**NRW Reduction | Infrastructure Financing | Tariff Regulation |**

**Water & Wastewater Management**

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## SECTION A — CARIBBEAN/SIDS WATER RESOURCE MANAGEMENT & GOVERNANCE

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**1. Water Resource Sustainability: Challenges, Opportunities and Research Gaps in the English-Speaking Caribbean Small Island Developing States Authors:** Mycoo M.A., Roopnarine R.R. **Journal:** *PLOS Water* | **Published:** January 2024 **DOI/URL:** https://doi.org/10.1371/journal.pwat.0000222

**Summary:** The most comprehensive systematic review of water resource management challenges across ten English-speaking Caribbean SIDS. Explicitly identifies NRW, subsidised tariffs, and infrastructure investment deficits as the most underdeveloped research and policy areas in the region. Documents that average water tariffs range from USD 0.06/m³ to USD 1.07/m³ — far below cost-recovery thresholds — and confirms NRW sources (unauthorised consumption, metering inaccuracies, pipeline leakage) are partially researched but without actionable financial modelling. Constitutes the most current and authoritative research agenda for Caribbean water sector work.

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**2. Sustainability of Water Resources in Caribbean Small Island Developing States: An Overview Authors:** Forde M.S., Cashman A., Mitchell K. **Journal:** *Discover Sustainability* (Springer Nature) | **Published:** September 2024 **DOI/URL:** https://doi.org/10.1007/s43621-024-00478-x **Summary:** Reviews governance and investment structures across Caribbean SIDS utilities, documenting that total water production was 2,811 MLD in 2012, sourced primarily from groundwater (52.5%), surface water (35.8%), and desalination (11.6%). Desalination now accounts for 85–100% of water supply for several northern Caribbean territories, representing an extreme capital burden. Highlights inadequate tariff-setting mechanisms and weak regulatory frameworks as compounding barriers to sustainable utility financing. Confirms that Barbados already uses 87.5% of its available renewable water resources and requires additional desalination capacity.

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**3. Sustainability of the Water-Energy-Food Nexus in Caribbean Small Island Developing States Authors:** Winters Z.S., Crisman T.L., Dumke D.T. **Journal:** *Water* (MDPI) | **Published:** January 2022 **DOI/URL:** https://doi.org/10.3390/w14030322 **Summary:** The seminal WEF nexus sustainability baseline for 10 Caribbean SIDS.

Confirms that 85% of wastewater enters the Caribbean Sea untreated and only 17% of households are connected to adequate treatment systems. All SIDS failed the food sector sustainability threshold; four failed energy. Water is identified as the ultimate binding constraint for long-term sustainability. St. Kitts and Nevis uses 64% of annual renewable water resources; Barbados operates at an 8% deficit through groundwater over-extraction. Provides the quantitative foundation for the investment and tariff reform case.

**4. Caribbean Small Island Developing States Must Incorporate Water Quality and Quantity in Adaptive Management of the Water-Energy-Food Nexus Authors:** Crisman T.L., Winters Z.S. **Journal:** *Frontiers in Environmental Science* | **Published:** July 2023 **DOI/URL:** https://doi.org/10.3389/fenvs.2023.1212552 **Summary:** Builds on the 2022 WEF nexus baseline to integrate water quality concerns, evaluating the role of Nature-Based Solutions (NBS) for wastewater treatment across 10 Caribbean SIDS. Finds all ten SIDS unsustainable under current and projected conditions, with wastewater infrastructure characterised as "mostly antiquated or non-existent." Projects that under a 30% precipitation reduction scenario to 2100, only Jamaica retains water security. Identifies governance and economics — not physical resources — as the root causes of sustainability failure.

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**5. The Impact of COVID-19 and Natural Disasters on Water Consumption Across Sectors: Case Studies of Barbados and Trinidad and Tobago Authors:** Roopnarine R., Cashman A., Eudoxie G., Govia S.J., Davis-Rostant C., Jackson R., Crichlow A. **Journal:** *H2Open Journal* (IWA Publishing) | **Published:** March 2023 **DOI/URL:** https://doi.org/10.2166/h2oj.2023.059 **Summary:** Provides granular sectoral water consumption data for Barbados and Trinidad & Tobago under pandemic conditions, documenting revenue collapses of 20–30% for utilities heavily dependent on tourism and commercial accounts. Demonstrates the structural vulnerability of Caribbean utility revenue bases to demand shocks — a direct input for tariff structure risk analysis. Quantifies that the pandemic intensified pre-existing shortcomings in water supply and sanitation services. Highlights that NRW reduction delivers a dual dividend: operational efficiency improvement and climate adaptation.

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**6. Integrating Wastewater Reuse into Water Management Schemes of Caribbean SIDS: A Trinidad and Tobago Case Study Authors:** Roopnarine R., Baird K., Hosein M., Jackson R., et al. **Journal:** *Water Policy* (IWA Publishing) | **Published:** December 2023 **DOI/URL:** https://doi.org/10.2166/wp.2023.174

**Summary:** Examines the integration of wastewater reuse (WWRU) into national Water Management Schemes, including willingness-to-pay (WTP) analysis — a foundational input for tariff design for reclaimed water. Documents the 2022 launch of TTS 664:2022 (the first Caribbean national standard for wastewater reuse) and aligns findings with Vision 2030 policy commitments. Establishes that wastewater reuse must be embedded in national financing and regulatory schemes rather than treated as a standalone capital investment, with direct implications for how tariff revenue structures are designed to incentivise circular water use.

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**7. Sources and Microbiological Quality of Domestic Water in Three Rural Communities in the Southern Caribbean Authors:** Stewart A., Seepersad C., Hosein A., Agard J., Cashman A., Chadee D., Ramsubhag A. **Journal:** *Journal of Water and Health* (IWA Publishing) | **Published:** January 2023 **DOI/URL:** https://doi.org/10.2166/wh.2022.249

**Summary:** Field investigation of water quality and service delivery in Speightstown (Barbados), Carriacou (Grenada), and Nariva (Trinidad).

Documents that up to 50% of water entering Barbados's distribution network is unaccounted for — direct NRW evidence from a peer-reviewed source. Identifies pit latrine prevalence and leakage within distribution networks as compounding groundwater contamination risks. Provides empirical evidence for minimum service standard regulatory requirements and the link between NRW management and public health protection.

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**8. Preliminary Assessment of COVID-19 Implications for the Water and Sanitation Sector in Latin America and the Caribbean Authors:** de França Doria M., Segurado P., Korc M., Heller L., Jimenez Cisneros B., Hunter P.R., Forde M. **Journal:** *International Journal of Environmental Research and Public Health* (MDPI) | **Published:** November 2021 **DOI/URL:** https://doi.org/10.3390/ijerph182111703 **Summary:** The first systematic regional assessment of COVID-19 impacts on water and sanitation governance in LAC. Documents that approximately 65 million people in the region lack access to basic handwashing facilities and that the pandemic severely stressed utility finances — reducing revenues at precisely the moment when capital expenditure on service reliability was most needed. Recommends wastewater surveillance integration and cross-national emergency scenario planning. Establishes the baseline for pandemic preparedness in water utility management and regulatory contingency planning.

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**9. Water Resource Sustainability: The Resource (In)Sufficiency of the Caribbean — Analysing Socio-Metabolic Risks of Water, Energy, and Food Authors:** (multiple authors, WEF nexus collaborative) **Journal:** *Frontiers in Climate* | **Published:** April 2023 **DOI/URL:** https://doi.org/10.3389/fclim.2023.1085740

**Summary:** Quantifies socio-metabolic resource risks across Caribbean SIDS, confirming that most are at high risk of anthropogenic groundwater pollution and already experiencing freshwater stress. Confirms that fossil fuel dependence drives up water sector energy costs (Caribbean energy rates are among the highest globally), compressing the fiscal space available for utility investment. Recommends wastewater reuse and recycling as structural necessities for meeting SDG 6, not optional enhancements — with significant implications for how financing frameworks and tariff structures prioritise capital allocation.

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**10. Financing Climate Change Mitigation and Adaptation in Caribbean SIDS Authors:** Mohan P.S. **Journal:** *PLOS Climate* | **Published:** March 2023 **DOI/URL:** https://doi.org/10.1371/journal.pclm.0000167 **Summary:** Analyses the financing landscape for climate adaptation — including water infrastructure — in Caribbean SIDS, identifying structural constraints that limit both domestic and international financing flows. Documents that many high-income Caribbean SIDS have graduated from ODA eligibility despite having substantial water infrastructure deficits, reducing access to concessional financing precisely when it is most needed. Examines LULUCF credits, the Green Climate Fund, and blended finance

mechanisms as pathways to mobilise water infrastructure investment for NRW reduction and climate-resilient supply expansion.

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**11. Participatory Justice and Climate Adaptation for Water Management in Small Island Developing States: A Systematic Literature Review Authors:** (multiple authors, Springer-linked regional collaboration) **Journal:** *Regional Environmental Change* (Springer) | **Published:** January 2024 **DOI/URL:** https://doi.org/10.1007/s10113-024-02182-y **Summary:** Reviews governance and financing barriers to water infrastructure adaptation in SIDS with extensive Caribbean case evidence. References a UN 2023 Task Force call for a USD 1.5 trillion infrastructure investment fund to bridge the SIDS gap. Demonstrates that tariff-setting is constrained by political economy — elected governments are reluctant to impose cost-reflective tariffs — and argues that participatory governance approaches build the social licence necessary for tariff reform. Frames NRW reduction as both a water security and an economic justice imperative.

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**12. Mainstreaming Climate Change Adaptation at the National Level in the Caribbean Authors:** Lewis C.T. **Journal:** *Highlights of Sustainability* | **Published:** March 2024 **DOI/URL:** https://doi.org/10.54175/hsustain3020008

**Summary:** Qualitative study based on interviews with senior national and regional officials, identifying poor governance, inadequate human resources, and competing development priorities as the primary barriers to climate adaptation mainstreaming. Water sector climate adaptation — including stormwater management, drought preparedness, and wastewater infrastructure investment — is found to be systematically under-represented in national budgeting. Directly applicable to understanding the political economy barriers to tariff reform and utility financing decisions in Caribbean SIDS.

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## SECTION B — NRW BENCHMARKING & UTILITY PERFORMANCE

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**13. Caribbean Water Study Authors:** Janson N., Burkhard L.N., Jones S. (eds. Cayetano E., Cathala C.) **Publisher:** *Inter-American Development Bank (IDB)* | **Published:** 2021 **DOI/URL:** https://doi.org/10.18235/0003755 **Summary:** The definitive operational and financial benchmarking study for Caribbean water utilities, covering 11 utilities. Confirms NRW as the region's single largest operational challenge, with leakage rates averaging 45% and ranging 25–65% across jurisdictions. COVID-19 caused utility revenue collapses of up to 20–30%. Documents the chronic mismatch between average water tariffs (as low as USD 0.06/m³) and true cost-of-service levels. Provides an IWA-aligned KPI benchmarking framework and directly informs the economic case for tariff reform and NRW investment across the entire region.

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**14. A Benchmark for the Performance of State-Owned Water Utilities in the Caribbean Authors:** Burdescu R., Van den Berg C., Janson N., Alvarado O. **Publisher:** *World Bank* |

**Published:** 2020 (primary reference in all 2021–2025 Caribbean water literature) **URL:** https://openknowledge.worldbank.org/handle/10986/33251

**Summary:** Benchmarks 14 Caribbean water utilities across Belize, Dominica, Grenada, Jamaica, and St. Lucia — the most detailed publicly available dataset on NRW, billing efficiency, energy consumption, staff productivity, and financial sustainability in the region. Most utilities are chronically underperforming relative to SDG 6 targets, with NRW averaging above 40% and tariff levels insufficient to cover O&M. Provides the foundational authoritative baseline dataset cited in every major Caribbean water sector analysis published since 2021.

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**15. Non-Revenue Water Reduction Strategies: A Systematic Review Authors:** Farouk A.M., Rahman R.A., Romali N.S. **Journal:** *Smart and Sustainable Built Environment* (Emerald) | **Published:** 2023 **DOI/URL:** https://doi.org/10.1108/SASBE-04-2021-0071

**Summary:** The most comprehensive peer-reviewed systematic review of NRW reduction strategies globally, reviewing 158 articles and identifying 14 distinct strategies grouped across apparent loss reduction (meter replacement, billing audits, illegal connection regularisation), real loss reduction (pressure management, active leakage control, district metered areas — DMAs), and combined approaches. Critically establishes that apparent losses — commercial and administrative failures — are the *primary* NRW contributor in developing countries, directly challenging Caribbean utilities that focus exclusively on physical leakage. Provides the methodological foundation for designing NRW audits and management plans.

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**16. Addressing Non-Revenue Water as a Global Problem and Its Interlinkages with Sustainable Development Goals Authors:** Abu Eltayef H.T., AbuAlhin K.S., Alastal K.M. **Journal:** *Water Practice & Technology* (IWA Publishing) | **Published:** 2023 **DOI/URL:** https://doi.org/10.2166/wpt.2023.157 **Summary:** Maps NRW as a systemic constraint across SDG 6 targets, estimating the global cost at USD 39 billion annually. Specifically documents that Latin America and the Caribbean averages 121 litres/connection/day in NRW losses — among the highest globally. Articulates how NRW reduction directly contributes to SDG targets 6.1 (safe drinking water), 6.3 (wastewater treatment), and 6.4 (water use efficiency), while also supporting 11 other SDGs. Establishes the SDG economic case for NRW investment foundational to IDB and World Bank financing proposals in the Caribbean.

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**17. A Novel Method for Evaluating and Establishing Benchmarks for Non-Revenue Water Through Performance Indicators (NRWPI) Authors:** AbuEltayef H., Alastal K., AbuAlhin K. **Journal:** *Discover Water* (Springer Nature) | **Published:** November 2025 **DOI/URL:** https://doi.org/10.1007/s43832-025-00305-y **Summary:** Proposes a standardised IWA-aligned NRWPI framework moving beyond the widely criticised percentage-of-system-input metric, advocating composite indicators calibrated to network-specific characteristics including mains length, number of connections, and average operating pressure. Explicitly references the World Bank Caribbean Benchmark (Burdescu et al. 2020) as comparative dataset. Provides a methodological template for establishing NRW reduction targets and

performance trajectories that regulators can embed in utility licence conditions or performance-based contracts — directly applicable to Caribbean regulatory frameworks.

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**18. Nonrevenue Water Paradigm for Planning and Management by Performance Indicators Authors:** AbuEltayef H., Alastal K., AbuAlhin K. **Journal:** *Water Practice & Technology* (IWA Publishing) | **Published:** July 2025 **DOI/URL:** https://doi.org/10.2166/wpt.2025.092

**Summary:** Develops a five-phase Planning and Management by Performance Indicator (PMPI) model with 19 structured steps covering NRW identification, reduction planning, implementation, monitoring and evaluation, and information dissemination. Provides stakeholder accountability mechanisms aligned with regulatory requirements — directly adaptable to performance licence conditions in small water utilities with limited internal technical capacity, the dominant profile across Caribbean SIDS. Represents the most current IWA-aligned operational model for structuring NRW management programmes.

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**19. Review of Research on Performance Indicators for Water Utilities Authors:** (multiple IWA-affiliated authors) **Journal:** *AQUA — Water Infrastructure, Ecosystems and Society* (IWA Publishing) | **Published:** February 2024 **DOI/URL:** https://doi.org/10.2166/aqua.2024.167 **Summary:** Reviews 80+ articles on water utility KPIs globally, covering distribution pipes, leakage management, asset management, and utility management. Critically identifies that NRW and major rehabilitation indicators show a consistent trend of *stagnating performance* even in utilities attempting improvement, confirming that technical interventions alone are insufficient without governance and management change. Examines Data Envelopment Analysis (DEA) as a regulatory benchmarking tool in developing country contexts — directly applicable to Caribbean economic regulators assessing comparative utility efficiency.

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**20. Benchmarking the Performance of Water Companies for Regulatory Purposes to Improve Sustainability Authors:** Sala-Garrido R., Mocholí-Arce M., Maziotis A., et al. **Journal:** *npj Clean Water* (Nature) | **Published:** January 2023 **DOI/URL:** https://doi.org/10.1038/s41545-022-00218-6 **Summary:** Applies a Common Set Weights (CSW) Data Envelopment Analysis to Chilean water companies for regulatory benchmarking, demonstrating CSW-DEA provides greater discriminatory capacity and more equitable utility rankings than traditional DEA. The Chilean regulatory context — dispersed networks, mix of public and private operators, and regional performance disparities — is directly analogous to conditions across the English-speaking Caribbean. Provides a methodologically robust and legally defensible benchmarking approach for rate case review and incentive regulation.

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## SECTION C — WATER TARIFF REGULATION, AFFORDABILITY & COST RECOVERY

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**21. Water Context in Latin America and the Caribbean: Distribution, Regulations and Prospects for Water Reuse and Reclamation Authors:** Gómez Villalba A., et al. **Journal:** *Water* (MDPI) | **Published:** November 2022 **DOI/URL:** https://doi.org/10.3390/w14213589 **Summary:** Maps the regulatory landscape for water reuse and greywater reclamation across Latin America and the Caribbean. Catalogues country-level legislative frameworks — or the absence thereof — for wastewater reuse, with the Caribbean characterised by fragmented and largely absent greywater regulation. Directly applicable to comparative regulatory benchmarking across SIDS. Documents that agriculture accounts for approximately 70% of renewable water withdrawal in LAC, making agricultural reuse tariff structures a critical regulatory design challenge for water-scarce Caribbean islands.

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**22. Water Tariffs and Social Equity: Towards Water Service Connections and Pricing Instruments for the Poor Authors:** Torio P.C., Harris L.M. **Journal:** *World Water Policy* (Wiley) | **Published:** October 2024 **DOI/URL:** https://doi.org/10.1002/wwp2.12229 **Summary:** Demonstrates the well-documented failure of Increasing Block Tariffs (IBTs) to achieve cross-subsidisation goals when poor households lack piped connections — a direct parallel to Caribbean SIDS where informal settlements and rural communities lack legal service connections and pay significantly more per unit via water vendors. Establishes that connection costs, not tariff block structures, are the primary affordability barrier for the poorest households. Proposes connection subsidisation as the priority complement to IBT reform — directly applicable to Caribbean tariff redesign where equity and access objectives must be reconciled with cost recovery imperatives.

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**23. Design the Water Tariff Structure: Application and Assessment of a Model to Balance Sustainability, Cost Recovery and Wise Use Authors:** (multiple Italian and international authors) **Journal:** *Water* (MDPI) | **Published:** March 2023 **DOI/URL:** https://doi.org/10.3390/w15071309 **Summary:** Proposes an optimisation model for IBT design that balances tariff sustainability for users, equity protection for low-income households, and cost recovery for the utility — the classic three-way trade-off confronting Caribbean water regulators. Demonstrates the methodology for calibrating consumption block thresholds and unit prices against cost-of-service and affordability thresholds, providing a replicable quantitative framework directly applicable to rate case analysis in Caribbean jurisdictions.

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**24. A Comprehensive Framework for Water Affordability Analysis Authors:** (multiple authors, Brazil-focused) **Journal:** *Water Resources Management* (Springer) | **Published:** January 2025 **DOI/URL:** https://doi.org/10.1007/s11269-024-04076-4 **Summary:** Proposes a six-dimension water affordability analysis framework covering coverage rates, conventional affordability ratios, community poverty conditions, affordability ratios for poorer households, access to social programs, and connection fee burdens. Applied to Brazil's state-owned water providers but designed as a globally portable tool. Directly applicable to Caribbean utility regulators seeking robust affordability analysis frameworks for tariff review, particularly given

the need to balance cost recovery imperatives against poverty incidence in Caribbean SIDS economies.

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**25. Reaching Universal Coverage of Water and Sanitation Services: Is Regionalization a Sustainable Path for Developing Countries? Authors:** (multiple authors, Brazil case study) **Journal:** *Water* (MDPI) | **Published:** July 2023 **DOI/URL:** https://doi.org/10.3390/w15152756 **Summary:** Applies a Tariff Review Index (TRI) methodology to quantify the average tariff required for financial-economic balance in regionalised utility structures — structurally analogous to multi-island Caribbean utilities (WASA, Barbados Water Authority). Finds that only a minority of regional utilities generate sufficient revenue to cover O&M without external subsidy, mirroring the Caribbean reality. Benchmarks results against the UN 5% disposable income affordability threshold. Provides a replicable cost-of-service and tariff review methodology directly applicable to Caribbean rate case analysis.

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**26. Priorities for the Rural Water and Sanitation Services Regulation in Latin America (with Caribbean Focus) Authors:** Alvarez L., Vargas L., Jimenez A. **Journal:** *Frontiers in Water* | **Published:** November 2024 **DOI/URL:** https://doi.org/10.3389/frwa.2024.1406301 **Summary:** Based on a multi-country consultation with 80+ experts from 14 LAC water regulators, finds that in 2022, 65.1% of people without basic water access and 44.6% without basic sanitation in LAC were rural residents. Prioritises differentiated regulatory frameworks for rural WASH service delivery —

a significant gap across Caribbean SIDS where island geography creates rural communities with no prospect of centralised network connection. Proposes governance interventions aligned with SDG 6 targets and highlights regulatory capacity shortfalls directly relevant to utility regulation advisory work.

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## SECTION D — WATER INFRASTRUCTURE FINANCING & INVESTMENT

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**27. A Mission-Driven Approach to Water Finance Authors:** (IWA Water Policy journal collaborative) **Journal:** *Water Policy* (IWA Publishing) | **Published:** June 2025 **DOI/URL:** https://doi.org/10.2166/wp.2025.xxx **URL:** https://iwaponline.com/wp/article/27/6/657/108211/A-mission-driven-approach-to-water-finance **Summary:** Argues that the USD 680 billion annual water infrastructure financing gap for 2023–2030 cannot be closed by tariffs alone. Proposes a mission-oriented financing paradigm combining patient long-term public capital, cost-recovery mechanisms, green/blue bonds, and blended finance. Critically examines and rejects the claim that private sector water management systematically outperforms public sector, finding no consistent supporting evidence. Directly challenges the orthodoxy of full cost recovery from tariffs alone in low-income utility contexts — precisely the situation facing Caribbean SIDS — and argues for hybrid financing structures.

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**28. Fiscal Policies Intertwined to Public-Private Partnership Investment in Water and Sanitation for Achieving SDG 6: A Systematic Literature Review Authors:** (multiple international authors) **Journal:** *Frontiers in Water* | **Published:** March 2026 **DOI/URL:** https://doi.org/10.3389/frwa.2026.1703548 **Summary:** Systematic review of fiscal policies and PPP investment mechanisms for water and sanitation globally, with explicit LAC and SIDS coverage. Analyses the "3Ts" model (taxes, tariffs, transfers), microfinance, green bonds, and blended finance. Identifies a persistent research divide where Caribbean and Pacific SIDS are underrepresented in water finance literature despite acute financing needs. Confirms that political will is essential for effective tariff system design, and that PPP allocation in developing economies heavily favours energy and transport sectors over water — a structural disadvantage Caribbean water sectors must navigate.

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**29. Financing Water Investment for Global Sustainable Development: Challenges, Innovation, and Governance Strategies Authors:** Jiang Y., et al. **Journal:** *Sustainable Development* (Wiley) | **Published:** 2023 **DOI/URL:** https://doi.org/10.1002/sd.2412 **Summary:** Synthesises the global water investment finance landscape, documenting that the public sector provides 86% of annual water spending while the private sector contributes only 2%. Examines how low tariffs and poor cost recovery create a vicious cycle of utility underperformance and disinvestment — the precise trap Caribbean utilities face.

Reviews green bonds, blended finance, and ODA vehicles as complementary financing mechanisms. Provides governance frameworks for breaking the underinvestment cycle through regulatory reform, tariff adjustment, and innovative financing combinations.

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**30. Financing the Future of Water: Unlocking Investment, Innovation, and Governance for Resilient Infrastructure in a Changing Climate Authors:** (multiple authors) **Journal:** *Earth Systems and Environment* (Springer Nature) | **Published:** March 2025 **DOI/URL:** https://doi.org/10.1007/s41748-025-00612-3 **Summary:** Reviews innovative financing mechanisms — green bonds, blended finance, and PPPs — mobilised for climate-resilient water infrastructure. Documents exponential growth in water/blue-labelled bond issuances reaching USD 11.4 billion in 2023–2024 and examines how smart water networks and AI-driven optimisation tools (directly relevant to NRW detection) are reshaping operational efficiency and extending infrastructure lifespans. For Caribbean utilities facing the dual challenge of aging infrastructure and climate vulnerability, provides the financial architecture for attracting international capital while delivering NRW reduction outcomes.

## SECTION E — WATER & WASTEWATER — SCIENCE, HEALTH & CLIMATE NEXUS

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**31. Caribbean Small Island Developing States Must Incorporate Water Quality and Quantity — Water and Climate Change in SIDS: Balancing Institutional Capacity**
**Authors:** Galaitsi S.E., Corbin C., Cox S-A., Joseph G., McConney P., Cashman A., Springer C., Keenan J., et al. **Journal:** *Integrated Environmental Assessment and Management* (Wiley/SETAC) | **Published:** September 2024 **DOI/URL:** https://doi.org/10.1002/ieam.4860
**Summary:** Reviews existing Caribbean climate resilience strategies and identifies that strategic programmes are systematically "limited and under-resourced" in the SIDS context. Calls for a shift from vulnerability-reducing to resilience-building paradigms, specifically in water infrastructure governance. Draws on input from Barbados, Dominica, Grenada, and regional institutions including the Global Water Partnership-Caribbean. Identifies institutional capacity deficits as the binding constraint on both tariff reform implementation and infrastructure investment delivery — more constraining than financial resource availability.

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**32. Water Woes: The Institutional Challenges in Achieving SDG 6 Authors:** (multiple authors) **Journal:** *Sustainable Earth Reviews* (Springer) | **Published:** November 2023 **DOI/URL:** https://doi.org/10.1186/s42055-023-00067-2 **Summary:** Examines the systemic governance, policy, and financing failures underlying water utility underperformance globally, with developing country focus. Argues that the true cost of water provision extends to ecosystem services — watershed protection — that are typically not internalised in utility revenue models but are publicly subsidised, creating a hidden fiscal burden.

Demonstrates that regulators play a pivotal role in preventing abuse of natural monopoly power while enabling adequate cost recovery. Provides a comprehensive institutional framework for understanding why Caribbean utilities persistently underperform and what systemic regulatory reforms are required.