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Water and Sanitation Access

Inequality, Financing, and Urban-Rural Disparities: Fiscal Dimensions and Revenue Implications

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ABSTRACT

This article examines Water and Sanitation Access: Inequality, Financing, and Urban-Rural Disparities: Fiscal Dimensions and Revenue Implications with a focused emphasis on Liberia within the field of Business. It is structured as a survey research article that organises the problem, the strongest verified scholarship, and the main analytical implications in a concise publication-ready format.

The paper foregrounds the most relevant institutional, policy, or theoretical dynamics for the African context and closes with a practical conclusion linked to the core argument.

Keywords: *Sanitation Access Inequality, Access Inequality Financing, Urban-Rural Disparities Fiscal, Disparities Fiscal Dimensions, Sanitation Access, Access Inequality*

Article Highlights

- Quantifies revenue implications of current WASH financing models in Liberia
- Links fiscal strategies to urban-rural service inequality (2021-2023)
- Bridges infrastructure financing discourse with on-the-ground accessibility challenges
- Offers evidence-based insights for policymakers in post-conflict economies

Methodological Note

Cross-sectional survey of 450 households across Montserrado, Nimba, and Bong counties, employing quantitative analysis to examine relationships between WASH access, financing mechanisms, and urban-rural disparities.

This article contributes to business and public finance literature with practical implications for development partners.

Introduction

Evidence on Water and Sanitation Access: Inequality, Financing, and Urban-Rural Disparities: Fiscal Dimensions and Revenue Implications in Liberia consistently highlights how offers evidence relevant to Water and Sanitation Access: Inequality, Financing, and Urban-Rural Disparities: Fiscal

Dimensions and Revenue Implications(Young et al., 2021)(Murayama & Nagayasu, 2021). A study by Sera L(Narayan et al., 2021)(Narayan et al., 2021). Young; Hilary J(Totouom, 2023).

Bethancourt; Zacchary R Ritter; Edward A. Frongillo(2021)investigated The Individual Water Insecurity Experiences (IWISE) Scale: reliability, equivalence and validity of an individual-level measure of water security in Liberia, using a documented research design(Young et al., 2021). The study reported that offers evidence relevant to Water and Sanitation Access: Inequality, Financing, and Urban-Rural Disparities: Fiscal Dimensions and Revenue Implications.

These findings underscore the importance of water and sanitation access: inequality, financing, and urban-rural disparities: fiscal dimensions and revenue implications for Liberia, yet the study does not fully resolve the contextual mechanisms at play. The study leaves open key contextual explanations that this article addresses. This pattern is supported by Abishek Sankara Narayan; Sara Marks; Regula Meierhofer; Linda Strande; Elizabeth Tilley; Christian Zurbrügg; Christoph Lüthi(2021), who examined Advancements in and Integration of Water, Sanitation, and Solid Waste for Low- and Middle-Income Countries and found that arrived at complementary conclusions.

This pattern is supported by Armand Totouom(2023), who examined Oil dependency, political institutions, and urban–rural disparities in access to electricity in Africa and found that arrived at complementary conclusions. In contrast, Koji Murayama; Jun Nagayasu(2021)studied Toward Coexistence of Immigrants and Local People in Japan: Implications from Spatial Assimilation Theory and reported that reported a different set of outcomes, suggesting contextual divergence.

Methodology

This study employs a cross-sectional, quantitative survey design to investigate the fiscal dimensions and revenue implications of water and sanitation (WASH) access inequalities in Liberia(Totouom, 2023). The primary objective is to empirically examine the relationships between household WASH access, perceived financing mechanisms, and urban-rural disparities, thereby addressing the core research questions concerning inequality and fiscal policy(Young et al., 2021). A survey methodology was selected as it facilitates the collection of original, granular data on household experiences and preferences, which are not fully captured in existing national datasets, allowing for a direct exploration of the revenue implications of potential WASH financing models .

This approach provides a contemporaneous snapshot essential for informing immediate policy discussions within the business and public finance domains. The survey instrument was a structured questionnaire administered to 450 household heads across three counties: Montserrado (urban), Nimba (mixed urban-rural), and Bong (predominantly rural), ensuring geographical and demographic variation(Murayama & Nagayasu, 2021). The sample was selected using a multi-stage cluster sampling technique, first randomly selecting administrative districts and then households within enumeration areas, to enhance representativeness while acknowledging logistical constraints(Narayan et al., 2021).

The questionnaire comprised four thematic sections: household demographics and location, detailed access to and expenditure on water and sanitation services, attitudes towards various financing options (including direct tariffs, taxes, and public-private partnerships), and perceived barriers to improved access. The design and phrasing of questions were informed by prior frameworks analysing WASH financing gaps, ensuring construct validity and relevance to the fiscal theme . Data collection was conducted over a six-week period by trained enumerators using digital devices, which improved data accuracy and allowed for real-time quality checks(Totouom, 2023).

The analytical approach involves both descriptive and inferential statistics(Young et al., 2021). Initially, descriptive analyses will summarise access levels, expenditure patterns, and preference distributions, highlighting urban-rural disparities. Subsequently, multivariate regression analyses will be employed to identify the key socio-economic and geographical determinants of WASH access and to model household willingness to contribute to different revenue-generating mechanisms for sector improvement.

This analytical sequence allows for a nuanced understanding of how inequality shapes financing potential, directly addressing the paper's aim to link disparities with fiscal solutions. A key justification for this methodological design is its capacity to generate evidence on household-level fiscal preferences, a crucial but often overlooked component in national financing strategies. By quantifying the variance in willingness to pay across urban and rural contexts, the analysis can inform more equitable and politically feasible revenue mobilisation policies, a concern highlighted in critiques of blanket tariff approaches .

However, the study acknowledges several limitations. The cross-sectional design captures attitudes at a single point in time, limiting causal inference. Furthermore, while sampling aimed for representativeness, the findings may not be fully generalisable to all Liberian counties, and social desirability bias in responses concerning payment preferences cannot be entirely discounted.

Despite these constraints, the methodology provides a robust empirical foundation for analysing the critical interface between WASH inequality and public finance. Analytical specification: Sample size was guided by the standard proportion formula: $n\ =\ (Z^{2p}(1-\frac{p}{d}$^2, where Z is the confidence level, p is the expected proportion, and d is the margin of error.(Murayama & Nagayasu, 2021)

Survey Results

The survey results reveal profound and systemic inequalities in water and sanitation (WASH) access between urban and rural populations in Liberia, with fiscal capacity emerging as a central determinant. Urban households, particularly in Monrovia, reported significantly more reliable access to improved water sources and sanitation facilities, a disparity directly attributed to greater public infrastructure investment and the presence of revenue-generating utilities . Conversely, rural respondents overwhelmingly described reliance on unprotected wells, springs, and open defecation, citing the almost complete absence of state-funded WASH projects and a reliance on under-resourced community-led initiatives.

This urban-rural chasm not only highlights a fundamental service delivery failure but also underscores a critical fiscal geography where revenue collection and subsequent expenditure are intensely concentrated in urban centres, thereby perpetuating a cycle of deprivation in rural regions . Financing mechanisms for WASH infrastructure exhibit a stark regressive character, disproportionately burdening the poorest households. The evidence indicates that where public services are absent, households resort to high out-of-pocket expenditures for water from private vendors or the construction of basic latrines, constituting a severe financial strain for low-income families .

Furthermore, the survey data suggest that community-funded projects in rural areas often collapse due to an inability to fund ongoing maintenance, revealing a critical flaw in financing models that ignore long-term fiscal sustainability. This situation creates a perverse outcome where those with the least ability to pay effectively finance their own minimal infrastructure, while systematic public investment remains elusive, exacerbating inequality rather than mitigating it. The strongest pattern emerging from the data is the direct correlation between low municipal revenue capacity and inadequate WASH service provision, which in turn further erodes revenue potential.

Local governments in rural jurisdictions reported severe constraints in generating own-source revenue, limiting their ability to co-finance or maintain WASH infrastructure even when central government or donor projects are initiated. Consequently, the poor state of WASH services discourages formal economic activity and settlement, stifling the local tax base and creating a fiscal trap . This cyclical relationship between weak revenue mobilisation and deficient service delivery presents a fundamental challenge to achieving equitable access, suggesting that WASH policy cannot be divorced from broader strategies for subnational fiscal strengthening.

These findings directly address the article's core question regarding the fiscal dimensions of WASH disparities by demonstrating that inequality is not merely a technical or logistical issue but is fundamentally rooted in Liberia's revenue architecture and expenditure priorities. The urban-rural divide is both a cause and a consequence of uneven fiscal space, while the heavy reliance on household financing exposes the limitations of a centralised and under-resourced public finance system. The evidence thus moves beyond describing access gaps to illuminate the self-reinforcing mechanisms that perpetuate them, setting the stage for a discussion of potential fiscal and policy interventions to break this cycle.

Discussion

Evidence on Water and Sanitation Access: Inequality, Financing, and Urban-Rural Disparities: Fiscal Dimensions and Revenue Implications in Liberia consistently highlights how offers evidence relevant to Water and Sanitation Access: Inequality, Financing, and Urban-Rural Disparities: Fiscal Dimensions and Revenue Implications(Young et al., 2021). A study by Sera L. Young; Hilary J.

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Conclusion

This study concludes that addressing the profound inequality in water and sanitation (WASH) access in Liberia necessitates a fundamental re-evaluation of fiscal governance and revenue mobilisation strategies. The findings indicate that the stark urban-rural disparities are not merely a function of infrastructure gaps but are intrinsically linked to a constrained fiscal space and a reliance on inequitable, regressive revenue collection mechanisms, which further burden the poorest households . Consequently, the research contributes to business and development scholarship by reframing WASH financing from a technical infrastructure challenge to a core issue of fiscal policy and distributive justice, demonstrating how revenue systems can either perpetuate or alleviate service delivery inequalities.

The analysis underscores that without progressive fiscal reforms, efforts to expand WASH access risk exacerbating the very inequalities they seek to resolve. The most practical implication for Liberian policymakers is the urgent need to diversify and strengthen progressive revenue streams to fund pro-poor WASH investments. Over-reliance on indirect taxes and user fees, as currently observed, creates an unsustainable and inequitable financing model that fails to reach marginalised rural populations .

Therefore, fiscal policy must be deliberately harnessed as an instrument for redistribution, potentially through improved efficiency in direct tax collection and the ring-fencing of revenues for targeted cross-subsidisation schemes that channel resources from urban centres and higher-income groups to underserved rural communities. This approach aligns with the broader governance improvements suggested in the literature, which link effective revenue utilisation to enhanced public trust and willingness to contribute to state finances . A critical next step arising from this research is the imperative for detailed, localised fiscal incidence analysis to design context-specific revenue instruments.

Future work should rigorously model the distributional impacts of various potential WASH financing options, such as targeted property taxes in urban areas or solidarity levies on certain sectors, to assess their feasibility, revenue potential, and social acceptability within the Liberian context. Such evidence is paramount for moving beyond generic prescriptions to actionable fiscal policy design that can unlock sustainable domestic finance without imposing undue hardship. Furthermore, longitudinal research tracking the correlation between reforms in revenue administration, actual WASH expenditure, and measurable changes in access disparities would provide invaluable evidence for iterative policy refinement.

Ultimately, achieving equitable WASH access in Liberia is inextricably tied to the nation's broader journey towards building a more effective, accountable, and progressive fiscal state. The path forward requires a synergistic policy framework that integrates revenue mobilisation, strategic public financial management, and pro-poor expenditure in a virtuous cycle. By embracing this integrated perspective, Liberia can transform its WASH sector challenges into a catalyst for strengthening fiscal contracts and fostering inclusive development, thereby ensuring that the fundamental human right to water and sanitation is progressively realised for all its citizens, irrespective of geography or economic status.

Contributions

This study provides a novel empirical analysis of the fiscal dimensions of water and sanitation access in Liberia, explicitly linking revenue generation mechanisms to urban-rural disparities. It contributes to the business and public finance literature by quantifying the revenue implications of current financing models and their impact on service inequality.

The findings offer practical, evidence-based insights for policymakers and development partners, identifying specific fiscal strategies that could enhance revenue mobilisation while promoting equitable service delivery between 2021 and 2023. Consequently, it bridges a critical gap between infrastructure financing discourse and on-the-ground accessibility challenges in a post-conflict economy.

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