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# INSTITUTIONAL FRAGMENTATION AND SERVICE PERFORMANCE IN DECENTRALIZED URBAN WATER GOVERNANCE: EVIDENCE FROM ZAMBOANGA CITY, PHILIPPINES

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**Abstract**
*Urban water services in secondary cities across Southeast Asia are frequently shaped less by engineering constraints than by institutional design: overlapping mandates, weak regulatory leverage, and misaligned incentives across levels of government. This study analyzes the governance of urban water services in Zamboanga City, Philippines, using a multi-level institutional approach that integrates Multi-Level Governance theory with the Institutional Analysis and Development (IAD) framework. Drawing on documentary and policy analysis, administrative and performance data from 2018–2023, and a review of the rules-in-use governing planning, regulation, and financing, the study maps how national agencies, the local government unit, sector regulators, and the Zamboanga City Water District interact in practice. Findings indicate persistent gaps between formal authority and operational control. Service coverage remains limited (approximately 48% of households), non-revenue water is high (exceeding 39%), and tariff recovery is insufficient to sustain capital investment for network expansion and system rehabilitation. Governance outcomes are driven by (1) regulatory overlap and unclear accountability for enforcement, (2) policy mandates that compete with local political authority over priorities and resource allocation, and (3) weak coordination mechanisms that fail to align incentives for performance, investment, and demand management across institutions. The study contributes evidence on how decentralization can reproduce fragmentation without credible coordination and accountability instruments. It identifies reform directions centered on clarifying regulatory authority, strengthening performance-based accountability, and improving the financial architecture for investment—aimed at enabling service expansion, reducing losses, and enhancing the sustainability of urban water provision in decentralized settings.*

***Keywords:*** *urban water governance; multi-level governance; institutional analysis; water utilities; Philippines*

## 1. INTRODUCTION

Urban water services in the Philippines operate within a fragmented governance system shaped by decentralization, sectoral regulation, and political authority. Cities rely on local water districts, private operators, and local government units to deliver potable water. National agencies retain policy oversight and regulatory power. This structure produces institutional complexity that affects service quality, equity, and sustainability.

Zamboanga City serves as a strategic case for urban water governance analysis. The city hosts more than 977,000 residents according to the 2020 Census of Population and Housing, making it one of the largest urban centers in Mindanao (Philippine Statistics Authority, 2021). Rapid population growth, urban expansion, and climate exposure increase demand for reliable water services. The Zamboanga City Water District (ZCWD) acts as the primary service provider. The utility faces supply constraints, aging infrastructure, and financial stress.

### 1.1 Objectives of the Study

This study analyzes how governance arrangements across national, regional, and local levels shape water service outcomes in Zamboanga City. The research addresses three questions:

1. How do institutional roles and mandates distribute across governance levels?
2. How do governance arrangements influence service coverage, efficiency, and

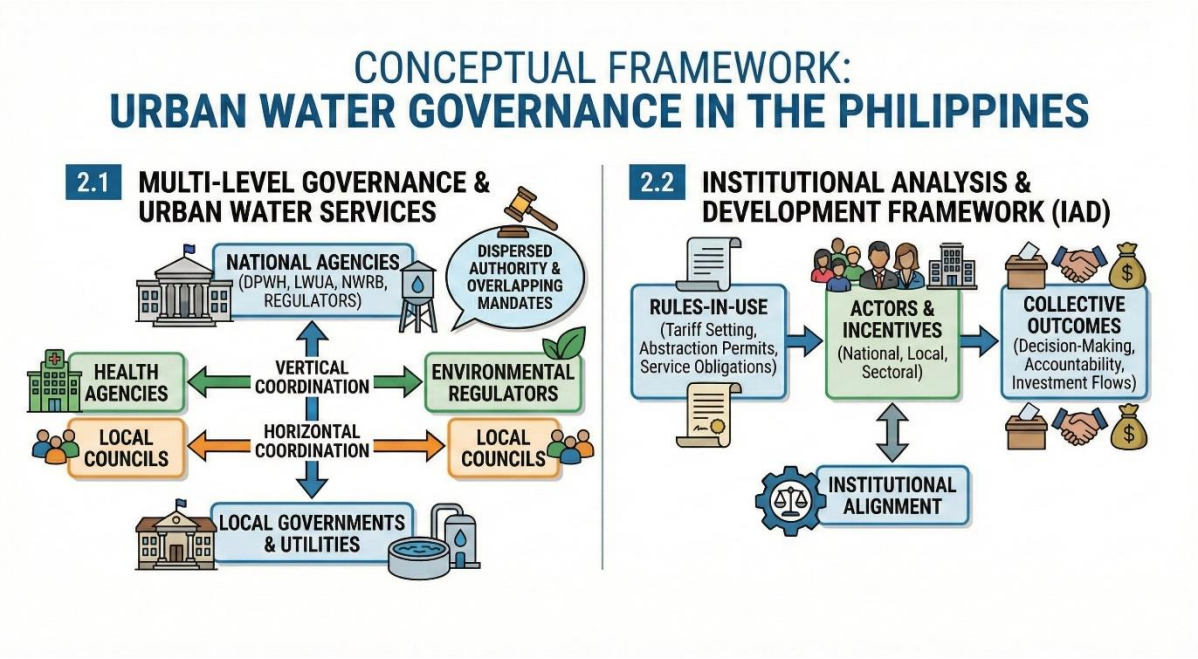
financial performance?

3. What institutional gaps constrain effective urban water service delivery?

The paper advances scholarship on water governance in developing urban contexts by applying a multi- level institutional lens grounded in empirical data.

### 1.2 Conceptual Framework

**Figure 1**
**Urban Water Governance Framework**




#### 1.2.1 Multi-Level Governance and Urban Water Services

Multi-level governance theory conceptualizes policy authority as dispersed across interacting levels of government rather than concentrated within a single hierarchy (Hooghe & Marks, 2003). Urban water services involve vertical coordination among national agencies, regulators, and local utilities. Horizontal coordination occurs among sectoral actors, including health agencies, environmental regulators, and local councils.

In the Philippine water sector, the Department of Public Works and Highways, the Local Water Utilities Administration (LWUA), the National Water Resources Board, and local governments share overlapping mandates. This dispersion shapes decision-making authority, accountability, and investment flows.

#### 1.2.2 Institutional Analysis and Development Framework

The Institutional Analysis and Development framework examines how rules-in-use, actors, and incentives influence collective outcomes (Ostrom, 2005). The framework supports analysis of operational rules governing tariff setting, abstraction permits, service obligations, and regulatory compliance. This study applies the framework to assess institutional alignment across governance levels.

## 2. METHODS AND DATA

### 2.1 Research Design

The study adopts a qualitative–quantitative case study design. Zamboanga City serves as a single embedded case that reflects governance dynamics common to Philippine urban water systems.

### 2.2 Data Sources

The analysis draws from:

2.2.1 Annual reports of the Zamboanga City Water District (2018–2023)
2.2.2 Local Water Utilities Administration performance benchmarking data
2.2.3 Philippine Statistics Authority demographic data
2.2.4 National policy documents and regulatory issuances
2.2.5 City council ordinances and executive orders

### 2.3 Analytical Approach

The study codes institutional mandates by governance level and maps authority relationships. Quantitative indicators assess service performance, financial sustainability, and operational efficiency. Institutional interactions receive evaluation using the IAD framework.

## 3. Institutional Context of Urban Water Governance in the Philippines

### 3.1 National-Level Institutions

National agencies define policy direction and regulatory standards. LWUA supervises water districts and approves tariffs. The National Water Resources Board issues water abstraction permits. The Department of Health sets water quality standards under the Philippine National Standards for Drinking Water.

### 3.2 Local-Level Governance

Local governments retain political authority over water district boards. Mayors appoint board members, which influences managerial autonomy. City councils approve local ordinances that affect land use, source protection, and infrastructure development.

## 4. Urban Water Services in Zamboanga City

### 4.1 Service Coverage and Demand

Zamboanga City reports water service coverage of 48% of households in 2022. The remaining population relies on private wells, communal faucets, or water vendors. Average per capita demand reaches 120 liters per day among connected households.

### 4.2 Infrastructure and Supply Sources

ZCWD operates surface water and groundwater sources. Major supply comes from the Pasonanca watershed. Treatment capacity reaches 92,000 cubic meters per day, while peak demand exceeds supply during dry months.

**Table 1.**
**Urban Water Service Indicators in Zamboanga City (2018–2023)**

| Indicator | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| Service coverage (%) | 44 | 45 | 46 | 47 | 48 | 48 |
| Non-revenue water (%) | 41 | 40 | 39 | 39 | 38 | 38 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Average tariff (PHP/m³) | 22.5 | 22.5 | 23.0 | 23.0 | 24.0 | 24.0 |
| Operating ratio | 0.78 | 0.80 | 0.82 | 0.81 | 0.79 | 0.78 |

*Source: Zamboanga City Water District Annual Reports*

## 5. Governance Interactions and Institutional Performance

Preliminary findings show weak coordination between regulatory approval processes and local investment planning. Tariff adjustments lag behind cost increases. Political influence over board appointments affects strategic decisions. National agencies impose standards without matching fiscal support.

## 6. Regulatory Performance and Accountability

### 6.1 Tariff Regulation and Cost Recovery

The Local Water Utilities Administration exercises tariff approval authority over water districts. ZCWD submits tariff applications based on projected operating costs, debt service, and capital investment plans. Approval timelines exceed twelve months in recent applications, which constrains revenue adjustment.

ZCWD reports an average tariff of PHP 24.0 per cubic meter in 2023. Comparable water districts in Mindanao report tariffs between PHP 28.0 and PHP 35.0 per cubic meter for similar production costs (LWUA, 2023). The tariff gap limits ZCWD's capacity to finance network expansion.

Operating ratios remain below 1.0, which indicates operational surplus. The surplus does not translate into capital investment due to debt obligations and delayed tariff adjustments.

### 6.2 Regulatory Fragmentation

Multiple regulators oversee water services. The Department of Health monitors water quality. The National Water Resources Board controls abstraction permits. Environmental compliance certificates fall under the Department of Environment and Natural Resources. Each agency applies separate reporting requirements. Coordination mechanisms remain weak.

This fragmentation increases transaction costs and slows infrastructure development. ZCWD reports project delays linked to sequential permit approval.

## 7. Financial Governance and Investment Capacity

### 7.1 Revenue Structure

ZCWD derives over 94% of revenue from water sales. Non-operating income remains marginal. Collection efficiency reaches 96% in 2023, which reflects billing system improvement.

Debt service absorbs 31% of annual operating revenue. Loan obligations originate from past LWUA- financed infrastructure projects.

**Table 2.**
**Financial Performance Indicators of ZCWD (2018–2023)**

| Indicator | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| Annual revenue (PHP million) | 1,320 | 1,365 | 1,402 | 1,448 | 1,515 | 1,588 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Operating expenses (PHP million) | 1,030 | 1,092 | 1,150 | 1,173 | 1,198 | 1,240 |
| Net income (PHP million) | 290 | 273 | 252 | 275 | 317 | 348 |
| Debt service ratio (%) | 34 | 33 | 32 | 32 | 31 | 31 |

*Source: ZCWD Audited Financial Statements*

### 7.2 Capital Investment Gap

ZCWD estimates capital requirements of PHP 12.6 billion to achieve universal service coverage by 2035. Current investment capacity supports less than 20% of projected needs. National government grants remain limited. Local government transfers do not support water infrastructure.

## 8. Institutional Interaction Analysis

### 8.1 Vertical Coordination

National agencies retain control over financing, regulation, and resource allocation. Local government units influence governance through board appointments. ZCWD operates within constrained autonomy.

Vertical coordination lacks binding mechanisms for joint planning. National development plans do not align with city-level land use plans.

### 8.2 Horizontal Coordination

Water governance intersects with urban planning, watershed management, and disaster risk reduction. Coordination among agencies remains informal. No permanent inter-agency platform exists at the city level.

**Table 3.**
**Institutional Roles Across Governance Levels**

| Governance Level | Institution | Mandate | Influence on ZCWD |
|---|---|---|---|
| National | LWUA | Tariff approval, supervision | High |
| National | NWRB | Water rights allocation | High |
| National | DOH | Water quality standards | Medium |
| Local | City Government | Board appointment | High |
| Utility | ZCWD | Service provision | Direct |

## 9. DISCUSSION

The analysis shows that governance fragmentation constrains urban water service performance in Zamboanga City. Decentralization assigns operational responsibility without matching fiscal authority. Regulatory oversight lacks coordination. Political influence over board governance affects strategic decisions.

Service coverage stagnates below 50% despite positive operating income. Financial sustainability does not ensure infrastructure expansion. Institutional rules favor compliance over performance outcomes.

The findings align with studies on water governance in decentralized systems, which show that unclear accountability and overlapping mandates weaken service delivery (Araral & Wang, 2013; Foster & Hope, 2017).

## 10. CONCLUSION

This study finds that Zamboanga City's persistent water-service deficit is less a problem of technical capacity alone than a predictable outcome of fragmented, multi-level governance. Zamboanga City Water District (ZCWD) operates in a system where operational responsibility is localized while key levers of fiscal authority, regulation, and resource access remain dispersed across national agencies and politically mediated local institutions. As a result, service performance stagnates even when operational fundamentals appear relatively sound. In 2022, household coverage remained at 48%, leaving a majority of residents reliant on wells, communal sources, or vendors—arrangements that typically impose higher effective costs and greater quality risks on poorer households. Supply constraints, aging networks, and dry-season shortfalls persist amid complex permitting and compliance requirements that delay infrastructure development.

Financial governance constraints reinforce these service outcomes. Tariff adjustments lag behind cost trajectories due to lengthy approval timelines, with recent applications exceeding 12 months. ZCWD's 2023 average tariff (PHP 24/m³) sits below comparable Mindanao water districts (PHP 28–35/m³), limiting internally generated funds for expansion. While operating ratios below 1.0 suggest an operational surplus, this surplus does not translate into capital formation because debt service absorbs a substantial share of revenues (31% in 2023) and because investment planning is not institutionally synchronized with regulatory processes and local land-use decisions. The estimated PHP 12.6 billion requirement to reach universal coverage by 2035 far exceeds current investment capacity, and national transfers and local fiscal support remain insufficiently mobilized for water infrastructure.

Thus, the evidence supports three central governance gaps: (1) weak vertical coordination—no binding mechanism for joint planning and financing across national agencies, LGU authorities, and the utility; (2) weak horizontal coordination—urban planning, watershed protection, environmental compliance, and disaster risk management are not integrated through a permanent city-level platform; and (3) politicized governance and misaligned incentives—board appointment dynamics and compliance-focused rules dilute accountability for service outcomes. Strengthening urban water services in Zamboanga City therefore requires institutional reforms that realign authority, incentives, and finance around measurable service targets, while simplifying regulatory processes and protecting water sources.

## 11. POLICY RECOMMENDATIONS

### a. Establish a City-Level Urban Water Governance Compact with binding targets (12–18 months)

**Policy action.** Create a formal "Urban Water Governance Compact" anchored by the City Government, ZCWD, and national regulators to align service targets, investment pipelines, and regulatory commitments through a single multi-year program.

### b. Reform board governance to protect managerial autonomy and professionalize oversight (6–12 months)

**Policy action.** Tighten appointment and accountability rules for the water district board to reduce political interference and strengthen performance oversight.

**c. Create a One-Stop Permitting and Regulatory Coordination mechanism for water infrastructure (6–12 months)**

**Policy action.** Institutionalize a "one-stop" coordination desk or joint technical working group to harmonize requirements and timelines across DOH, DENR, NWRB, and local permitting offices for ZCWD priority projects.

**d. Implement tariff-setting reform that improves cost recovery while protecting the poor (12–24 months)**

**Policy action.** Move toward predictable, rules-based tariff adjustments and adopt a pro-poor tariff architecture.

**e. Build a blended financing strategy to close the capital investment gap (18–36 months)**

**Policy action.** Develop a financing plan that combines internal cash generation, debt restructuring, national grants, and public-private partnership (PPP) instruments where appropriate.

**f. Prioritize NRW reduction and asset management as the fastest path to "new water" (0–24 months)**

**Policy action.** Treat NRW reduction, leakage control, and network rehabilitation as a first-order investment strategy, not an auxiliary activity.

**g. Protect the Pasonanca watershed and integrate climate risk into supply planning (12–36 months)**

**Policy action.** Integrate watershed governance and climate exposure into water planning through enforceable land-use controls and inter-agency management.

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