

RTE in Infrastructure: Lessons from Guyana for the Caribbean



RTE of the Water Supply Improvement Project (WSIP) in Guyana – Caribbean Development Bank

Infrastructure investments in the Caribbean increasingly combine physical delivery with institutional reform, behavioural change, and climate resilience objectives. In these contexts, traditional evaluation approaches—largely oriented toward ex post assessment—provide limited support for decision-making during implementation. The Real-Time Evaluation (RTE) of the Water Supply Improvement Project (WSIP) in Guyana illustrates how evaluation can function as a structured learning and decision-support tool while maintaining methodological rigour.

Infrastructure Complexity and the Limits of Ex Post Evaluation

The WSIP is a major investment supporting Guyana's efforts to expand equitable access to safe, reliable, and climate-resilient potable water while strengthening the operational capacity of Guyana Water Incorporated (GWI). Financed by the Caribbean Development Bank with co-financing from the European Investment Bank and the Government of Italy, the project combines infrastructure construction with institutional strengthening.

Its core components include five water treatment plants in Maria's Delight, Adventure, Bath, Leguan, and Wakenaam, as well as storage facilities, transmission mains, production wells, and district metered areas to reduce non-revenue water. These investments aim to improve water quality, reliability, and service coverage in communities historically affected by high iron content, intermittent supply, and climate-related vulnerabilities.

Beyond physical infrastructure, WSIP functions as a system-level intervention addressing governance, service performance, and user experience as interconnected determinants of impact. The project strengthens GWI's

technical and monitoring capacity, integrates environmental and social safeguards, and supports community engagement mechanisms aligned with national strategies and Sustainable Development Goal 6 (Clean Water and Sanitation).

In such integrated interventions, outcomes depend heavily on early implementation dynamics. Where infrastructure delivery, institutional performance, and behavioural uptake interact, conventional ex post evaluation provides limited support for adaptive decision-making. Under these conditions, a real-time, theory-based evaluation approach becomes strategically relevant.

RTE as a Strategic Response

This technical note distils lessons from the WSIP experience, presenting the project as a reference case for applying RTE in complex infrastructure operations. The RTE demonstrated that evaluation can generate operational value when it is theory-based, carefully prioritised, and aligned with management decision points.

Rather than attempting comprehensive measurement, the WSIP RTE concentrated on critical causal mechanisms most likely to influence outcomes during implementation—particularly those related to behavioural uptake, institutional coordination, and service readiness.

The note is intended to inform borrowing countries, multilateral development banks, and regional practitioners interested in strengthening implementation learning in infrastructure projects. It highlights enabling conditions, institutional constraints, and practical lessons for adapting RTE across the CDB portfolio.

RTE and theory-based MEAL approaches expand the traditional role of evaluation and may test institutional capacity to absorb and act on findings. They are most appropriate for complex interventions where outcomes depend on behavioural or institutional dynamics. These approaches require additional analytical capacity and management engagement and entail trade-offs relative to conventional evaluations, including lower standardisation and limited comparability across projects.

Large infrastructure projects operate within systems characterised by uncertainty, interdependence, and path dependency. While engineering risks are typically well managed, many of the most significant risks to development outcomes emerge during commissioning and early operation. These risks often relate to how beneficiaries experience services, whether institutions coordinate effectively, and whether operational challenges are addressed rapidly.

The WSIP RTE addressed these dynamics by evaluating the project while outcomes were still emerging. This allowed evidence to inform decisions during implementation rather than after completion

Institutional Conditions and Practical Limits of RTE

The WSIP experience also highlights several practical constraints affecting the application of RTE. While early signals pointed to the importance of strengthening communication and trust-building activities before commissioning, implementation schedules and contractual arrangements limited the scope for introducing additional engagement measures during certain construction phases.

Similarly, coordination challenges among technical, social, and communication functions were identified as potentially affecting early service experiences. However, institutional mandates and reporting structures constrained the ability to rapidly adjust responsibilities across operational units.

In other cases, the RTE suggested adjusting operational sequencing to better manage user expectations. Yet disbursement conditions and approved implementation plans reduced flexibility to modify timelines without formal approval.

These observations illustrate that RTE should be understood as a facilitating mechanism rather than a corrective instrument. Its effectiveness depends not only on methodological quality but also on institutional willingness and capacity to act on emerging evidence.

The WSIP case highlights several conditions necessary for effective real-time learning. Institutional openness to learning is fundamental. When evaluation is perceived solely as an accountability function, opportunities for adaptive learning remain limited. When it is recognised as a management support tool, RTE can contribute directly to operational decision-making.

Methodological clarity is equally important. Real-time data collection must be anchored in a clear theory of change to avoid anecdotal interpretation. In WSIP, analytical coherence was maintained by grounding data collection and analysis in a theory-based framework that linked evidence to decision-relevant questions.

Alignment with decision cycles also proved critical. The RTE generated the most value when findings coincided with operational milestones such as readiness assessments, commissioning decisions, and adjustments to communication strategies.

These institutional conditions extend beyond WSIP and are relevant for integrating learning into the implementation of complex development operations.

Replicability and Portfolio-Level Implications

The WSIP RTE was designed to be adaptable rather than bespoke. Its core elements—prioritised causal chains, theory-based analysis, and structured learning loops—can be applied to other infrastructure projects with modest adjustments. This modularity enhances the approach's potential for replication across the CDB portfolio and other MDB-financed operations.

RTE is particularly relevant for projects characterised by long implementation horizons, non-linear causal pathways, and outcomes dependent on behavioural or institutional change. In the Caribbean context, these conditions apply to sectors such as water and sanitation, energy transition, climate adaptation, and urban development.

Beyond infrastructure, the approach may also be applicable to programmatic interventions such as poli-

cy-based lending, where disbursements occur early, and policy outcomes emerge gradually within complex institutional environments.

RTE does not replace conventional evaluation methods. Rather, it complements them by enabling structured engagement with uncertainty during implementation. By integrating RTE into appropriate operations, institutions can strengthen adaptive management, support risk-in-

formed decision-making, and generate practical learning across their portfolios.

For the Caribbean and similar contexts, the WSIP experience demonstrates how evaluation can contribute not only to assessing results but also to actively supporting their emergence.



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