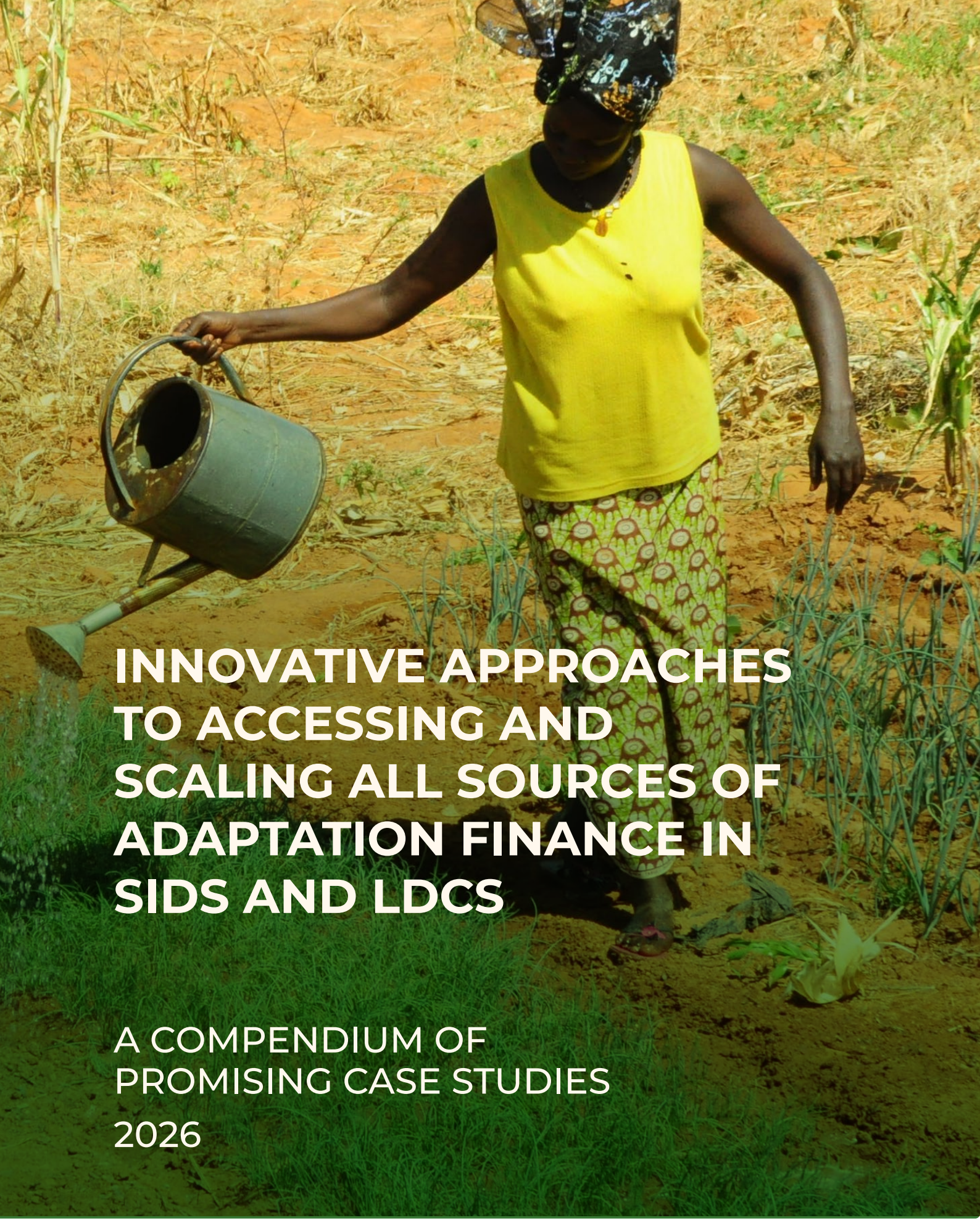

INNOVATIVE APPROACHES TO ACCESSING AND SCALING ALL SOURCES OF ADAPTATION FINANCE IN SIDS AND LDCS

A COMPENDIUM OF PROMISING CASE STUDIES

2026

Climate &
Development
Ministerial

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DISCLAIMERS

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ABBREVIATIONS

ABBREVIATION	MEANING / DESCRIPTOR
ACRE Africa	Agriculture and Climate Risk Enterprise (insurance intermediary for smallholders)
AF	Adaptation Fund
AGRA	Alliance for a Green Revolution in Africa
ALCB Fund	African Local Currency Bond Fund
APF	Alternative Project Financing (Tanzania strategy enabling sub-national/utility issuance)
BESF	Barbados Environmental Sustainability Fund (from the 2022 nature swap)
BIMA SALAMA	'Safe insurance' scratchcard product/distribution model used by ACRE
CEGA	Centre for Effective Global Action
C&DM	Climate and Development Ministerial
DSA	Debt Sustainability Analysis
EDA	Enhanced Direct Access (Adaptation Fund modality)
EIB	European Investment Bank
ESG	environmental, social and governance
FONERWA/RGF	Rwanda Green Fund (national climate fund FONERWA is the Kinyarwanda acronym; RGF used in text)
FSM	Federated States of Micronesia
GCF	Green Climate Fund
GCR (UAE Framework)	UAE Framework for Global Climate Resilience
GGA	Global Goal on Adaptation
IDB	Inter-American Development Bank
KARLO	The Kenya Agricultural and Livestock Research Organization
KPIs	key performance indicators
LDC(s)	least developed country(ies)
LLA	locally led adaptation (principles/modality)
MRV	monitoring, reporting and verification
NDC(s)	nationally determined contribution(s)
NIE	national implementing entity (Adaptation Fund)
R2RP	Roof-to-Reefs Programme

ABBREVIATION	MEANING / DESCRIPTOR
SIDS	Small Island Developing States
SPT(s)	sustainability-linked performance target(s)
SSLL	sovereign sustainability-linked loan
TanWIP	Tanzania Water Investment Programme
UNCDF	United Nations Capital Development Fund
USP	unidentified sub-project
USSD	Unstructured Supplementary Service Data (mobile channel)
UWASA	Urban Water Supply and Sanitation Authority (eg Tanga UWASA)
WFP	World Food Programme
ZEP-RE	PTA Reinsurance Company (ZEP-RE)

CONTENTS

Executive summary

Adaptation finance for LDCs and SIDS continues to fall far short of needs. Public finance is stagnating or shrinking, while emerging private flows remain difficult to access and are not reaching the communities most exposed to climate impacts. Countries are calling for a system that is faster, fairer and more responsive to local priorities — and funders and the global community must respond. This compendium supports that call by showcasing innovative, scalable, country-led case studies from LDCs and SIDS.

This compendium sits within the **Climate and Development Ministerial** (C&DM) process, which convenes countries and institutions around three goals: (1) enhancing country-owned programmatic approaches, (2) easing access and (3) scaling all sources of finance. The case studies in this compendium offer practical examples of how countries are advancing these goals, and draws lessons and best practices from these examples, offering a peer-learning opportunity for both countries and fund providers.

What this compendium adds to the current adaptation finance landscape

This compendium highlights four illustrative cases selected from across LDCs and SIDS, which demonstrate practical approaches that advance, in particular, C&DM Goal 2 (easing access) and Goal 3 (scaling finance from all sources). Together, they show what workable, country-led solutions look like in practice, while also revealing bottlenecks that require system-level reform. The case studies are:

- Debt-for-climate conversion (Barbados): a sustainability-linked loan (SSLL)-anchored, debt-neutral transaction combining guarantees and a Green Climate Fund (GCF) grant to create fiscal space and ring-fence resilience outcomes; disaster clauses help manage shock risk
- Adaptation Fund LLA window (Rwanda, Belize, Micronesia): devolving decisions and finance, with readiness clinics and flexible unidentified sub-project (USP) designs improving proposal quality and local ownership
- Tanga UWASA Water Infrastructure Green Bond (Tanzania): a sub-sovereign, utility-led issuance (dual listing, majority domestic investors) showing how domestic capital markets can fund resilient public services, and
- The Agriculture and Climate Risk Enterprise (Africa): a market-based micro-insurance platform combining digital tools and re/insurance partnerships to reach millions of smallholders.

Policy and practice: key recommendations from the case studies

The four case studies highlight practical, country-led approaches to scaling adaptation finance in LDCs and SIDS. These lessons are organised around five recurrent thematic pillars (Figure 1) based on the reviewed case studies, illustrating actionable steps, systemic barriers addressed and examples of successful implementation.

1. Programmatic, country-led pipelines (including through country platforms)

2. Risk-sharing instruments (guarantees, disaster clauses, blended structures)

3. Direct and local access supported by intensive readiness assistance

4. Mobilisation of domestic capital (sub-national bonds, micro-, small- and medium-enterprise finance)

5. Integration with public financial management systems to sustain results

Figure 1. Five recurrent thematic pillars

1. PROGRAMMATIC, COUNTRY-LED PIPELINES (INCLUDING THROUGH COUNTRY PLATFORMS)

- **Institutionalise and streamline governance:** Establish cross-ministerial structures linking finance, environment and sectoral authorities to ensure that fiscal and investment decisions support resilience goals. Clear oversight mechanisms — such as Ministry of Finance sign-off, sectoral committees and audits — improve speed, efficiency and accountability.
- **Build technical and advisory capacity:** Strengthen units in debt management, fiscal risk and climate finance to manage complex instruments, negotiate terms and monitor performance. Dedicated advisory support can help smaller national implementing entities (NIEs), SIDS, and LDCs develop high-quality proposals aligned with fund requirements.
- **Set realistic, nationally driven targets:** Align climate and resilience goals with national capacity to maintain credibility and avoid overextension. Capacity-based indicators in proposals ensure targets are achievable within staffing and financial resources.

Lesson: Cross-ministerial co-ordination and dedicated technical capacity accelerate decision making and ensure finance aligns with national resilience goals

2. RISK-SHARING INSTRUMENTS (GUARANTEES, DISASTER CLAUSES, BLENDED STRUCTURES)

- **Scale guarantees and blended finance instruments:** Offer partial credit guarantees, hybrid capital and disaster-risk clauses to reduce investment risk and attract private participation.
- **Replicate debt-for-resilience conversions:** Embed climate-resilient clauses in debt instruments to free fiscal space and link finance to tangible resilience outcomes.

Lesson: Guarantees, blended finance and debt clauses reduce investment risk and mobilise private capital to scale up finance for adaptation.

3. DIRECT AND LOCAL ACCESS SUPPORTED BY INTENSIVE READINESS ASSISTANCE

- **Support NIEs and local actors:** Provide sufficient Project Formulation Grants (PFGs), readiness clinics and advisory support to strengthen proposal quality and alignment with fund requirements.
- **Sustain post-project outcomes:** Develop clear exit strategies that integrate project results into national plans and budgets, with follow-up monitoring for several years.
- **Empower communities:** Leverage community champions and local civil society to reach remote populations, build trust and ensure transparency.
- **Localise adaptation strategies:** Align climate action with country- and local-specific risks, cultural practices and community engagement to ensure effective uptake.

Lesson: Local ownership, advisory support and community engagement improve proposal quality and the delivery of finance

4. MOBILISATION OF DOMESTIC CAPITAL (SUBNATIONAL BONDS, MICRO-, SMALL- AND MEDIUM-ENTERPRISE FINANCE)

- **Institutionalise alternative finance frameworks:** Ministries should clarify policies for subnational entities issuing green bonds, providing investor certainty and encouraging wider adoption.
- **Strengthen technical capacity:** Support utilities and local authorities in financial structuring, reporting and investor engagement to reduce reliance on external advisors.
- **Integrate climate proofing and maintenance:** Ensure infrastructure projects embed long-term resilience and dedicated financing for operation and maintenance.
- **Promote blended finance approaches:** Combine public, concessional and private capital to reduce risk and allow scalable replication.
- **Facilitate private sector entry:** Explicitly treat climate risk as capital risk and define clear roles and entry points for private investors and credit agencies.

Lesson: Clear frameworks and technical capacity enable utilities and subnational entities to leverage local finance for resilience.

5. INTEGRATION WITH PUBLIC FINANCIAL MANAGEMENT SYSTEMS TO SUSTAIN RESULTS

- Embed adaptation finance pipelines, instruments and monitoring processes within national public financial management (PFM) systems to ensure continuity, accountability and long-term impact.
- Align performance targets, monitoring, reporting and verification (MRV) processes and fiscal risk management across ministries and implementing entities to sustain results beyond individual projects.

Lesson: Embedding adaptation finance within national PFM systems ensures sustainability and accountability.

INTRODUCTION

Small Island Developing States (SIDS) and least developed countries (LDCs) are among the most climate-vulnerable nations, and face escalating physical risks and severe fiscal constraints due to climate change. While SIDS and LDCs are especially vulnerable, the need for adaptation finance extends across all developing countries. The cost of adaptation needs for developing countries are estimated to be US$310–365 billion per year by 2035 (UNEP, 2025), while international public adaptation flows fell to about US$26 billion in 2023, leaving a gap 12–14 times current levels.

The composition of the available finance is also shifting: an estimated 58% of adaptation finance in 2022–23 was delivered as debt, and the share of non-concessional debt instruments is also rising (UNEP, 2025). Even where finance is labelled concessional, transparency is limited on how concessional it actually is. This drift toward costlier debt deepens affordability and equity concerns — especially for countries already facing high debt burdens such as SIDS and LDCs.

These pressures highlight the urgency for systemic solutions. While imperfect and met with mixed reactions, the Baku to Belém Roadmap to 1.3T [1] creates a political track to scale climate finance to at least US$1.3 trillion per year by 2035 across grants and other non-debt instruments (eg equity, guarantees) and concessional finance. It also calls for systemic access fixes — harmonised procedures, recognition of national systems and programmatic financing — so funds reach national adaptation plan (NAP)/nationally determined contribution (NDC) priorities in LDCs and SIDS (UNFCCC, 2025).

New innovative sources of finance are also providing exciting opportunities to increase grant-based finance. **The Premium Flyers Solidarity Coalition** launched at the Financing for Development conference last year, and now has nine signatory countries. This initiative has the potential to raise billions in grants for adaptation in LDCs and SIDS without further constraining national budgets.

Broader negotiation processes and policy frameworks add further momentum. The new call to developing countries to triple adaptation finance by 2035, adopted at COP30, provides a renewed push and a north star against which to scale finance for resilience. Under the UAE Framework for Global Climate Resilience (GCR: UAE Framework) and its newly adopted indicator set, which includes indicators on means of implementation (MoI), parties are one step closer to tracking and guiding implementation towards the Global Goal on Adaptation (GGA). Also adopted at COP30, the latest NAP assessment and guidance bring light to the real barriers faced by developing countries to implement their plans. With these in place, the international adaptation architecture is slowly beginning to take shape to enable action at the scale needed.

On the delivery side, funds are expanding modalities that support country-driven and locally led action. For example, the creation of the Adaptation Fund's locally led adaptation (LLA) funding windows are promising steps forward in helping broaden national implementing entity pipelines and increase approval volumes, even as overall grant resources remain constrained.

Against this backdrop, the Climate and Development Ministerial (C&DM),[2] launched in 2020, emerges as a forum that brings together climate-vulnerable countries, donors and fund providers to accelerate and scale adaptation finance. The C&DM focuses on three core goals:

1. Advancing country-owned, programmatic approaches
2. Easing access to climate finance, and
3. Scaling finance from all sources.

1 A plan developed by the COP29 (Azerbaijan) and COP30 (Brazil) presidencies to scale up annual climate finance for developing countries to US$1.3 trillion by 2035, focusing on public-private mobilisation, debt relief and reforming financial systems through five 'R's: replenishing grants, rebalancing debt, rechannelling private capital, revamping capacity and reshaping systems for fairer access, aiming to bridge the massive funding gap for climate action.

2 **https://www.iied.org/climate-development-ministerial**

It is within this context that the International Institute for Environment and Development (IIED), with support from SouthSouthNorth (SSN), have developed this second series of evidence review case studies, building on the inaugural compendium released in October 2024 (IIED, 2024). This edition focuses on offering practical insights and inspiration for achieving Goal 2 (easing access) and Goal 3 (scaling finance). It distils how promising models are addressing these two persistent challenges: (i) easing access through greater speed, simplicity and equity of disbursement, and (ii) scaling finance by bringing in more diversified sources while protecting fiscal space.

Case studies selection

This compendium highlights four case studies selected to illustrate practical pathways for achieving C&DM Goal 2 and Goal 3. The cases were chosen to reflect diverse instruments, actors and delivery approaches (see Table 1), demonstrating how different models can overcome systemic bottlenecks and unlock finance for adaptation in SIDS and LDCs. Figure 2 gives an overview of the four case studies.

Barbados debt-for-climate conversion

Demonstrating a successful, scalable model for combining innovative financing instruments and blended finance to unlock large-scale, predictable investments in resilience while addressing critical debt challenges.

Adaptation Fund LLA window

Showcasing the practical implementation of the locally led adaptation (LLA) model by devolving decision making and finance to communities through national implementing entities (NIEs).

The Tanga UWASA Water Infrastructure Green Bond

Illustrating how a subnational utility in an LDC can issue the first public-sector-led green bond in East Africa, mobilising private capital directly from investors to fund climate-resilient water services.

The Agriculture and Climate Risk Enterprise (ACRE Africa)

Offering a locally relevant, market-oriented solution that uses innovative partnerships and accessible technology to provide climate risk and insurance solutions, strengthening the resilience of over 3.1 million small-scale farmers.

Figure 2. The four case studies

CASE STUDY	GEOGRAPHY	INSTRUMENT / APPROACH	C&DM GOAL(S) HIGHLIGHTED
Barbados debt-for-climate conversion	Caribbean SIDS	Debt-for-climate and blended finance	Goal 3
Adaptation Fund LLA window	Specific review of EDA/LLA projects in Rwanda, Belize and Micronesia	Direct/local access, readiness clinics	Goal 2
Tanga UWASA Water Infrastructure Green Bond	Tanzania	Subnational green bond	Goal 3
ACRE Africa	Multiple African LDCs	Digital micro-insurance and risk partnerships	Goal 2 and 3

Table 1. Selection of case studies

BARBADOS DEBT-FOR-CLIMATE CONVERSION

Context and background

Barbados, a Caribbean SIDS, is acutely vulnerable to the climate crisis. The country faces frequent and intense hazards, including hurricanes, sea level rise, coastal erosion and droughts. It is also one of the world's most water-scarce nations, with just 285 cubic metres of freshwater available per capita annually (GCF, 2024b). Such confluence of climate impacts and national context impose high costs, often forcing governments to borrow for recovery, leading to unsustainable debt burdens.

Between 2011 and 2019, the average external debt for SIDS fluctuated between 48–51% of gross national income. For Barbados, the combined stress of climate events, the COVID-19 pandemic, and rising debt service costs severely constrained public investment in resilience. In 2018, the country's debt-to-GDP ratio spiked to 178%, one of the highest globally, necessitating a restructuring process under an IMF programme (Senior government official, Barbados, 2025).

Against this backdrop, debt-for-development swaps/conversions have emerged as mechanisms to create fiscal space while directing resources toward climate and development priorities (Central Bank of Barbados, 2025). Barbados has positioned itself as a global leader in this field, completing a debt-for-nature swap in 2022 and executing the world's first-ever debt-for-climate conversion in November 2024 (GCF, 2024a). This innovative approach aligns closely with the fiscal space and adaptation finance priorities articulated in the Baku to Belém Roadmap and contributes to advancing the GGA by mobilising predictable resources for resilience building.

OVERVIEW: The 2024 debt-for-climate swap repurposed US$592.7 million in domestic debt through a syndicated loan, reducing interest obligations without increasing the debt stock. Interest savings, estimated at US$220 million over ten years, will finance critical projects such as water resource management, agricultural irrigation, and aquifer recharge under the South Coast Water Reclamation Project (SCWRP). This debt-for-climate swap was built on the success of the 2022 debt-for-nature swap, which funded marine conservation and established a marine spatial plan. Barbados continues to lead in adopting innovative financing mechanisms that address climate challenges while promoting sustainable economic growth.

GEOGRAPHIC LOCATION: Barbados — Caribbean SIDS.

STAKEHOLDERS: Government of Barbados, Inter-American Development Bank (IDB), European Investment Bank (EIB), Canadian Imperial Bank of Commerce (CIBC) and the GCF.

RELEVANCE: Offers a concrete, scalable example of how Goal 3 of C&DM — scaling up finance from all sources — can be achieved. It demonstrates a successful model for combining innovative financing instruments, blended finance structures and concessional resources to unlock large-scale, predictable investments in resilience while simultaneously addressing critical debt sustainability challenges.

The financial architecture of the conversion involved:

- Converting approximately US$592.7 million in domestic bonds into a syndicated loan (Central Bank of Barbados, 2025).
- The transaction was neutral to the public debt stock, meaning it did not increase the face value of total government debt — but it improved the overall debt profile by extending maturities, lowering the present value (PV) of debt, and easing key debt sustainability indicators such as the PV-to-exports and interest-to-revenue ratios under the IMF-World Bank Debt Sustainability Analysis (DSA) framework. It also replaced higher-cost debt (carrying rates of up to 8%) with lower-cost financing fixed at 3.5% in local currency (Central Bank of Barbados, 2025).

The primary objectives of the Barbados debt-for-climate conversion were to (GCF, 2024b):

- Reduce the cost of debt servicing without increasing the total debt stock
- Create guaranteed fiscal space for investments in climate resilience and adaptation
- Enhance national water and food security, particularly through the South Coast Water Reclamation Project (SCWRP), and
- Ensure alignment with national strategy documents, including the NDC and the flagship Roof-to-Reefs Programme (R2RP).

Key innovations and good practices

1. **Financial benefit and dedicated fiscal space:** The conversion has generated approximately US$125 million in fiscal savings, channelled directly into new resilience investments over ten years (GCF, 2024b). This avoids increasing the burden of public debt and replaces outstanding, more expensive debt with more affordable financing (GCF, 2024b).
2. **Sovereign sustainability-linked loan (SSLL) focus:** Barbados structured the conversion as the first SSLL explicitly tied to sovereign water security (GCF, 2024b). Performance targets relate specifically to the volume and quality of reclaimed water generated by the upgraded South Coast Water Reclamation Facility (GCF, 2024a).
3. **Blended finance leveraging guarantees:** The conversion was successfully de-risked through US$300 million in guarantees (US$150 million each) from the EIB and the IDB (GCF, 2024b). This blended structure secured a long-tenor loan at favourable conditions with regional banks, a key pathway for scaling adaptation finance (GCF, 2024b; Central Bank of Barbados, 2025).
4. **Concessional upfront capital:** The blended structure included US$110 million in upfront funding for the SCWRP, incorporating a crucial US$40 million grant from the GCF (GCF, 2024b; GCF, 2024a).
5. **Built-in accountability mechanism:** The loan includes sustainability-linked performance targets (SPTs) for water quantity and quality, eg the MRV annex sets a target of about 1,971,400 cubic metres per year of reclaimed water from the South Coast facility by 2030, meeting national/international standards. Progress is independently verified, and missed targets trigger a sustainability-linked charge (outstanding principal x rate), set at 0.2% per annum until 2032, then 0.1% p.a., with proceeds ring-fenced for climate resilience (GCF, 2024a; Central Bank of Barbados, 2025).
6. **Disaster clauses for resilience:** The loan features natural disaster and pandemic clauses, a major innovation, allowing principal payments to be deferred for up to two years in the event of major shocks, enhancing the country's immediate fiscal resilience (Central Bank of Barbados, 2025).
7. **Learning from previous conversions:** Unlike the 2022 debt-for-nature swap, which created a brand new fund (The Barbados Environmental Sustainability Fund, or BESF) which took almost three years to become operational, the government utilised a specialised trust account structure, allowing for faster implementation and lower costs (Official from Inter-American Development Bank, 2025).

Lessons learned

WHAT WORKED WELL

The success of the conversion was enabled by a convergence of political, institutional and strategic factors:

1. **High-level political leadership:** Strong political commitment, led by the prime minister, was crucial for providing strategic direction. The continuous engagement of the prime minister and minister of finance ensured that the conversion remained a top-level priority, attracting partners who "want to work with us" (Senior Government Official from Barbados, 2025; Official from Inter-American Development Bank, 2025).

2. **Policy coherence:** The conversion was anchored in existing national policies, for example NDCs, R2RP, National Biodiversity Strategy and Action Plan (NBSAP) and so on. This interconnected policy environment meant the chosen investments were "aligned with pre-agreed national resilience goals", creating both a top-down and bottom-up approach (Senior Government Official from Barbados, 2025).

3. **Cross-ministerial co-ordination:** A functioning working relationship was established between the Ministry of Finance and the Ministry of Environment. This was a critical step, as typically, ministries of finance "see the Ministry of Environment as just, you know, an entity that is providing certificates" (Official from Inter-American Development Bank, 2025). The conversion elevated the Ministry of Environment to an advisory role on financial decisions. This arrangement functioned as a prototype for a programmatic country platform model integrating climate and finance portfolios.

4. **Trust-based stakeholder engagement:** The formal Social Partnership (consisting of government, private sector, and community/NGOs/unions), which meets regularly and is chaired by the prime minister, created trust and accountability for national projects. Any government project official "may have to come and report to the social partnership" ensuring accountability and trust between the government and non-state actors, which is often lacking in many countries (Senior Government Official from Barbados, 2025).

5. **Robust financial capacity:** The existence of specialised technical units — the Debt Unit, Fiscal Risk Unit and Public Investment Unit — within the government was key to managing the complex financial aspects and loan requirements. These units are necessary because "you can't get away from the fact that you need money, and if you have to borrow that money, then it's a debt that you have to manage" (Senior Government Official from Barbados, 2025).

6. **Willingness to co-finance:** The government's pragmatic approach to investing its own resources demonstrated commitment and boosted partner confidence. A senior government official noted that co-financing is essential because "there's not enough grant financing out there, and so even if you get access to some grant financing, you have to be willing and able to put in your share of financing" (Senior Government Official from Barbados, 2025).

CHALLENGES AND CONSTRAINTS

1. **Time and complexity:** The conversion process was extremely time-consuming and difficult, requiring constant, high-intensity work from senior personnel across multiple agencies (Senior Government Official from Barbados, 2025; Official from Inter-American Development Bank, 2025). Even with high levels of commitment, the debt-for-climate conversion took approximately eight months to complete from the time of political mandate (Official from Inter-American Development Bank, 2025).

2. **Partner alignment and rules:** Co-ordinating numerous partners including multilateral banks (MDBs), the GCF and the private sector, introduced complexities due to differing institutional rules, requirements and products such as different procurement or safeguarding procedures (Official from Inter-American Development Bank, 2025). Partners sometimes introduced new requirements late in the process, which caused delays (Official from Inter-American Development Bank, 2025).

3. **Capacity and resource strain:** The specialised nature of the transaction placed significant strain on limited human resources within government agencies, which also had to cover the upfront costs for preparatory studies (Senior Government Official from Barbados, 2025).

4. **Long-term accountability burden:** The accountability for meeting environmental milestones and key performance indicators (KPIs) falls heavily on the Ministry of Environment for the entire 15-year life of the loan: a long-term resource commitment often forgotten about after the deal is closed (Official from Inter-American Development Bank, 2025).

Policy and practical recommendations

Based on the Barbados experience, the following actionable advice is recommended for governments, donors and practitioners in climate-vulnerable countries:

1. **Institutionalise and streamline governance:** Establish formal cross-ministerial working groups between the ministry of finance, climate and environment agencies, and sectoral authorities (for example the water authority) to ensure fiscal and investment decisions support resilience goals. Use existing government structures or independent accounts for managing fiscal savings, with clear oversight (including MoF sign-off, sectoral committee and annual audits) to ensure speed, efficiency and accountability, as demonstrated by Barbados' 2024 debt-for-climate conversion.

2. **Build technical financial capacity:** prioritise the development of strong, dedicated technical units (for example Debt Management, Fiscal Risk) to handle the complexity of innovative financing and effectively negotiate terms. Similar recommendations are made in IIED's guide 'Linking sovereign debt to climate and nature outcomes', which highlights that creating an inter-ministerial taskforce is a foundational step for debt-climate transactions (Fenton and Labbé, 2021).

3. **Build capacity and commit for the long term:** Strengthen dedicated technical units (for example Debt Management, Fiscal Risk) to handle complex instruments, negotiate terms and monitor performance. Donors and governments should allocate funding and human capital for the full duration of the instrument (10–15 years) to ensure continuous MRV, tracking of targets and achievement of milestones, drawing on lessons from Barbados' SSLL framework.

4. **Set realistic, nationally driven targets:** External partners and NGOs must ensure that environmental performance targets (such as protected areas) are based on the country's baseline capacity, rather than donor requirements, to maintain the credibility of the instrument and prevent countries from failing due to unrealistic pressure. Adapt frameworks to local fiscal, social and environmental conditions to maintain credibility and effectiveness.

5. **Leverage peer learning and SIDS strengths:** Facilitate South-South learning through platforms, workshops or knowledge exchanges to share practical experience in debt-for-climate and nature conversions. Small countries can use close professional networks and pre-existing inter-agency relationships to streamline negotiations, fast-track approvals and adapt models efficiently to their context.

Scalability and replicability

1. **Adaptability of the SSLL framework**: The framework is adaptable to different sectors. Following the 2022 debt-for-nature swap focused on marine conservation, the 2024 conversion focused on water security, demonstrating that the SSLL structure can be tied to diverse, measurable sustainability-linked performance targets (SPTs).

2. **Standardisation for scale:** The consistent use of instruments like disaster clauses and SPTs, and the involvement of regional and international partners (in this case, the IDB, EIB and GCF), moves these transactions toward standardisation. This simplicity is essential for scaling, as it provides a clear blueprint and reduces the fragmentation and high transaction costs that typically plague complex financial structures.

3. **Prerequisites for transferability**: Successful replication relies on strong political leadership and the existence of robust technical units within the government to manage the complex negotiations, legal structuring and long-term monitoring requirements. Every case is unique and requires careful assessment of contexts.

ADAPTATION FUND LLA WINDOW

Context and background

The global climate finance architecture primarily funnels resources through intermediaries and large, centralised institutions, creating systemic access barriers for the local communities and grassroots organisations that are most severely impacted by climate change. Because these local actors typically lack the institutional capacity and accreditation needed for direct access, adaptation solutions are frequently designed and implemented through top-down approaches that may not fully reflect local needs and realities. This disconnect can reduce the effectiveness and impact of projects, as interventions risk overlooking context-specific priorities and knowledge that are critical for building resilience on the ground (Adaptation Fund, 2025). A 2021 IIED workshop report also highlighted these issues, noting that many national and subnational institutions struggle to meet stringent access criteria, and that once they do, limited funding supports critical areas like human resources.

The Adaptation Fund (AF) recognised this critical gap early, pioneering the Direct Access funding modality and later developing the Enhanced Direct Access (EDA) funding window, now called the Locally Led Adaptation (LLA) funding window. These mechanisms share a single core principle: that the people most affected by climate change should be the ones making the decisions (Adaptation Fund, 2025). The fund's approach to ensuring local actors have access to funding for climate action is underpinned by the principles for locally led adaptation, emphasising local ownership, equity and the devolution of decision-making authority (Adaptation Fund, 2025; Adaptation Fund Board Secretariat, 2025).

The LLA windows, the first of which was approved by the Adaptation Fund Board in 2022, represent an evolution of the EDA model. While both approaches devolve funding and decision making to national or subnational entities, the LLA windows go further by employing updated criteria to help further align projects with LLA principles, and supporting more effectively the transfer of decision-making authority directly to communities, using simplified templates, flexible eligibility criteria and community-based scoring systems to appraise and prioritise sub-projects. This operational design strengthens inclusivity and accountability, ensuring adaptation actions directly reflect local priorities and capacities, and encourages design that aligns with the principle of patient and predictable funding. The LLA windows provide opportunities to countries that do not have an accredited national implementing entity to access fundings for LLA, as well as those to capitalise on regional synergies in the implementation of LLA action, where this would be useful. The LLA windows — regional and single-country — provide project preparation funding that can be higher, as needed, than the limits for such funding under other windows, in response to unique needs associated with the preparation of LLA projects.

The AF's evolving model thus aims to broaden access for grassroots and subnational actors, aligning with ongoing reform tracks such as the Baku to Belém Roadmap on access and delivery. To date, there are ten EDA and LLA projects with a combined allocation of approximately US$52 million (Adaptation Fund, 2025).

OVERVIEW: Originating from the Direct Access and EDA modalities, now called the LLA window, the fund devolves decision making to communities to strengthen locally driven adaptation.

GEOGRAPHICAL SCOPE: The fund's global portfolio has long reflected its commitment to locally led adaptation, spanning three global regions: Africa, Latin America and the Caribbean, Eastern Europe, and Asia-Pacific.

STAKEHOLDERS: NIEs, local governments, community-based organisations, NGOs and the Adaptation Fund Board.

RELEVANCE: Demonstrates the practical implementation of LLA, linked to Goal 2 of C&DM (easing access). By empowering NIEs to directly sub-grant to local actors, the model validates that vulnerability reduction is most effective when local communities control the planning and implementation of context-specific solutions.

To further unpack the practical on-the-ground experiences of some of the projects funded through this window in SIDS and LDCs, three projects were examined in detail (See Table 2). It is important to note that these three projects illustrate different institutional models: a governmental fund (Rwanda), conservation trust (Belize) and NGO-managed trust (Micronesia).

PROJECT	PROJECT DURATION	IMPLEMENTING ENTITY/COUNTRY	PROJECT OBJECTIVE/ SECTOR	IMPLEMENTING ENTITY TYPE
Practical Solutions for Reducing Community Vulnerability to Climate Change	2018–2024	Micronesia Conservation Trust (Federated States of Micronesia)	Building ecological, social and economic resilience through marine and terrestrial conservation	NIE — NGO/trust fund
Rwanda Subnational Adaptation Fund	2022 (ongoing)	Ministry of Environment/ Rwanda Green Fund	Increasing devolved adaptation finance and decision making for rural adaptation in water, agriculture and land management	NIE — government agency/fund
Building Community Resilience via Transformative Adaptation	2023 (ongoing)	Protected Areas Conservation Trust (Belize)	Improving long-term community capacity to manage drought, flood and wildfire risks through watershed management and livelihood support	NIE — conservation trust fund

Table 2 . Overview of projects reviewed

Practical Solutions for Reducing Community Vulnerability to Climate Change (Micronesia)

Implemented by the Micronesia Conservation Trust (MCT) in the Federated States of Micronesia (FSM), this case demonstrates effective **direct sub-granting** and the necessity of intensive **capacity building** for small civil society organisations (CSOs).

- **Core innovation (direct sub-granting and capacity building):** MCT channelled funds directly to small local CSOs, such as the Conservation Society of Pohnpei (CSP), which work directly with protected area managers. Crucially, MCT invested in the institutional capacity of these local partners by providing **hands-on financial training** and even purchasing and installing **QuickBooks** software for them.
- **Practical experience:** This technical support directly addressed the fact that CSOs, despite being trusted implementers, often lack the systems needed to manage international funds. The project ensured funds supported actions based on traditional knowledge and local plans, increasing fish biomass in and near protected areas.

Rwanda Subnational Adaptation Fund (Rwanda)

This project, managed through Rwanda's Ministry of Environment and the Rwanda Green Fund (RGF), showcases a successful model for **institutionalising local finance access** within a national structure.

- **Core innovation (subnational mechanism and project clinic):** Rwanda created an in-country subnational adaptation fund to channel finance to districts and CSOs, ensuring long-term sustainability by integrating project indicators directly into district-level action plans and government budgets. The RGF enhanced readiness by setting up a project development (PD) clinic offering one-on-one technical advice to local applicants. Beyond the PD clinic, the RGF also organised a series of technical capacity-building sessions on the AF's Environmental and Social Policy and its Gender Policy. These were open to participants from districts and CSOs and proved highly valuable, offering space for discussion and hands-on guidance.
- **Practical experience:** The RGF used this process to bridge the knowledge gap, starting by explaining adaptation in basic terms and helping local teams link their existing activities (like soil terracing) to formal adaptation indicators. This top-down support for bottom-up planning was key to improving proposal quality.

Building Community Resilience via Transformative Adaptation (Belize)

This project, implemented by the Protected Areas Conservation Trust (PACT), demonstrates the value of **flexibility in planning** and **intensive, hands-on engagement** at the community level.

- **Core innovation (USP model):** Belize used the **unidentified sub-project (USP)** model. This approach allowed PAC to secure funding approval based on broad priority areas (for example fire management, livelihoods) and then design the specific sub-projects in close consultation with local communities during implementation, ensuring activities were current and locally driven.
- **Practical experience:** PACT ensured true ownership by translating complex concepts such as procurement and financial management into local languages (Spanish) and holding working sessions on weekends when community members were available. This commitment made the process feel community-led and "accessible, participatory, and impactful" (Official from PACT Belize, 2025).

Key innovations and good practices

1. **Subnational funding mechanism and readiness support:** Rwanda established a subnational adaptation fund to channel finance to districts and CSOs, utilising the RGF's existing systems. This innovative structure was reinforced by targeted assistance: the RGF established a project development clinic, using their own resources, where local applicants could secure one-on-one appointments with technical experts to refine their project designs prior to submission. This direct support dramatically improved proposal quality (Official from Ministry of Environment, 2025).

2. **Flexible project planning (USP model):** In Micronesia, the flexibility meant the NIE could incorporate inputs from communities and align activities with local management plans (Official from Micronesia Conservation Trust, 2025). In Belize, this concept was formalised as the USP implementation modality — an approach that enables the NIE to secure approval for an overarching concept note first, and then design-specific, community-led sub-projects during implementation, directly reflecting LLA Principle 2 on devolving decision making to local actors (Official from Protected Areas Conservation Trust, 2025).

3. **LLA principles as guiding criteria:** The AF formally repurposed its EDA window into the LLA window, making adherence to the LLA principles the core criteria for accessing funds. This systemic change embeds transparency, equity and local control into the governance of climate finance (Adaptation Fund Secretariat, 2025).

4. **Targeted, hands-on institutional capacity building**: Recognising that "many do not have the infrastructure, resources, or technical capacity to access, manage, and report on those funds effectively" (Official from Protected Areas Conservation Trust, 2025), NIEs provided high-touch support. The MCT provided partners with hands-on training that included procuring and teaching CSOs to use QuickBooks software, significantly strengthening their financial management and reporting systems (Official from Micronesia Conservation Trust, 2025).

Lessons learned

WHAT WORKED WELL

1. **Intensive, contextual engagement:** Successful implementation required intensive efforts to establish common ground. In Rwanda, technical teams had to "start from the basics — explaining what adaptation means, identifying the activities they are already doing on the ground, and then linking those actions to adaptation indicators" (Official from Rwanda, 2025). This deep dive approach maximised local ownership.

2. **Embedding capacity support** during implementation: Instead of waiting for capacity to be fully built beforehand, NIEs integrated training directly into the project lifecycle. In Belize, this meant dedicating staff to weekend-long sessions where procurement, financial management and reporting concepts were explained "in simplified terms" and often translated into Spanish to ensure full buy-in and ownership at the grassroots level (Official from Protected Areas Conservation Trust, 2025).

3. **NIE-led capacity development for sustainability:** NIEs such as MCT and Rwanda's RGF focused on creating systemic change. In Micronesia, the AF grant was designed to be a valuable capacity-building exercise not just for the community partners but for the NIE itself, helping MCT staff strengthen internal systems to manage and report on future, larger grants (Official from Micronesia Conservation Trust, 2025).

CHALLENGES AND CONSTRAINTS

1. **Administrative delays in disbursement:** The Rwanda project experienced some delays when revisions to the results framework and disbursement schedule were requested (Official from Ministry of Environment, 2025). These adjustments required standard secretariat processing, board approval and an amendment to the legal agreement. While the approval itself was completed within normal timeframes, the overall sequence contributed to implementation delays. This suggests that even routine project modifications can slow progress, despite the generally faster processes promised under direct access.

2. **Limited local capacity and financial constraints:** A major bottleneck is often the ability of small, effective CSOs to sustain administrative and technical staff. In Micronesia, partners are often restricted by rules that cap overhead at around 10%, meaning their core implementing CSOs face an internal crisis: "their only issue is that they do not have a lot of human resource … making it difficult for them to cover operational costs or sustain staff between projects" (Official from Micronesia Conservation Trust, 2025).

3. **Geographical and logistical challenges for SIDS:** The sheer size and isolation of SIDS territories complicate on-the-ground management. In Micronesia, monitoring staff must frequently "fly to one island and then take a boat or ship to another", making every monitoring visit "both time-consuming and expensive", which limits the frequency and duration of community engagement (Official from Micronesia Conservation Trust, 2025).

4. **Inadequate concept development funding:** Under the previous funding window, PACT in Belize had to cover substantial upfront costs for stakeholder engagement and technical studies before securing the main project grant. This strained resources and constrained the NIE's ability to hire the highly qualified consultants needed to transition from concept to a fully formulated proposal (Official from Protected Areas Conservation Trust, 2025). However, the AF Board did increase the funding available for the preparation of projects, which is a positive step forward. In the case of LLA grants, PFGs are available for US$150,000. An additional US$100,000 is available to NIEs and requests are evaluated on a case-by-case basis.

Policy and practice recommendations

1. **Strengthen dedicated project advisory teams:** The AF should enhance its existing readiness support by providing more targeted, one-on-one advisory assistance to smaller NIEs and SIDS/LDCs during proposal formulation. Building on current readiness services, this strengthened support could help entities prepare higher-quality proposals and better navigate AF requirements.

2. **Ensure proposals match institutional capacity:** NIEs should align the ambition of LLA/EDA project objectives with their actual capacity to implement them. To support this, project proposals could include a simple, capacity-based assessment that shows how planned activities and indicators correspond to available staffing, experience and resources. The AF could consider strengthening its review process by encouraging such capacity-to-ambition alignment during the initial technical review, to help avoid over-extended project designs.

3. **Focus on sustained post-project support:** NIEs should establish clear exit plans that integrate project results into long-term national or district action plans and government budgets to ensure sustainability beyond the funding cycle. Plans should be finalised at least six months before project closure, with annual follow-up monitoring for at least three years.

4. **Ensure adequate project formulation grants:** International funds should provide sufficient PFG resources (for example the current US$150,000 cap) to allow NIEs to conduct detailed, country-wide stakeholder consultations and hire the necessary technical experts for high-quality proposal development.

Scalability and replicability

1. **Integrate climate finance into national planning:** The LLA model is scalable when countries actively integrate climate finance into national planning frameworks. Rwanda's approach of linking project indicators to the district's next action plan ensures sustainability and guarantees government budget support for project continuation This also demonstrates how local, devolved finance can be integrated into a national fund — providing a strong example of how LLA can be mainstreamed into national systems and supporting the broader country platform approach.

2. **Scale through global aggregators:** The AF's introduction of the Global Aggregator Programme has created a practical way for grassroots, non-accredited organisations to access the support they need, by working through accredited multilateral and regional implementing partners. This approach cuts through procedural obstacles and broadens access, enabling many more local and Indigenous organisations to tap into adaptation finance.

3. **Strengthen regionally informed support for SIDS:** For SIDS, processes tend to work more smoothly when reviewers and support teams understand regional contexts and the data and logistical constraints these countries face. While AF staff cannot be experts on every country — and the fund rightly follows a country-driven approach — international funds can continue to strengthen regional understanding within their support and review processes. This could include drawing more systematically on regional expertise and long-term relationships to ensure that requirements and guidance remain context appropriate.

THE TANGA UWASA WATER INFRASTRUCTURE GREEN BOND

Context and background

Tanga, a significant port city on Tanzania's northeastern coast, is home to over 450,000 people (UNCDF, 2024c) but has long struggled with chronic water shortages. The city's ageing infrastructure, including leaking pipes and outdated pumping stations, combined with limited investment, has led to frequent supply interruptions and to many residents relying on unsafe water sources (Tanga UWASA, 2024). This issue is rooted in a fundamental financial gap: Tanga Urban Water Supply and Sanitation Authority (Tanga UWASA), like many urban utilities in LDCs, has lacked the budget and mechanisms to fund necessary large-scale modernisation and maintenance projects (UNCDF, 2024c). From 2024, bond financing has increased the water supply from 45,000 to 60,000 cubic metres per day. The rehabilitation of 110 kilometres of old piping has reduced water losses from 30 to 20%. As a result, over 26,000 residents have benefited from increased reliable water access and reduced drought exposure.

In 2024, Tanga UWASA, supported by the United Nations Capital Development Fund (UNCDF), which served as the lead technical advisor and catalytic funder, made history by issuing the first green bond by a public institution in East Africa (UNCDF, 2024b). The €17.8 million raised through the bond is dedicated to funding the expansion, modernisation and maintenance of the city's water infrastructure (FSD Africa, 2024a). Listed on both the Dar es Salaam Stock Exchange (DSE) and the Luxembourg Green Exchange (LGX) (FSD Africa, 2024b), the bond offered a 13.5% annual yield, attracted 65% of its investment domestically and 35% internationally (UNCDF, 2024c). The bond was issued by Tanga UWASA, with regulatory support from the Tanzania Capital Market Authority and backing from the Ministries of Finance and Water, in line with the national Alternative Project Financing (APF) strategy. The African Local Currency Bond (ALCB) Fund served as the anchor investor, taking 35% of the issuance.

OVERVIEW: In 2024, Tanga UWASA issued East Africa's first public-sector-led green bond, raising €17.8 million to modernise the city's water system. The investment has improved water access for 26,000+ residents, replaced aging pipes, and introduced smart meters to boost efficiency and resilience. It demonstrates how locally driven finance can deliver tangible climate and development benefits.

GEOGRAPHICAL SCOPE: Tanga, Northeastern Tanzania, Africa.

STAKEHOLDERS: Tanga UWASA led the project, with support from the Ministries of Finance and Water, the Capital Markets Authority, and the UNCDF. Private sector partners helped with the bond's listing, financial structuring and compliance.

RELEVANCE: Aligns closely with the C&DM Goals 2 and 3, which focus on easing access to adaptation finance and on scaling up private sector participation. By raising funds directly from investors, the bond shows that subnational utilities can mobilise private capital while improving service delivery and building resilience against climate risks.

Aligned with the Baku to Belem Roadmap and C&DM Goal 3 (to scale adaptation finance from all sources), the bond showed that well-designed, locally led financing instruments can mobilise private domestic and international capital for adaptation and infrastructure in LDCs (Minney, 2024). It also advances Tanzania's adaptation priorities to improve access to clean and safe water, as stated in the country's updated NDC (United Republic of Tanzania, 2021) and the Tanzania Water Investment Programme (TanWIP) (2023–30).

The initiative's primary objectives were to (UNCDF, 2024a):

- **Fund infrastructure modernisation:** Raise capital to expand, rehabilitate and maintain Tanga's ageing water system.
- **Localise finance flow:** Channel funds directly to Tanga UWASA, bypassing national intermediaries, to strengthen local capacity and ensure investments address community priorities.
- **Build climate resilience:** Improve resilience to climate risks (for example drought, flooding) through strategic infrastructure upgrades and catchment protection activities in the Zigi River basin.

Key innovations and good practices

1. **Locally led finance and institutional ownership:** Tanga UWASA led the issuance of the bond, with guidance from the UNCDF, but without relying on a sovereign guarantee. This proved that a subnational utility could meet international capital market standards. By managing the process locally, Tanga UWASA ensured funds addressed community priorities while building internal staff capacity in financial modelling, investor engagement and compliance.
2. **Strong partnerships and technical assistance:** The bond's success relied on collaboration between the Tanzanian government, the UNCDF, private advisors and investors. The UNCDF (with external review by ISS Corporate Solutions) provided crucial support in designing the green framework to meet both local and international environmental, social, and governance (ESG) standards, drawing on the International Capital Market Association (ICMA) Green Bond Principles (GBPs). This laid the foundation for attracting a wide range of investors and enabling favourable financing terms.
3. **Policy alignment and enabling environment:** The project successfully implemented Tanzania's 2021 APF Strategy on a substantial scale. Active involvement from the Ministries of Finance and Water ensured alignment with national development priorities, securing the necessary governmental and regulatory support.
4. **Mobilising domestic capital for adaptation:** Although listed internationally, the majority of the investment — 65% — came from Tanzanian institutional sources (pension funds, insurance companies). This demonstrated strong domestic market confidence in local green finance products and confirmed the market's willingness to support the €17.8 million bond.
5. **Building climate resilience:** Bond proceeds have funded upgraded pipelines, installed smart meters to reduce water loss and implemented catchment protection activities. These measures have helped build climate resilience by reducing the vulnerability and exposure of low-income urban households to floods and drought, including those containing women and children. This aligns with the equity and inclusion principles underpinning the GGA, which call for country-specific, locally led approaches with fairly distributed benefits.
6. **Long-term sustainability and maintenance:** A ten-year maintenance plan embeds climate proofing and long-term sustainability into the project design, prioritising reliable, resilient services.
7. **Knowledge transfer and replicability:** The green bond mechanism has built on earlier proof-of-concept initiatives, such as pension and insurance fund participation, to mobilise national savings for climate adaptation. The UNCDF meticulously documented every step of the process, from regulatory approvals to investor engagement. This has created a clear guide for other cities in Tanzania and across East and Southern Africa, establishing a replicable model for subnational entities to raise green capital without sovereign guarantees.

Lessons learned

WHAT WORKED WELL

1. **Technical support and catalytic funding:** The foundational technical assistance provided by the UNCDF was key. This support structured the bond, established its credible green framework, and helped Tanga UWASA meet international standards, thereby significantly reducing investor risk and enabling favourable financing terms.

2. **Dual listing for investor confidence:** Listing the bond on both the DSE and the LGX was a strategic move. This dual listing expanded the investor base and built international credibility, contributing directly to the oversubscription of the bond by TSh120 million.

3. **Local ownership of finance:** In line with C&DM Goal 3, the bond successfully mobilised 65% of domestic capital. By channelling the capital directly to Tanga UWASA, the investment went straight to address local priorities identified by the utility, strengthening internal financial management skills and creating a foundation from which staff could manage future market instruments.

CHALLENGES AND CONSTRAINTS

1. **Centralised water management:** Although there has been local progress, water management in Tanzania remains largely centralised. This can restrict the operational efficiency and independence of regional and local utilities like Tanga UWASA. Local borrowing, or sub-sovereign debt, is governed by the Local Government Finance Act (Chapter 290) (United Republic of Tanzania, 2019), which requires oversight from the relevant ministries. In the Tanga UWASA bond case, it was secured with formal approval and support from the Ministries of Finance and Water.

2. **Maintenance-first mindset:** There is a persistent challenge in shifting the focus from building new infrastructure to prioritising the long-term maintenance and sustainability of existing systems, which are essential for climate resilience. The bond addressed this by including infrastructure maintenance among its objectives. Furthermore, there is potential to implement national policy reforms that require operational and maintenance KPIs to be included in utility budgets.

3. **Vulnerability to climate shocks:** Even with infrastructure upgrades, Tanga remains vulnerable to unpredictable rainfall and flooding, which require constant planning and adaptive design to prevent service interruptions. There exists the potential to resolve this matter through the utilisation of resilience bonds, inspired by the Tanga UWASA bond approach, and by enhancing the integration of climate data into insurance risk assessment and pricing models.

Policy and practice recommendations

1. **Institutionalise alternative finance frameworks.** Ministries should establish clear policies for subnational entities issuing green bonds or similar instruments. This provides investors with certainty and encourages wider adoption. In the case of Tanzania, this can be built into the Local Government Finance Act (Chapter 290) (United Republic of Tanzania, 2019) or the APF Strategy.

2. **Strengthen technical capacity.** Utilities should be supported in financial structuring, reporting and investor engagement. This builds confidence, reduces reliance on external advisors and ensures funds are well managed. UNDCF, in partnership with local governments, will help develop annual training for utilities by the end of 2027.

3. **Integrate climate proofing and maintenance.** Projects should embed climate resilience and long-term maintenance plans, supported by dedicated financing strategies, to keep infrastructure operational under changing conditions. This can be achieved through national regulation that mandates the incorporation of maintenance and operation KPIs in utility budgets.

4. **Promote blended finance approaches.** Combining public, concessional and private capital can reduce investment risk and allow replication across sectors while maintaining sustainability. This could be achieved through the development of the Tanzania Green Credit Facility, offering partial credit guarantees for upcoming green bonds.

5. **Foster peer learning and knowledge exchange.** Platforms for utilities, ministries and investors to share experiences help standardise practices and accelerate the adoption of green finance tools.

Scalability and replicability

1. **Market validation:** The bond's strong oversubscription provides crucial market validation for investors globally. It proves that well-structured, locally led projects with robust governance — even in LDCs — are viable and attractive investments for public service delivery and climate resilience.

2. **Standardised knowledge transfer:** Replication is directly facilitated by the standardised knowledge product created by the UNCDF. This detailed guide, documenting every step from regulatory approvals to investor engagement, serves as an operational manual, enabling countries like Kenya, Malawi, Zambia and Uganda to fast-track their own adoption of the model.

THE AGRICULTURE AND CLIMATE RISK ENTERPRISE (ACRE AFRICA)

Context and background

In sub-Saharan Africa, small-scale farmers are acutely vulnerable to climate change impacts, including droughts, floods and storms which frequently disrupt crop yields and livestock production (Omokpariola et al., 2025). It is estimated that climate impacts in Africa will lead to a reduction of between 2.9% and 28% in agricultural crop yields by 2050. Furthermore, climate change is projected to diminish the long-term value of Africa's economy by approximately 36% to 61% (Kofi Adom, 2024). Despite these challenges, it is estimated that 80% of smallholder farmers in Africa do not have access to formal insurance coverage. This proportion increases to 97% within sub-Saharan Africa (ISF Advisor, 2022). This vulnerability creates a vicious cycle of income instability that undermines investment in sustainable agricultural practices, limits access to credit, and results in increased food and water insecurity.

While traditional insurance mechanisms are a natural solution, they have historically failed to serve this market due to high transaction costs, small farm sizes and inadequate data, making them financially infeasible (Hazell and Timu, 2024). For instance, ACRE Africa emerged from the Kilimo Salama project under the Syngenta Foundation for Sustainable Agriculture, which offered index-based crop insurance to farmers. Nonetheless, the adoption of index-based crop insurance remains sluggish due to inadequate or unappealing financial products, high payout thresholds, and unreliable or imprecise weather data. National crop insurance has encountered comparable challenges (CRAFT, 2022).

The Agriculture and Climate Risk Enterprise Ltd (ACRE Africa), a for-profit social enterprise and licensed insurance intermediary, was established to address this systemic failure. In 2024, ACRE Africa Ltd was established with support from the Global Index Insurance Facility (GIIF) and the International Finance Corporation (IFC). Currently, it operates through offices in Kenya, Rwanda, Tanzania and Zambia, with ongoing projects in Uganda, Ghana, Malawi, Senegal, Nigeria, Zimbabwe, Ethiopia, Eritrea and Somalia.

OVERVIEW: ACRE Africa is a for-profit social enterprise providing climate risk and insurance solutions to small-scale farmers, helping them adapt to climate change and strengthen resilience across agricultural value chains.

GEOGRAPHICAL SCOPE: ACRE is operational through offices in Kenya, Rwanda, Tanzania and Zambia. Additionally, projects have been undertaken in Uganda, Ghana, Malawi, Senegal, Nigeria, Zimbabwe, Ethiopia, Eritrea and Somalia.

STAKEHOLDERS: ACRE builds financial access through innovative partnerships with institutions like the World Bank's GIIF, IFC, WFP, International Development Research Centre (IDRC), and private insurers including ZEP-RE, Swiss Re, and Safaricom.

RELEVANCE: ACRE Africa offers locally relevant, innovative, market-oriented solutions that align directly with Goal 3 of the C&DM and demonstrates how private-sector instruments can drive inclusive adaptation by offering tailored financial partnerships and risk awareness programmes.

ACRE provides risk management and climate adaptation solutions that bolster the resilience of farmers across Africa's value chains by expanding financial access through innovative partnerships. Since its inception in 2014, ACRE has helped over 3.1 million farmers access climate insurance and provided over US$100 million in payouts following weather shocks. They aim to scale their approach and insure five million farmers by 2026.

The initiative's primary objectives were to:

- Design and implement innovative risk management solutions that protect farmers against acute climate risks
- Connect local farmers with larger markets to increase the profitability of their operations, and
- Bolster farmer resilience to lessen the impact of climate effects on the agricultural sector.

Key innovations and good practices

1. **Locally driven participation and adaptation models:** ACRE Africa prioritises equity, fairness and localised solutions to empower small-scale farmers and embed resilience throughout the agriculture sector. This is achieved through three innovative models that increase adoption and awareness at the local level:

    i. Village Champion Model: A peer-to-peer knowledge transfer system leveraging trusted social structures to create a network of rural change agents. These champions are vital for raising awareness of climate risks, facilitating access to products and encouraging farmers to adopt adaptation measures. Through donor funding, ACRE has successfully trained over 500 village champions across 15 counties in Kenya. Of these champions, 56% are women and 40% are youth. It is estimated that each village champion can disseminate their knowledge and skills to more than 100 other farmers within their communities. Importantly, ACRE and the village champions operate through trusted community structures, such as women's groups and co-operatives, to ensure meaningful participation by women in mitigating agricultural risks. Additionally, ACRE utilises accessible technologies, such as mobile platforms, to facilitate the inclusion of women who are unable to attend in-person meetings due to domestic responsibilities or financial constraints (ACRE Africa, 2024c).

    ii. BIMA SALAMA Distribution Model: This innovative method uses scratchcards sold in small denominations — either standalone or bundled with essential agricultural inputs (for example certified seeds or fertilisers). This ensures that insurance coverage remains affordable and readily accessible, particularly through the Village Champions scheme. By 2018, an estimated 1.7 million individuals had been insured since the inception of the model in 2014. This number had increased to 3.1 million by 2023, and currently, the model is advancing towards its objective of insuring five million farmers by 2026. This trend demonstrates a steady increase in insurance coverage among small-scale farmers in Africa and underscores the effectiveness of the distribution model.

    iii. Picture-based insurance monitoring: This model uses cellphone imagery uploaded by farmers to verify losses and engage directly in the insurance process. This fosters trust and awareness while simultaneously reducing monitoring costs and minimising basis risks. ACRE has piloted this model in collaboration with numerous partners and donors. This model is founded upon multiple prior research and feasibility studies.

2. **Technological and digital innovation:** The development of technological and digital tools is crucial for overcoming high transaction costs and improving data reliability across diverse regions.

3. **Advanced underwriting and pricing:** Tools provide precise satellite and weather station data to support insurance product design, pricing and rating. Insurance underwriting is managed via a platform that allows the insurer and reinsurer to view, approve products and manage claims efficiently.

4. **Accessible sales and payouts:** To reach remote areas, ACRE uses tools that facilitate Unstructured Supplementary Service Data (USSD)-based insurance sales via mobile phones. Claims are evaluated using a dual-monitoring approach: satellite systems assess general damage while farmers upload real-time photos for verification, enabling rapid and transparent payout determinations.

5. **Holistic partnerships and stakeholder engagement:** Collaboration underpins the success of all ACRE services and products, leading to increased farmer participation, improved production and greater resilience.

6. **Private-sector financial integration:** Partnerships with financial institutions, credit agencies and private-sector investors, such as the PTA Reinsurance Company (ZEP-RE) and Swiss Re Group, simplify the insurance process, provide capital funding and raise awareness within the financial sector regarding the capital risks linked to climate impacts.

7. **Advisory and impact support:** Working with development partners, for example the World Food Programme (WFP) and International Finance Corporation (IFC), and research organisations such as the Alliance for a Green Revolution in Africa (AGRA) or The Kenya Agricultural and Livestock Research Organization (KARLO) is vital to advising the enterprise on structuring products for maximum impact and to ensuring effective engagement with rural farmers. This collaboration also facilitates the creation and sharing of knowledge products that highlight insights into food security and sustainable agriculture.

Lessons learned

WHAT WORKED WELL

1. **Peer-to-peer trust and reach:** The Village Champions Model was essential for bridging the gap between a modern financial product and remote, often sceptical, rural communities. It effectively built trust, facilitated adoption and raised awareness of climate risk and adaptation measures.

2. **Leveraging accessible technology:** The deliberate use of commonly available technologies, such as smartphones and SMS services, helped lower the cost of monitoring crops and livestock. This technological approach increased transparency and awareness among farmers while minimising cost for the enterprise.

3. **Holistic partnership model:** Collaboration across diverse sectors — including development partners, the private financial sector, for example, ZEP-RE, Swiss Re, the African Reinsurance Corporation (Africa Re), and research organisations such as AGRA or the Centre for Effective Global Action (CEGA) — was key to lowering product costs, improving service impact and successfully disseminating key insights to stakeholders.

CHALLENGES AND CONSTRAINTS

1. **Climate risk as economic risk:** A persistent challenge is the need for awareness-raising to educate the private sector and financial institutions on the necessity of treating climate risk insurance as capital risk insurance, rather than merely a compliance or separate line item.

2. **High data costs vs small margins:** Due to the nature of agricultural insurance for smallholders, ACRE works with small margins. Meanwhile, acquiring accurate climate/weather data and pricing models is costly, requiring constant innovation in cost-reduction methods to maintain the **enterprise's sustainability**.

3. **Cultural and logistical diversity:** The vastness of the operational area, combined with significant variations in languages and cultural traditions among rural communities, poses challenges in areas such as claims evaluation, distribution of payments and consistent engagement.

Policy and practice recommendations

1. **Integrate climate risk as capital risk:** Policy should explicitly conceptualise climate risk as capital risk and design financial products to reflect this. This strengthens the economic case for private-sector participation and investment. This should be outlined in national climate and economic development strategies.
2. **Empower community champions:** Climate policies should formally support and leverage community champion models and partnerships with local CSOs to effectively access rural/remote communities, build trust and ensure transparency.
3. **Localise adaptation strategies:** Climate adaptation policies focusing on agriculture and food security must be highly localised and sensitive to area-specific risks and cultural traditions to successfully gain farmers' trust and 'buy-in'.
4. **Outline private-sector entry points:** Climate policy should clearly outline the specific roles and entry points for private financial institutions and credit agencies across agricultural markets to simplify private investment.

Scalability and replicability

The ACRE Africa model is highly replicable across diverse agricultural contexts due to its tested systems:

1. **Proven toolset:** ACRE has successfully developed a variety of methods for pricing, monitoring, distribution and awareness raising that can reach rural and remote farming communities, which have been applied in different contexts across Africa.
2. **Streamlined system:** The enterprise has established a transparent and streamlined system, including necessary accreditation and partnerships with multiple financial institutions, which provides a practical blueprint for other countries or regions seeking to mobilise similar solutions.

CONCLUSION

The case studies reviewed in this compendium illustrate that country-led innovation in SIDS and LDCs offers promising pathways toward transforming adaptation finance. While the global adaptation gap remains vast, these models demonstrate how targeted mechanisms can simultaneously improve access and mobilise scaled resources, providing replicable lessons for other vulnerable nations.

To fully realise this potential, persistent challenges around access and institutional capacity must be addressed. Fund providers play a central role in easing these barriers by standardising proven governance blueprints and supporting the integration of climate funding into national systems, such as PFMs. Crucially, sustaining LLA requires ongoing, hands-on readiness support and technical training delivered directly to local actors.

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"Woman watering her income-generating vegetable garden in Ninigui Village, Yatenga, Burkina Faso"

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