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Attracting Private Investment in Public Infrastructure: Comparative Policy Innovations and Best Practical Models for Accelerating Infrastructure Financing in Developing Countries

by

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Abstract

Public budgets and concessional aid are insufficient to deliver transport, energy, water and digital systems required in developing countries. This study examines how governments can mobilize private investment in public infrastructure by combining credible institutions, fit-for-purpose instruments, and risk sharing. Using Rwanda as an embedded case and benchmarking six exemplars (specifically Luxembourg, United States, Singapore, South Korea, Sweden, and Canada), the study uses mixed methods: qualitative analysis of laws, PPP guidance and project documents, alongside quantitative indicators of private participation in infrastructure and bond issuance. Findings converge upon three pillars: codified rules to reduce transaction costs; investable instruments (PPPs, infrastructure/green bonds and pooled vehicles) to widen the investor base; and de-risking to unlock early markets when capped, disclosed, and time-bound. A complementary contribution proposes a Retail Infrastructure Mobilization Model (RIMM) that adapts retail bond financing for infrastructure needs through ring-fenced proceeds, independent oversight, milestone reporting, and consumer protection, enabling citizens and diaspora to co-invest in service needs in tiers of USD 1,000–10,000 (or local equivalents). For Rwanda, a sequenced pathway is proposed: 1) standardizing PPP practice, 2) publishing a rolling pipeline, 3) piloting instruments including a Rwanda Retail Infrastructure Bond. and 4) tapering support as markets deepen.

Keywords: public infrastructure; private investment; PPP; policy innovation; Retail Infrastructure Mobilization Model; Rwanda

Introduction

Across developing countries, infrastructure financing gaps have outpaced public budgets and concessional aid. Even where growth is robust and reform momentum is strong, debt sustainability ceilings limit how much governments can borrow on their own balance sheets. The result is a widening mismatch between infrastructure needs, especially those in transport, power, water, and digital connectivity, and the public resources available to finance them. Meanwhile, climate adaptation and resilience add new capital requirements and higher technical standards for assets that must perform for decades (World Bank, 2019; African Development Bank, 2020). Mobilizing private investment is therefore not optional. It is central to meeting development and climate objectives in ways that are fiscally prudent and operationally credible. Yet, many governments face persistent obstacles: investors worry about contract enforcement, tariff predictability, and currency risk; lenders seek bankable structures with clear cash flow waterfalls and ring-fenced accounts; and citizens need assurance that affordability, service quality, and accountability will not be compromised. These concerns are magnified in smaller economies where market depth is thin, and where transaction costs loom largely and relatively to project size (World Bank, 2019).

This study, therefore, addresses a practical question: how can developing countries, using Rwanda as an embedded case, attract private capital into public infrastructure at scale and at reasonable cost without assuming opaque fiscal risks? The central proposition is that success depends upon three mutually reinforcing pillars. First, credible institutions and standardized practices reduce uncertainty and shorten negotiations. Second, well-designed financing instruments pertaining to public private partnerships (PPPs), infrastructure and green bonds, and pooled vehicles widen the investor base while also aligning incentives. Third, fit-for-purpose de-risking tools, including partial guarantees, escrow and liquidity facilities, and foreign exchange solutions, enable early stage markets while protecting the public balance sheet through explicit limits and sunset clauses (North, 1990; Grimsey & Lewis, 2005). Rwanda illustrates both opportunity and constraint. The country has sustained strong growth, improved governance metrics, and advanced sector reforms in energy, water, logistics, and aviation. PPP law and guidelines articulate procedures and approvals; demonstrate projects in water (Kigali Bulk Water PPP), logistics (Kigali Logistics Platform) and power (KivuWatt), showing that complex transactions can reach financial close. At the same time, gaps remain in local currency tenor, project preparation depth, and the standardization needed to run programmatic pipelines rather than as isolated, bespoke deals (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

The contribution of this study is twofold. Conceptually, it integrates institutional theory (North, 1990) with policy innovation and risk allocation perspectives to explain why and when private investors participate in public infrastructure. Practically, it extracts lessons from best practice exemplars. including those from Luxembourg, Singapore, South Korea, Sweden, Canada, and the United States, and translates them into a sequenced reform roadmap for Rwanda and similarly situated economies. The analysis goes beyond wholesale finance to include a complementary pathway for domestic participation: a Retail Infrastructure Mobilization Model (RIMM) that channels small household and diaspora savings into ring-fenced, de-risked assets via retail bonds, and trust-like vehicles with strong reporting and consumer protection.

In practical terms, RIMM is an add-on to established PPP and bond tools: it uses ring-fenced proceeds, independent oversight, and plain-language disclosure to make retail participation (e.g., USD 1,000–10,000 tiers) workable and safe (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024). Methodologically, the study uses mixed methods and embedded case design. Qualitative analysis covers laws, PPP guidance, sector strategies, and project documents. Quantitative indicators include private participation in infrastructure (PPI) commitments, bond issuance, and macro controls such as public investment ratios to provide scale and context. Evidence is coded thematically and pattern-matched to propositions about the roles of institutions, instruments, and de-risking. The exemplars are used not as numerical peers but as design references from which transferable features can be adapted to smaller markets like Rwanda (Braun & Clarke, 2006; North, 1990).

The scope is public infrastructure transport, energy, water, and digital systems delivered through PPPs, concessions, and capital market instruments. The focus is on mobilizing private finance in ways that protect affordability and fiscal integrity. Limitations include reliance on publicly available data and the use of analytic generalization rather than causal identification; these are mitigated by triangulation, documentation, and transparency in assumptions (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

A Literature review

This section synthesizes literature on mobilizing private investment for public infrastructure as well as positions Rwanda as an illustrative learner rather than a direct comparator to advanced systems. Three strands anchor the review. The financing gap perspective explains why public resources alone cannot deliver required assets. Institutional and transaction cost economics clarify why credible rules and enforcement shape investor behavior in long-lived, capital-intensive sectors. Policy innovation and risk allocation theory address how instruments and de-risking mechanisms are designed and sequenced. The review then surveys

evidence on private participation and co-financing in developing markets and distills transferable innovations from six exemplars Luxembourg, the United States, Singapore, South Korea, Sweden, and Canada. A conceptual framework concludes the chapter, followed by a targeted synthesis of retail and community capital approaches, and with the remaining conceptual gaps for small developing economies (North, 1990; World Bank, 2019).

Financing gap analyses show that annual needs for transport, energy, water, and digital infrastructure far exceed budgeted public investment and concessional aid. While estimates vary across institutions, they converge upon the insight that closing the gap requires mobilizing private capital at a greater scale and lower cost. In practice, mobilization is not merely a matter of money but of credibility: the durability of contracts, the predictability of regulatory decisions, and the clarity of government obligations over time. Investors price these attributes into required returns, and the lack of them manifests in higher costs, delayed financial close, and renegotiation risks (North, 1990; World Bank, 2019).

Institutional theory posits that credible commitment reduces hold-up risks, especially when assets are sunk and politically salient. In PPPs and concessions, credibility is signaled through a hierarchy of rules and practices: a PPP law and associated regulations; specialized PPP units with technical and commercial expertise; standardized contracts and procedures (pre-feasibility, market sounding, value for money tests, gateway reviews); and mechanisms for transparency and accountability (publication of pipelines, redacted contracts, and performance dashboards). Transaction cost economics further explains how standardization and specialization reduce the frictions that otherwise make small markets unattractive for repeat sponsors and lenders (North, 1990; Grimsey & Lewis, 2005).

Policy innovation is not simply the creation of new instruments but rather the disciplined sequencing of models to match market depth and state capability. Early stage markets often need catalytic support for partial risk or credit guarantees, escrow and liquidity facilities, and foreign exchange solutions to cover risks that private actors cannot efficiently bear. Yet such support must be transparent, targeted, and time-bound, with clear reporting of contingent liabilities in medium-term budget frameworks. Over time, as project preparation improves and a track record accumulates, countries can taper support and rely more on market pricing (Grimsey & Lewis, 2005).

Evidence on private participation in infrastructure (PPI) in low and middle income countries reveals several regularities. First, transactions cluster in sectors where revenue models are transparent, such as energy and transport, and where offtake agreements or regulated tariffs provide visibility on cash flows. Second, a

significant share of deals involves multilateral development banks (MDBs) or development finance institutions (DFIs) as advisors, co-financiers, or guarantors, underscoring the importance of anchor credibility and credit enhancement in earlier staged contexts. Third, shocks in the global financial, commodity, or health arenas can disrupt pipelines, highlighting the value of standardized processes that allow governments to restart programs efficiently (North, 1990; World Bank, n.d.).

Best-practice exemplars offer transferable design features rather than off-the-shelf templates. Luxembourg, for example, illustrates how strong fund governance and investor protections can support pooled infrastructure capital. Singapore shows how codified PPP handbooks, VfM discipline, and standardized contracts reduce transaction costs. South Korea demonstrates the value of a dedicated PPP law, a central appraisal body (PIMAC/KDI), and phased incentives. Sweden's sovereign green bond framework illustrates credible use-of-proceeds rules and impact reporting. Canada highlights programmatic pipelines and model evolution (including progressive P3 approaches). The United States shows how standardized disclosure, municipal markets, and targeted credit programs can deepen capital pools and crowd-in private finance (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Table 1 summarizes selected innovations and the specific lesson each offers to developing countries (Grimsey & Lewis, 2005). The conceptual framework that guides this study links institutional and policy inputs to financing instruments and de risking mechanisms, which together build investor confidence and mobilize private capital. Feedback loops from delivery performance and fiscal reporting support model evolution. In smaller markets, the framework emphasizes the power of standardization and central expertise to lower per-project transaction costs and the importance of publishing a rolling pipeline to convert one-off deals into a credible program (North, 1990).

A targeted strand of literature examines how domestic retail and community investors can participate meaningfully in infrastructure through small denomination bonds, listed trusts, diaspora instruments, and community energy shares. The rationale is threefold. First, mobilize household savings and deepen local markets; second, strengthen project legitimacy through citizen participation; and third, diversify the investor base beyond banks and foreign sponsors. To protect consumers and public finances, these programs require clear use of proceeds rules, ring-fenced structures, reserve or guarantee mechanisms, plain language disclosure, and redress channels. When such guardrails are in place, retail programs can support both infrastructure delivery and financial inclusion, especially where mobile money and digital rails are widespread (Grimsey & Lewis, 2005).

Table 1

Best Practice Exemplar Innovations (selected highlights)

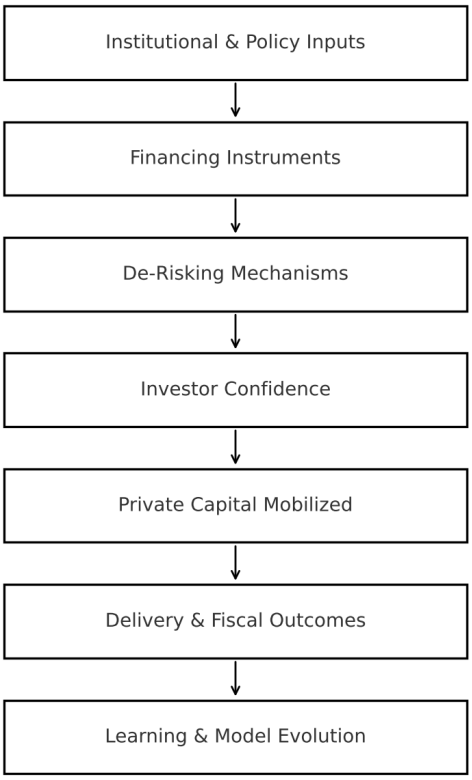
Country	Institutional Feature	Instrument/Practice	Transferable Lesson
Luxembourg	Leading funds domicile; professional governance	Infrastructure/alternative funds	Pool global capital via reputable domiciles
Singapore	PPP Handbook; VfM discipline; standard forms	Standardized toolkits and review gates	Codify PPP processes to cut transaction costs
South Korea	PPP Act; central evaluator (PIMAC)	Standard templates; early MRGs then taper	Sequence incentives; build central expertise
Sweden	Government green bond framework	Sovereign green bonds; impact reporting	Framework credibility broadens ESG demand
Canada	National/provincial P3 ecosystem	Progressive P3; programmatic pipelines	Evolve models to match complexity
United States	Rules based muni market; federal credit	Munis, PABs, TIFIA; BABs (historical)	Deep capital pools via standardized rules

Note: Adapted from public sources; Grimsey & Lewis, 2005

Despite progress, conceptual gaps remain salient for small developing economies in shallow domestic long-term savings and limited local currency tenor; uneven project preparation and standardization (model contracts, sector risk matrices, VfM methods); readiness for green finance frameworks and credible impact reporting; and in disciplined management of guarantees and other contingent liabilities. The Retail Infrastructure Mobilization Model proposed in this study addresses part of this agenda by connecting household and diaspora savings to ring-fenced, well-reported infrastructure securities with appropriate backstops, and by integrating consumer protection principles from retail finance into the infrastructure domain (Grimsey & Lewis, 2005).

Figure 1

Conceptual Framework for Mobilizing Private Capital (schematic)



Note: Author's framework; Grimsey & Lewis, 2005

Methodology

This study adopts mixed methods, embedded case design. The population of interest is developing countries; Rwanda is treated as the primary, illustrative case. Six best practice exemplars, specifically Luxembourg, Singapore, South Korea, Sweden, Canada, and the United States, are used for analytic benchmarking and design transfer, not for head-to-head performance comparisons (Singapore Ministry of Finance, 2015; Korea Development Institute / PIMAC, n.d.).

Data sources include (i) qualitative documentary evidence laws, PPP guidelines, sector strategies, project summaries, and MDB/DFI reports; and (ii) quantitative indicators on private participation in infrastructure (PPI) commitments, sovereign and infrastructure bond issuance, and macro control variables such as public investment ratios and growth. Documentary sources were collected from official government portals, MDB repositories, and recognized industry associations; quantitative indicators were drawn from publicly available databases and program websites (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Sampling is purposive. Within Rwanda, projects across water, logistics, power, aviation, and digital/real estate are examined to illustrate varied revenue models and risk allocation patterns: availability payment models (bulk water, some roads), user pay concessions (logistics), independent power projects with offtake agreements (generation), and complex joint ventures (aviation). Measures are operationalized for (a) institutional credibility PPP law, PPP unit functions, standardization, and disclosure; (b) policy innovation new and enhanced instruments and frameworks; (c) de-risking architecture guarantees, escrow and liquidity facilities, FX tools; and (d) capital mobilization outcomes including private commitments, PPP stock, and issuance volumes (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

The analytical strategy combines a within-case narrative (Rwanda), cross-case synthesis (exemplars), and pattern-matching to propositions. First, institutional codification and central expertise are expected to reduce transaction costs and shorten negotiations; evidence is sought in handbooks, model contracts, review gates, and published pipelines. Second, well-designed instruments are expected to widen the investor base; evidence includes the presence of green bond frameworks, project bond precedents, pooled vehicles or listed trusts, and fund domicile features. Third, fit-for-purpose de-risking is expected to enable early deals in thinner markets while preserving fiscal integrity. Evidence includes the availability of partial guarantees, escrow or liquidity facilities, FX solutions, and contingent liability reporting in budget documents. Rival explanations including those related to market size, macro shocks, or tariff politics are assessed against the evidence matrix (World Bank, 2020; International Monetary Fund, n.d.).

Validity and reliability are supported by triangulation of sources, a structured evidence matrix, and a case database that preserves a transparent chain of evidence. External validity rests upon analytic generalization: the objective is to test and refine propositions, not to estimate universal causal effects. To avoid hindsight bias, the analysis emphasizes documents published prior to and at financial close and relies upon publicly disclosed terms rather than speculative reconstructions. Illustrative scenarios (Option A) are used in the RIMM sections to explain participation, repayment logic, and safeguards. They are explanatory rather than predictive and are linked to observable indicators such as uptake, repayment performance, disclosure compliance, and service outcomes.

Ethics note

This research uses publicly available documents and datasets only; no human participants were involved and, as a result of this study's use of only publicly available data, institutional ethical review was not required.

Policy Innovations in Developing Countries

Private capital enters public infrastructure when rules are credible, instruments are investable, and risks are sensibly shared. Codification and central expertise reduce transaction costs by shortening due diligence and negotiations and by creating a common language between the public buyer and private bidders. Singapore's PPP handbook and value for money discipline exemplify this approach: standardized templates, review gates, and clear output specifications align expectations and reduce the need to renegotiate basic terms. South Korea's PPP Act and the Public and Private Infrastructure Investment Management Center (PIMAC) institutionalize appraisal standards and contract forms, allowing projects to move from identification to procurement with less friction and more consistency in risk allocation (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Fund domiciliation regimes offer another type of policy infrastructure. Luxembourg demonstrates how professional governance, depositary and administrator oversight, and investor protection rules make it possible to pool capital at scale across borders for infrastructure strategies. For smaller markets, the lesson is not to copy the jurisdiction but to recognize that pooling capital in reputable domiciles can be a bridge solution while domestic regimes are developed. Such structures can then co-invest into local projects through joint ventures or side vehicles, connecting global limited partners to local assets without compromising governance standards (Luxembourg for Finance, 2024).

The rise of credible green bonds and sustainability frameworks illustrate the power of rules to widen the investor base. Sweden's sovereign framework links eligible expenditures to budget processes and requires impact reporting, thereby giving investors confidence that proceeds are used as promised and that climate metrics are credible. Transparent frameworks can reduce borrowing costs and attract specialized ESG mandates. For developing countries, the implication is to focus first on the quality of the framework taxonomy, selection and evaluation of processes, management of proceeds, and then reporting before sizing the first issuance. Pilot transactions should be modest, tied to shovel-ready projects with measurable outcomes, and supported by external review (Sweden, Government Offices, 2020).Canada's long-standing P3 ecosystem shows how models evolve with capability. Progressive P3s use collaborative development phases to de-risk scope and design before locking in price and schedule, thereby reducing the frequency of costly disputes. This approach is valuable for complex social and health assets and for digital platforms where uncertainty is high and iteration is essential. A similar evolution can help smaller markets introduce complexity gradually, keeping early

transactions within the envelope of administrative capacity (Global Infrastructure Hub, 2024).

The United States provides lessons from its rules-based municipal market, private activity bonds (PABs), and the federal TIFIA credit program. Municipal issuers operate within standardized disclosure practices and investor protection norms overseen by the SEC; PABs allow tax-exempt financing for eligible privately developed infrastructure; and TIFIA offers long tenor, flexible federal credit that can catalyze private co-financing. While the legal environment is not portable, the institutional logic is: predictable rules, program eligibility criteria, and standardized disclosure reduce risk premiums and expand investor participation (U.S. Department of Transportation, n.d.; U.S. Securities and Exchange Commission, n.d.).

De-risking architecture is market infrastructure in earlier-stage contexts. Partial risk and credit guarantees can address specific risk components (e.g., termination payments, revenue floors, or refinancing risk). Escrow and liquidity facilities cover temporary cash flow shortfalls in construction or early operation. FX solutions, including indexation, local currency tranches, or hedging supported by development partners, help align currency risks with the parties best able to bear them. To safeguard the public balance sheet, governments should codify de-risking in a policy note with eligibility criteria, pricing, aggregate limits, along with sunset provisions, and incorporate contingent liability reporting into the medium-term budget framework. Transparency is a precondition for sustainability: the point of de-risking is to unlock transactions initially, not to socialize losses permanently (Global Infrastructure Hub, 2024).

Policy innovations should be sequenced. The recommended order is: 1) codify rules and standardize documents; 2) publish and maintain a rolling pipeline; 3) pilot instruments with MDB/DFI anchors to establish credibility; and 4) taper public support as track records accumulate. Throughout, governments should invest in project preparation feasibility studies, environmental and social assessment, demand modeling, and bankable contracts because preparation costs are far lower than the costs of failed tenders or contentious renegotiations. Publishing redacted contracts and performance dashboards builds trust and creates feedback loops that improve the next round of transactions (Global Infrastructure Hub, 2024).

For developing countries, five cross-cutting lessons emerge. First, institutions set the ceiling for what is possible: without credible rules and enforcement, sophisticated instruments will not compensate for weak fundamentals. Second, programs beat projects: investors value continuity and visibility, both of which reduce bid costs and encourage repeat participation. Third, fit the model to sector

economics: users pay concessions where demand is measurable; availability payment PPPs where tariffs are constrained; and hybrids where targeted subsidies unlock affordability. Fourth, de-risking should be treated as infrastructure with exit ramps that are transparent, priced, and are time-bound. Fifth, embed transparency: standardized disclosure, independent reviews, and clear reporting of fiscal risks are investments in lower capital costs (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Table 2

Selected Policy Innovations and Transferable Lessons

Country	**Institutional Innovation**	**Instrument**	**De Risking/Process**	**Key Lesson**
Singapore	PPP Handbook; VfM		Gateway reviews; output specs	Codify practice to cut transaction costs
South Korea	PPP Act; PIMAC	MRGs (early)	Standard forms; appraisal	Sequence incentives; central expertise
Luxembourg	Fund domicile regime	Infrastructure/alt funds	Cross border pooling	Mobilize global LPs via trusted domiciles
Sweden	Green bond framework	Sovereign green bonds	Use of proceeds; reporting	Framework credibility broadens ESG demand
Canada	P3 ecosystem	Progressive P3	Collaborative development	Evolve models to match complexity
United States	Rules based muni market; federal credit	Munis, PABs, TIFIA; BABs (historical)	Disclosure; eligibility; ratings	Deep pools via standardized rules

Note: Adapted from public sources; Global Infrastructure Hub, 2024

Practical Models for Infrastructure Financing

Policy defines the rules of the game; practical financing models are the mechanisms that move capital into projects. In developing countries, infrastructure delivery often depends upon combining public funding with private capital in ways that are affordable, transparent, and enforceable. This chapter reviews practical models that governments commonly use (procurement and PPP variants, capital market instruments, and blended finance tools) and then develops the Retail Infrastructure Mobilization Model (RIMM) as an inclusive pathway for mobilizing citizens' and diaspora capital responsibly (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

PPP and Concession Families

Public–private partnerships (PPPs) and concessions are contract families that allocate responsibilities for designing, building, financing, operating, and maintaining infrastructure. They are not a single model; they vary based on who pays and which risks are transferred (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024). User-pay concessions are most suitable when user charges are feasible and demand is predictable (for example, ports, airports, some terminals, and selected toll roads). When demand is uncertain or user fees are politically sensitive, availability-payment PPPs are often more realistic: the government pays a service fee only when the asset meets defined performance standards (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

A practical policy lesson is that PPPs should be used selectively. They add value when they improve lifecycle performance, accelerate delivery, and allocate risks to the party best able to manage them, not when they are used to postpone costs or obscure long-term fiscal obligations (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Risk Allocation Logic

Across models, the central question is not "public or private," but "which risks sit where." Poorly allocated risks increase costs and disputes. A disciplined approach allocates risks to the party best able to control them and prices any government support transparently (OECD, 2018).

Table 3
Typical Risk Allocation by Model

Risk Category	Traditional Procurement	Availability PPP	User-Pay Concession	Practical Notes
Design & construction	Public (manages contractor)	Private	Private	Transfer works only if specifications are clear and monitoring is credible.
Land & permits	Public	Mostly public	Mostly public	A frequent source of delay; requires clear accountability and early action.
Demand / traffic	Public	Public	Private (often shared)	If demand is uncertain, prefer availability payments or staged approaches.
Operations & maintenance	Public or contractor	Private (performance-based)	Private	Performance indicators reduce deterioration and lifecycle costs.
Financing / refinancing	Public	Private (contract-governed)	Private (contract-governed)	Refinancing rules should protect the public interest through transparency.
Political / policy change	Public	Often shared (contract protections)	Often shared (contract protections)	Stable rules and credible dispute resolution reduce risk premiums.

Note: Author's synthesis

Capital Market Instruments

Capital market instruments can mobilize longer-term funding when repayment sources are credible and disclosure is strong. Infrastructure and project bonds including diaspora-oriented bonds can match long-lived assets, but they require disciplined reporting and clarity on how debt will be serviced (OECD, 2018). In practice, successful bond programs emphasize: (1) clear repayment sources (for example, regulated tariffs, budgeted availability payments, or dedicated fees), (2) strong governance and investor communication, (3) credible legal frameworks and trustee/custody arrangements where appropriate, and (4) transparent use-of-

proceeds reporting when bonds are linked to specific infrastructure programs (OECD, 2018). For developing countries with limited market depth, portfolio approaches can help: pooling multiple similar projects reduces concentration risk and can attract investors who would avoid single-project exposure (OECD, 2018).

Blended Finance and Guarantees

Blended finance uses concessional resources often from development from finance institutions in order to reduce selected risks and crowd in private capital. Common tools include partial risk guarantees, partial credit guarantees, political risk insurance, and viability gap support for projects with strong social value but weak stand-alone returns (World Bank, 2019; African Development Bank, 2020).

Blended finance can be useful, but it requires fiscal discipline. Government support should be targeted, transparently disclosed, and capped. Contingent liabilities should be recognized and reported in budget documents so that private investment does not create hidden long-term public risks (OECD, 2018).

Model Selection Framework

Selecting a financing model is simpler when the decision process follows a small set of practical questions: who pays, how predictable demand is, and whether performance can be measured. This helps governments match models to sector reality and avoid deals that are politically fragile or financially unworkable (OECD, 2018).

Table 4

Choosing a Model: A Quick Diagnostic

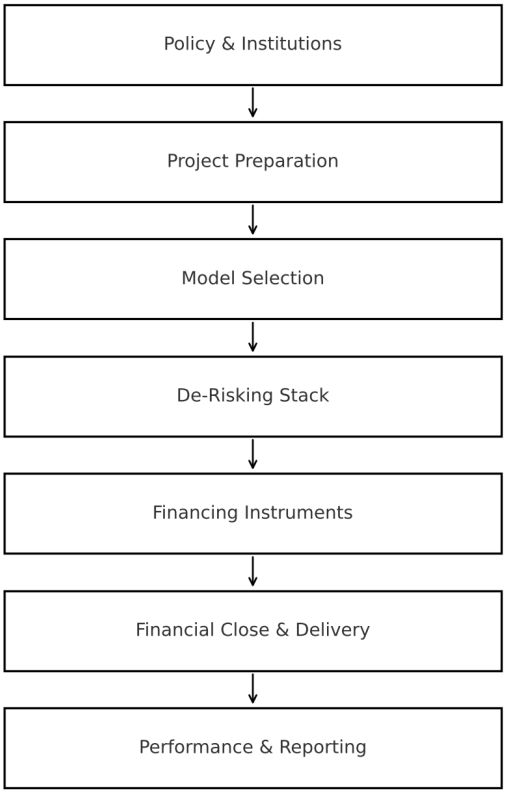
Decision Question	**If "Yes"**	**If "No"**	**Practical Implication**
Can users pay without harming access/affordability?	Consider user-pay concession or tariff model	Consider availability-payment or budget funding	Affordability constraints shift the model toward public payments.
Is demand predictable and measurable?	User-pay can be bankable	Prefer availability payments or phased projects	Uncertain demand increases financing cost unless addressed.
Can service performance be monitored credibly?	Performance-based payments feasible	Keep model simpler; strengthen monitoring first	Weak monitoring undermines PPP and performance contracting.
Is fiscal space available for long-term commitments?	Availability payments can scale	Use smaller pilots; prioritize preparation and transparency	Long-term obligations must be budgeted and disclosed.

Note: Author's synthesis; OECD, 2018

Figure 2 illustrates the typical pathway from policy commitment to a bankable transaction: clear rules and institutions enable credible project preparation, which supports risk allocation and investor confidence, resulting in financing and contract close (OECD, 2018).

Figure 2

From Policy to Financial Close (process schematic)



Note: Author's schematic

Retail Infrastructure Mobilization Model (RIMM)

RIMM is a practical framework for mobilizing citizens' and diaspora capital into public infrastructure through a retail channel supported by strong safeguards. It enables non-expert investors to participate in financing named infrastructure projects such as roads, water connections, electricity distribution upgrades, or market facilities through retail infrastructure bonds or similar retail-access instruments, with clear governance and transparency requirements (OECD, 2018).

The contribution of RIMM is not the invention of a new financial instrument, but the way an existing retail bond approach is designed and applied to infrastructure financing. Specifically, RIMM can increase citizens' willingness to participate by linking investment opportunities to visible public services and daily infrastructure needs, while ensuring transparency and safeguards. It integrates governance,

distribution, consumer protection, and project traceability so that citizens and diaspora investors can participate confidently in infrastructure financing. In this sense, RIMM adapts retail bond financing to the specific requirements of public infrastructure delivery and non-expert investors

Core safeguards include: ring-fenced use of proceeds tied to named projects; independent trustee or custodian oversight of fund flows; a clearly stated repayment source; a debt-service reserve buffer where feasible; and routine public reporting linked to delivery milestones. Consumer protection features plain-language disclosures, complaint channels, and anti-mis-selling measures are essential because retail investors typically cannot evaluate complex project risks as institutions do.

RIMM can also benefit from a service-linked participation incentive: retail investors may be more willing to invest when the instrument is tied to a clearly identified local infrastructure need that affects them directly, such as a water distribution extension, a feeder road upgrade, or a market facility. In such cases, investors are not only seeking interest income; they are also financing projects that improve daily services in their community. This can strengthen uptake, provided that project selection is transparent and investor protections are strong.

Table 5

How RIMM Differs from Traditional Instruments and Models

Approach	**Primary Purpose**	**Typical Capital Source**	**Key Limitation**	**How RIMM Differs**
Traditional government bonds	General government financing	Mostly institutions (sometimes retail)	Weak traceability to specific projects	Ring-fenced proceeds for named projects + trustee oversight + milestone reporting
PPPs (availability/user-pay)	Delivery contract and risk allocation	Sponsors + lenders	Does not automatically mobilize citizens/diaspora	Adds a retail participation channel that complements PPP delivery
Blended finance	De-risking to crowd in private institutions	DFIs + institutions	Often reliant on external support	Mobilizes domestic/diaspora savings through trust safeguards

Institutional infrastructure bonds	Long-term capital markets funding	Pension funds, banks, insurers	Limited retail access	Retail access + consumer protection + plain-language disclosure

Note: Author's synthesis; OECD, 2018

RIMM is instrument-agnostic: governments can tailor retail products to sector needs and market depth, but the same safeguard principles apply. The table below summarizes common retail-oriented instruments that can be configured under RIMM, depending on local legal frameworks and distribution channels (OECD, 2018).

Table 5A
Retail Oriented Infrastructure Instruments

Retail Instrument (Illustrative)	**How It Works**	**Typical Suitable Sectors**	**Key Protection Requirements**
Ring-fenced retail infrastructure bond	Retail investors buy bonds tied to a named project/program	Road upgrades, water extensions, power distribution	Use-of-proceeds controls; trustee oversight; clear repayment source; reporting
Diaspora infrastructure bond window	Diaspora investors participate through an offshore/onshore window	National priority programs with strong reporting	FX clarity; legal protections; transparent reporting; dispute resolution
Community infrastructure note (local)	Local investors finance a defined municipal/service project	Local markets, feeder roads, water points	Simple disclosures; clear governance; ring-fenced flows; accountability
Portfolio retail product (pooled)	Retail investors fund a pool of small projects	Multiple similar assets (markets, mini-grids)	Strong project selection rules; diversification; regular reporting

Note: Author's synthesis

Illustrative pilot: a ring-fenced retail infrastructure bond can finance a 100 km road upgrade and maintenance program. Retail participation can be offered in meaningful but accessible tiers (for example, USD 1,000 to USD 10,000, including a diaspora window where feasible) (OECD, 2018).

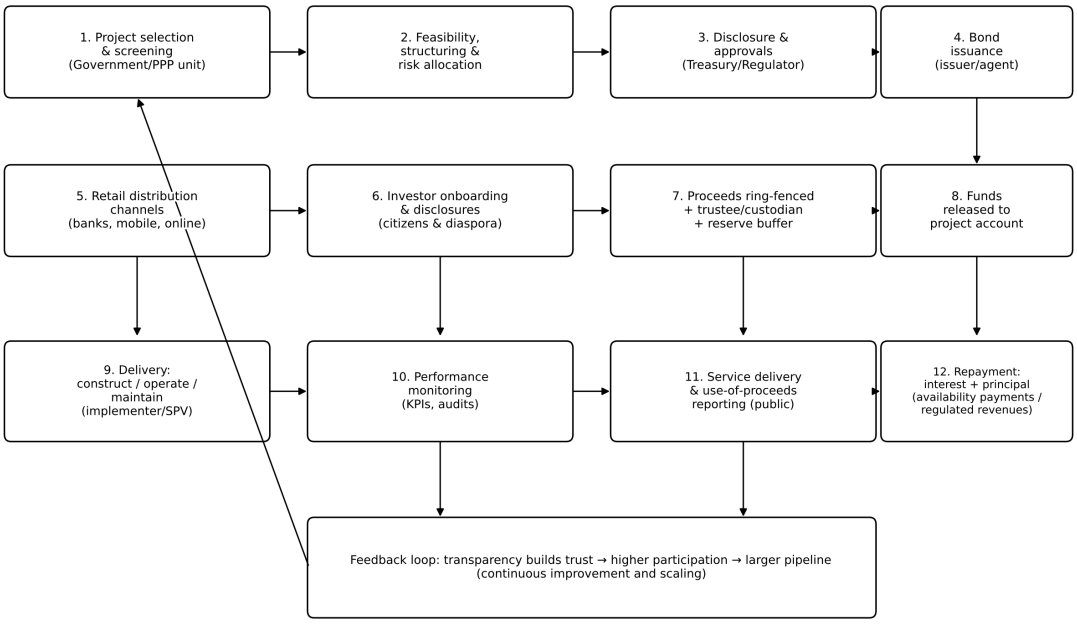
For retail investors, returns are bond-based: periodic interest payments and repayment of principal at maturity. The repayment source must be stated plainly and must be designed to be credible. Where toll revenues are uncertain or socially

sensitive, an availability-payment approach is often the most practical: the government commits to a scheduled payment stream that is budgeted and linked to performance (for example, road quality and safety standards). This means bond repayment does not depend on unpredictable traffic volumes; it depends on a disclosed public payment stream tied to service delivery (OECD, 2018).

To protect retail investors and maintain confidence, the pilot should apply safeguards that are understandable to non-experts. These safeguards include: a ring-fenced account separating proceeds and repayment flows from general accounts; independent trustee oversight of disbursements; a debt-service reserve buffer where feasible; plain-language disclosure of returns, risks, repayment source, and timelines; and routine public reporting on use of proceeds and delivery milestones (OECD, 2018)

Figure 3

Retail Infrastructure Mobilization Model (RIMM) process flow



Note: Author's schematic; OECD, 2018

Figure 3 summarizes the RIMM flow from project selection and disclosure, to issuance and retail distribution, to monitored use of proceeds, to service delivery reporting and repayment (OECD, 2018).

Rwanda Case Study Institutions, Pipeline, and Gaps

Rwanda's PPP architecture rests on Law No. 14/2016 and supporting guidance, which clarify procedures, roles, and approvals. National strategies (Vision 2050 and NST1) place infrastructure at the core of competitiveness and service

delivery. Demonstration transactions across water (Kigali Bulk Water PPP), logistics (Kigali Logistics Platform), energy (KivuWatt), and aviation (Bugesera Airport partnership) indicate that complex deals can reach financial closure when projects are prepared and risks are clearly allocated (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

What works in Rwanda reflects the three pillars, institutional credibility has improved through clear laws and procedures, central coordination at the RDB, and the use of reputable advisors. Sector revenue models offtakes and regulated tariffs provide predictable cash flows. Partnering with experienced operators has accelerated capability transfer. Demonstration effects matter: successful early deals reduce perceived risk and attract more bidders and lenders to subsequent transactions (Rwanda Development Board, n.d.).

Binding gaps are equally clear. Domestic long-term savings are shallow, limiting local currency tenor for infrastructure debt. Project preparation is uneven across sectors; standardized model contracts, sector risk matrices, and value for money methods would reduce transaction costs and improve consistency. De-risking tools exist in practice but are not yet institutionalized through a published policy note with eligibility, pricing, aggregate limits, and sunset provisions; contingent liability reporting can be strengthened. Pipeline visibility is episodic; examples include investors' discount projects that are not part of a credible, rolling program with clear milestones and data rooms (Rwanda Development Board, n.d.).

Adaptation of global lessons for Rwanda starts with standardization and program discipline. Key steps include: (i) a practical PPP handbook with model contracts and sector risk matrices; (ii) a published 12–24 month rolling pipeline with clear milestones and data rooms; (iii) a de-risking policy note that defines tools, eligibility, caps, disclosure, and sunset provisions; and (iv) small, well-reported pilot issuances (e.g., a green bond framework or a retail bond pilot) that can be scaled only after performance is proven (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

To connect citizens and diaspora to this agenda, a pilot Rwanda Retail Infrastructure Bond (RRIB) can be launched under the RIMM architecture. The objective is to enable households to invest small amounts safely in national infrastructure while lowering financing costs for priority assets. The pilot would raise funds in modest tranches linked either to a road bundle delivered under an availability payment PPP or to a power transmission upgrade with regulated tariffs. Cash flows to investors would be anchored in predictable public or regulated payments; an independent trustee would oversee ring-fenced accounts and a debt service reserve (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

To strengthen uptake and legitimacy, early RRIB pilots should prioritize projects with clear, local service value that citizens can easily understand, for example, a defined water-distribution extension in under-served districts, a feeder-road rehabilitation bundle that reduces travel time and vehicle damage, or a distribution and reliability upgrade that reduces outages. This “service-linked participation” design is intended to complement, not replace, institutional finance: it provides a transparent co-investment pathway where investors can see both the service improvement and the financial terms (Rwanda Development Board, n.d.).
Design features of the RRIB include tiered retail denominations (approximately USD 1,000–10,000 per investor, offered in Rwanda francs at prevailing exchange rates), fixed or inflation-linked coupons, and 3–7 year tenors. Repayment should be anchored in predictable public or regulated payments and routed through ring-fenced accounts overseen by an independent trustee. Core protections include a debt-service reserve buffer where feasible, plain-language disclosures of returns and risks, and periodic public reporting on use of proceeds and delivery milestones (World Bank, 2020; International Monetary Fund, n.d.).

From a citizen’s perspective, the RRIB must be easy to understand: investors receive periodic interest and principal at maturity, and repayment is backed by disclosed public or regulated cash flows rather than uncertain demand. Simple investor materials (FAQs, examples, and risk warnings) and a clear complaints channel help prevent mis-selling and strengthen confidence (Rwanda Development Board, n.d.).

Sequencing matters. Start with a single, well-prepared pilot linked to a tangible public outcome (e.g., safer roads or fewer outages), evaluate results after one year, and refine terms. As confidence builds, subsequent tranches can scale and diversify across sectors. MDB/DFI anchors can be phased down. Over time, Rwanda can consider a pooled vehicle or listed trust to hold brownfield assets, providing households with a liquid income product backed by regulated infrastructure (Rwanda Development Board, n.d.).

Table 3
Selected Rwanda PPP/Private Investment Examples

Sector	Project	Model	Scale/Capacity	Notes
Logistics	Kigali Logistics Platform (DP World)	Concession (25y)	~50,000 TEU/yr; ~350,000 t/yr	Inland port; throughput pricing
Water	Kigali Bulk Water Supply (Metito)	Concession (27y)	40,000 m^3/day	Performance based offtake
Power	KivuWatt IPP (ContourGlobal)	IPP (PPP type)	~25–26 MW	Methane to power; safety benefits
Power/Water	Nyabarongo II Multipurpose	Public w/ concessional	≈43.5 MW (phase)	Hydro + irrigation/water management
Aviation	Bugesera International Airport	PPP/JV	Multi-phase	Strategic investor Qatar Airways
Digital/Real Estate	Kigali Innovation City	PPP framework	Campus & tech park	Africa50 partner; cluster logic

Note: Compiled from public sources; Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024

Discussion

The cross-case evidence supports the three pillar hypothesis. First, institutions set the ceiling for what is possible. Codified rules, standardized contracts, and specialized PPP units reduce transaction costs and shorten negotiations, enabling more bidders to participate and repeat sponsors to return. Second, instruments widen the investor base when frameworks are credible and pipelines visible; examples include green bonds, project bonds, pooled vehicles, and retail-oriented instruments, as introduced in this study, under the RIMM architecture. Third, de-risking is market infrastructure for early-stage contexts: guarantees, escrow and liquidity facilities, and FX tools allow projects to reach financial closure while transparent caps and sunset rules protect the public balance sheet (North, 1990; Grimsey & Lewis, 2005).

Interpreting Rwanda through this lens, the legal framework and demonstration projects have improved credibility, but scaling requires institutional deepening (such as in handbooks, templates, and disclosures) and programmatic signaling (such as rolling pipelines and data rooms). The RRIB pilot aligns with these requirements: it is anchored in prepared projects with predictable public or regulated

cash flows, relies on ring-fencing and credit enhancement, and communicates clearly with citizens through disclosure and dashboards. Over time, as data accumulate, support can taper and more sophisticated instruments that can include asset recycling and listed infrastructure vehicles can mobilize domestic pensions and insurers (North, 1990; Rwanda Development Board, n.d.).

Theoretically, the findings reinforce credible commitment perspectives and illuminate policy innovation as a sequencing problem, not just an instrument choice. Preparing projects and codifying processes lower the threshold for viable instruments and reduce renegotiation risk. The addition of retail pathways extends the mobilization agenda beyond wholesale finance and anchors it in inclusion and legitimacy: when citizens co-invest transparently, governments face stronger incentives for disciplined reporting and performance management (World Bank, 2019).

Practical implications are actionable. Codify before scaling: publish a PPP handbook with model contracts, sector risk matrices, and VfM methods. Build and maintain a rolling pipeline, with milestones and data rooms that reduce bid costs. Match models to sector economics: users pay concessions where demand is measurable; make payment PPPs available where tariffs are constrained; and create hybrids to bridge affordability with bankability. Additionally, practical implications involve institutionalizing de-risking with eligibility, pricing, caps, and sunset provisions; report contingent liabilities; leverage credible ESG frameworks and external reviews to access specialist investors; mobilize domestic savings through retail instruments with robust consumer protection plain language disclosure, caps, and redress supported by mobile money rails. Finally practical implications include investing steadily in project preparation and especially when its cost is small compared with failed tenders or contentious renegotiations (North, 1990; Grimsey & Lewis, 2005).

RIMM can scale across developing countries when governance capacity and market depth support investor protection. In early-stage contexts, start with small, ring-fenced pilots and minimum safeguards (trustee oversight, disclosure, milestone reporting). In reforming contexts, scale retail and diaspora windows alongside standardized PPP processes. In more mature markets, evolve toward diversified portfolio products. The core lesson is sequencing: scale only as transparency and protections prove reliable (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Limitations must be weighed. The study relies on public sources; some contract terms and performance data are confidential, and cross country indicators are not always strictly comparable. The design emphasizes analytic generalization rather than causal identification; it explains how and why patterns recur, not precise

effect sizes. Rival explanations market size, macro shocks, tariff politics remain pertinent, and future research can test their relative weight using econometric or quasi experimental designs (World Bank, 2019).

On balance, the evidence supports a sequenced, transparent path towards mobilizing private capital in smaller markets and shows how retail participation can complement wholesale instruments without compromising prudence. The next and final section of this study translates these insights into conclusions and recommendations that specify near term priorities and medium term reforms for Rwanda and articulate transferable lessons for developing countries (World Bank, 2019).

Conclusions and Recommendations

In sum, this study shows that developing countries can mobilize private capital for public infrastructure by combining credible institutions, well designed instruments, and disciplined, transparent risk sharing. RIMM's contribution is not the invention of a new instrument, but rather an integrated governance-and-distribution design of ring-fenced proceeds, independent oversight, transparent reporting, and consumer protection that supports citizen and diaspora participation. Rwanda's early successes in water, logistics, energy, and aviation demonstrate feasibility. The next step is to convert isolated transactions into a program with standardized processes and visible pipelines. The Retail Infrastructure Mobilization Model (RIMM) extends the toolkit by connecting household and diaspora savings to ring-fenced, de-risked assets with strong reporting and consumer protection.

The conclusions of this study are straightforward. Institutions set the ceiling: codified rules, standardized documents, and specialized capacity enable bankable projects at lower cost. Instruments matter conditionally: green bonds, project bonds, pooled vehicles, and PPP families work best when anchored in credible frameworks and clear cash flow sources. De-risking is not a shortcut but a scaffold: guarantees, escrow and liquidity facilities, and FX tools can enable early deals, but they must be priced, capped, disclosed, and time-bound to protect fiscal sustainability. Retail models can complement wholesale mobilization by deepening domestic markets and strengthening legitimacy, provided that consumer protection guardrails are in place (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Near term recommendations for Rwanda (0–12 months) are five-fold. First, publish a PPP handbook with model contracts, sector risk matrices, and VfM methods; include a contract disclosure protocol and performance dashboards. Second, adopt a de-risking policy note with eligibility, pricing, aggregate limits, sunset clauses, and contingent liability reporting. Third, publish a 12–24 month

rolling pipeline with milestones and data rooms. Fourth, pilot a credible sovereign green bond framework tied to shovel ready projects with measurable outcomes and external review. Fifth, launch a RRIB pilot linked to an availability payment road bundle or to a transmission upgrade with regulated tariffs, using retail tiers of roughly USD 1,000–10,000 (or local equivalents), ring-fenced accounts, a DSRA, partial credit enhancement, and mobile money distribution (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Medium term recommendations (12–36 months) include expanding availability payment PPPs for roads and social assets with standardized DBFOM contracts; using hybrid models in water to close affordability gaps with targeted subsidies; initiating asset recycling to monetize brownfield assets and fund new builds; exploring pooled vehicles and, as markets deepen, listed infrastructure trusts; and graduating to progressive PPPs for complex assets. For developing countries more broadly, the transferable message is to sequence reforms pragmatically, communicate clearly with investors and citizens, and treat transparency as an asset that lowers the cost of capital (Grimsey & Lewis, 2005; Global Infrastructure Hub, 2024).

Limitations and future research warrant emphasis. Public source dependence and indicator comparability constrain inference; future work can quantify pricing benefits from guarantees and credible ESG frameworks and evaluate long run service outcomes (access, reliability, equity) across asset life cycles. Household finance dynamics in retail programs suitability, behavioral responses, and financial education deserve careful study and policy attention as RIMM type initiatives scale (World Bank, 2019).

References

Africa50. (n.d.). *Kigali Innovation City*. https://www.africa50.com/

African Development Bank. (2020). *African Economic Outlook 2020: Developing Africa's Workforce for the Future*. https://www.afdb.org/en/knowledge/publications/african-economic-outlook

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Contour Global. (n.d.). *KivuWatt project*. https://www.contourglobal.com/

DP World. (n.d.). *Kigali Logistics Platform*. https://www.dpworld.com/

Global Infrastructure Hub. (2023–2024). Infrastructure Monitor & Insights. https://www.gihub.org/

Grimsey, D., & Lewis, M. K. (2005). *Are public private partnerships value for money? Accounting Forum, 29(4), 345–378*. https://doi.org/10.1016/j.accfor.2005.01.001

International Finance Corporation. (2019). *Kigali Bulk Water Supply PPP: Case study*. https://www.ifc.org/

International Monetary Fund. (n.d.). *Rwanda Country reports and PIMA assessments*. https://www.imf.org/

Korea Development Institute (KDI) & PIMAC. (n.d.). *PPP materials and evaluations*. https://www.kdi.re.kr/

Luxembourg for Finance. (2024). *Alternative investment industry overview*. https://www.luxembourgforfinance.com/

North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.

OECD. (2018). *Blended Finance Principles for Unlocking Commercial Finance for the SDGs*. https://www.oecd.org/dac/financing-sustainable-development/blended-finance-principles/

Qatar Airways & Government of Rwanda. (n.d.). *Bugesera Airport partnership announcements*. https://www.qatarairways.com/

Republic of Rwanda. (2016). *Law No*. 14/2016 Governing Public–Private Partnerships. Official Gazette of Rwanda. https://www.rwandaparliament.gov.rw/

Rwanda Development Board. (n.d.). *PPP Guidelines and investment reports*. https://rdb.rw/

Singapore Ministry of Finance. (2015). *Public–Private Partnership Handbook*. https://www.mof.gov.sg/

Sweden, Government Offices. (2020). *Sovereign Green Bond Framework and issuance*. https://www.government.se/

U.S. Department of Transportation, Build America Bureau. (n.d.). *TIFIA Credit Program*. https://www.transportation.gov/buildamerica/programs-services/tifia

U.S. Department of the Treasury. (2010). *Build America Bonds: Updated Guidance*. https://home.treasury.gov/

U.S. Securities and Exchange Commission. (n.d.). *Municipal Bonds Investor Bulletin*. https://www.sec.gov/oiea/investor-alerts-bulletins/ib_muni-bonds

World Bank. (2019). *Mobilizing Private Finance for Development in Emerging Economies*. https://www.worldbank.org/

World Bank. (2020). *Rwanda Economic Update*. https://www.worldbank.org/

World Bank. (n.d.). *Private Participation in Infrastructure (PPI) Database*. https://ppi.worldbank.org/

Yin, R. K. (2014). *Case Study Research: Design and Methods (5th ed.)*. SAGE.