($p < 0.001$)
All households	707	299 (42.3)	408 (57.7)	30 - 60 L	90 - 120 L	0.31 ($p < 0.001$)

Table A3. Ordinal logistic regression of daily consumption class on distance (odds ratios, 95% CI).

Variable	Model 1: distance only	Model 2: +locality	Model 3: source type
Over 500 m (vs under 500 m)	3.36 (2.53 - 4.48); $p < 0.001$	3.38 (2.53 - 4.51); $p < 0.001$	2.02 (1.38 - 2.95); $p < 0.001$
Noépé (vs Kovié)	-	1.03 (0.79 - 1.35); $p = 0.81$	1.16 (0.88 - 1.53); $p = 0.30$
Borehole (vs network)	-	-	0.55 (0.32 - 0.95); $p = 0.03$
Free source (vs network)	-	-	1.93 (1.29 - 2.89); $p = 0.001$
Household size, socioeconomic index	Not recorded	Not recorded	Not recorded
n; log-likelihood	707; -1035.4	707; -1035.4	707; -1024.7

Table A4. Semi-structured interviews by institution.

Stakeholder category	Institution/organization	Respondents (n)
State actors	Ministry in charge of water and sanitation (MCEA)	1
	Ministry of Territorial Administration, Local Governance, and Customary Affairs	1
	Maritime Regional Water Directorate	2
	Directorate of Drinking Water Supply (DAEP)	2
	Electricity Sector Regulatory Authority (ARSE)	5
Technical services	Society for Water and Sanitation in Urban and Semi-Urban Areas (SP-EAU)	4
	Togolese Water Company (TdE)	2
Local authority	Municipality of Avé 2	5
	Municipality of Zio 2	5
Non-governmental organization	Pioneers in Action for Environmentally Integrated Development (PADIE)	3
Technical partner	Experts Solidaires	2
Technical consulting firm	ARWP	2
Delegated operator	CHAT-EAU	3
Delegated operator	ACA-BTP	5
Total	14 institutions/organizations	42