

# A Full-Spectrum Approach to Climate Finance

Paper submitted to the Baku to Belém Roadmap to 1.3T

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**PICO** is a new initiative anchored at Perry World House that connects cutting-edge academic research with global policy and practice. The Observatory convenes scholars, practitioners, and decisionmakers to generate near-term foresight generate foresight on risks and opportunities, translate emerging evidence into actionable insights, and stress-test strategies for resilience and the energy transition. The Penn International Climate Observatory brings geopolitical and security, finance and real economy, and social analysis to global climate diplomacy and action.

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## Executive summary

The legacy approach to climate finance focused on finance volume. However, the global climate finance system is under pressure. Rising debt, inflation and geopolitical instability are reshaping how countries access capital for the energy transition and resilience. In a world of shifting trade flows, surging AI-driven energy demand, and renewed emphasis on domestic self-reliance, climate finance must be restructured to reflect new constraints and opportunities. Instead, what is needed is a full-spectrum approach to climate finance that integrates fiscal, monetary and regulatory tools into coherent, nationally-led systems.

The Baku to Belém Roadmap outlines a path for mobilizing at least \$1.3 trillion annually by 2035 to support climate action in developing countries. Drawing on recent policy and finance tool innovations, we outline five strategic priorities for operationalizing the Baku to Belém Roadmap: reforming multilateral development bank (MDB) approaches to risk-sharing and domestic anchoring; using concessional finance to de-risk large-scale private investment; aligning fiscal and monetary policy to support energy and resilience transitions; improving market architecture to shift risk perceptions and reduce capital costs; and strengthening regulatory frameworks. These five priorities are essential to translate climate finance into country-specific packages aligned with real economy fundamentals—jobs, inflation, trade and interest rates.

MDB reform must go beyond capital generation to include risk-sharing and domestic system anchoring. Concessional finance should be catalytic, embedded in broader macroeconomic strategies. Country platforms must build tailored capital stacks that facilitate complementary public and private investment. Financial instruments like green bonds and climate-linked loans are likely to succeed within stable policy environments. Regulatory frameworks that improve market confidence and reduce risk premiums for energy transition and resilience are a needed focus for policy.

In today's shifting geopolitical and climate context, stability is no longer defined by the absence of shocks but by the capacity to absorb them. Countries must build resilient systems that sustain investment and deliver climate, social and economic outcomes. Countries must design resilient systems that sustain investment and deliver climate, social and economic outcomes over time. In addition to helping preserve stability and improve economic wellbeing, this full spectrum approach can make climate investments cheaper, more stable and more attractive to big investors like pension funds. This means countries can borrow money at better rates, for longer periods, and from investors who are in it for the long haul. The challenge on the horizon is assembling them into integrated strategies capable of mobilizing \$1.3 trillion annually and delivering durable shifts towards a renewables-driven, resilient real economy.

## Introduction: The case for full-spectrum climate finance

The Baku to Belém Roadmap outlines a path for mobilizing at least \$1.3 trillion annually by 2035 to support climate action in developing countries. This submission translates the five strategic priorities identified by the COP30 Circle of Finance Ministers – reforming multilateral development banks (MDBs), expanding concessional finance, boosting private investment, increasing the effectiveness of carbon markets and aligning financial flows with climate and development goals – into actionable, country-specific approaches for operationalizing the Roadmap. It offers a framework for full-spectrum climate finance that integrates fiscal and monetary tools, addresses macroeconomic risks and strengthens the resilience, credibility and durability of climate investments in developing countries.

The global political economy is undergoing profound shifts. Rising tariffs, inflationary pressures and political instability are reshaping the calculus of climate finance and commitments made under the United Nations Framework Convention on Climate Change. For developing and emerging economies, mounting debt burdens and soaring borrowing costs are squeezing fiscal space and crowding out essential investments. Meanwhile, in countries that have traditionally led in providing climate finance, political priorities have shifted to domestic and security concerns and more selective regional engagement. The future of Official Development Assistance (ODA) is now uncertain as donors realign priorities or abruptly walk away from prior financial and other commitments.

The future of climate finance, humanitarian and development assistance and global economic stability is being redefined. In this context, more finance alone is not enough. What's needed is finance that is fit for purpose – rooted in national priorities and the real economy (jobs, inflation, trade, interest rates) and structured to manage the macroeconomic risks of the energy and resilience transition. Climate finance is needed that is capable of delivering sustained, system-wide change in energy, land use and climate resilience. It must also be resilient to economic and political shocks, including those seen recently: sudden reversals by major powers, the withdrawal of key contributors and serious strains on hard-won climate agreements.

These pressures demand a critical rethink of prevailing climate and development finance models. At the 2025 Spring Meetings of the IMF and World Bank, we argued that the structure and delivery of climate finance matter as much as its volume. Here, we go further: countries need full-spectrum finance packages that align fiscal and monetary tools within coherent, nationally-led systems. In practice, this means moving beyond abstract targets and finance “tagging”, toward country-specific transformation packages – anchored in the real economy, designed to preserve stability and built to maintain credibility and durability over the long term.

Article 2.1(c) of the Paris Agreement calls on Parties to “make finance flows consistent” with climate goals. To achieve this, the COP30 Circle of Finance Ministers’ five strategic priorities must be translated into full-spectrum, country-specific approaches that operationalize the Baku to Belém Roadmap. By guiding integrated, diversified and resilient climate finance, these approaches can both support transformational, low-emission and climate-resilient development in developing countries and help mobilize the \$1.3 trillion per year required to meet the Roadmap’s objectives.

## Reforming multilateral development banks

Multilateral development banks (MDBs) remain central to channelling concessional and blended capital, particularly for countries facing acute fiscal constraints. They must take on more risk, but this requires overcoming entrenched political challenges, especially reforms to governance and voting structures. While global reform processes unfold slowly, national and regional finance institutions are pioneering innovative prototypes that could be scaled or replicated. These include:

- **Development Bank of Southern Africa (DBSA):** The DBSA has developed blended finance facilities that combine concessional climate funds with commercial capital to finance large-scale renewable energy projects and grid upgrades. By taking on first-loss positions, it has lowered perceived risk for private investors, enabling projects that would otherwise stall in South Africa’s high-cost capital environment.
- **Inter-American Development Bank (IDB) Local Currency Guarantee Pilot:** To tackle exchange rate volatility – a major deterrent to foreign investment in Latin America – the IDB is piloting local currency guarantees. By shielding investors from currency risk and lowering financing costs, this mechanism expands the pool of viable renewable energy projects. Complementing this, a Brazil–IDB FX hedging platform backed by a \$1 billion IDB credit line enables projects funded in Brazilian currency to offer returns in US dollars or other foreign currencies without prohibitive hedging costs.
- **African Development Bank (AfDB)–IDB Special Drawing Rights (SDR) Cooperation:** The 2024 International Monetary Fund (IMF) approval of using SDRs as hybrid capital is a major breakthrough. This method, endorsed by France, Japan

and the United Kingdom, preserves the status of SDRs as reserve assets while leveraging them up to four times for lending. Its operationalization could mobilize at least \$5 billion for climate adaptation, demonstrating how existing global reserves can be used to expand fiscal space without increasing debt burdens.

- **African Credit Rating Agency (AfCRA):** Backed by the AfDB, this new agency seeks to correct the tendency of global credit rating agencies to overstate African sovereign risk, which drives up borrowing costs. By providing more accurate assessments, AfCRA aims to unlock regional capital markets and reduce the high-risk premiums that stifle development.

These examples show that MDB reform is not only about generating or unlocking more capital – it is about changing how risk is shared, how projects are structured and how finance flows are anchored in domestic systems. Regional MDB cooperation, in particular, can serve as a proving ground for new tools, partnerships and risk-sharing mechanisms that could transform climate finance globally.

Public Expenditure Reviews (PERs) are another tool through which MDBs can strengthen their role in climate finance. A PER is a diagnostic tool used by MDBs and governments to assess how public resources are allocated and spent. Traditionally, PERs help governments determine whether spending aligns with development priorities and where adjustments are needed.

Integrating climate into PERs transforms them into strategic tools for climate finance. They shift the focus from “how much” finance is available to “how well” it is structured and aligned with national strategies. By reviewing climate-related spending alongside other priorities, PERs expose gaps, overlaps and opportunities to improve policy coherence and integrate climate into core fiscal planning. When linked to pipeline development and budget processes, PERs enable MDBs to design financing packages that combine grants, concessional loans, guarantees and private capital. Done well, this approach strengthens macroeconomic stability, productivity growth and resilience while ensuring climate finance is fully embedded in national systems.

## Strategic focus of concessional finance and climate funds

The expansion of concessional finance and the role of climate funds is essential for making the climate transition affordable, particularly in developing economies. For maximum impact, however, these funds must be deployed with greater strategic focus and as part of a full-spectrum package.

Concessional finance should be viewed as “catalytic capital” – a small amount of public finance used to de-risk a much larger pool of private investment. For example, a climate fund could provide a first-loss tranche in a blended finance structure supporting a portfolio of green infrastructure loans. These loans, once aggregated and seasoned, could be securitized into green bonds, with the first-loss protection absorbing initial defaults before senior tranches are affected. This arrangement can lower the risk premium demanded by investors, potentially enabling issuance at more favourable interest rates than would otherwise be possible for the underlying risk profile. The proceeds could fund infrastructure essential for the low-carbon transition, with public capital used strategically to unlock larger pools of private investment.

**Table 1: Financing channels for managing disruption and building stability**

CHANNEL	STRENGTHS	TRADE-OFFS
<b>Domestic public finance</b>	Direct control, sovereignty, can be tailored to national priorities	Limited fiscal space, can be politically contentious, may not be sufficient on its own
<b>Bilateral finance and ODA</b>	Rapid deployment, targeted assistance, political influence	Volatile, subject to donor political cycles (currently downward trend in ODA in many countries but upward trend in “deal making”), can create dependencies or debt burden
<b>Multilateral climate funds</b>	Pooled resources, technical expertise, leverage for larger investments	Complex project finance requirements, slow disbursement, limited by donor contributions

<b>Private philanthropic capital</b>	Risk-tolerant, innovative, can fill critical gaps where others won't invest	Tied to philanthropy goals rather than comprehensive country transformation plans, can be limited in scale and time, often project-specific and not systemic
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Concessional finance should be embedded within broader fiscal, regulatory and monetary frameworks that align investment incentives, rather than being deployed as isolated subsidies. International climate finance, such as from the Green Climate Fund and the Global Environment Facility, could be prioritized for these blended structures, coordinated with country-led investment strategies.

## Fostering monetary and fiscal policy coherence and boosting domestic capacity

To align financial flows with low-emission pathways and climate-resilient development – as set out in Articles 2.1(b) and 2.1(c) of the Paris Agreement – countries need layered public and private investment frameworks (“capital stacks”) that are country-driven, systemically integrated with real economy considerations and politically feasible. Delivering a stable energy transition – retiring fossil fuel assets, scaling renewable generation, upgrading grids and transport – requires substantial upfront capital, credible long-term policy signals and macroeconomic stability. The challenge is particularly acute in middle-income and emerging economies, where emissions are rising rapidly and governments face climate impacts, debt pressures and demographic transitions.

Achieving full-spectrum climate finance at scale requires coherent deployment of fiscal, financial and monetary policy instruments. Fiscal measures – including targeted subsidies, tax incentives, carbon pricing and budgetary allocations – can create demand for low-carbon and resilient infrastructure and absorb part of the investment risk. Financial and monetary tools – such as concessional loans, blended finance structures, currency and interest-rate hedging, and partial credit or risk guarantees – can reduce the cost of capital, enhance investor confidence and support macro-financial stability. When aligned, these instruments can lower financing costs for priority investments, crowd in private capital, support job creation and productivity gains, and help manage inflationary and financial stability risks during the transition. Table 2 outlines how these tools are already being used to support these goals.

**Table 2: Monetary tools to support stable energy transformations**

TOOL	HOW IT SUPPORTS STABLE TRANSFORMATION	EXAMPLES
<b>Fiscal instruments</b>	Incentives, investment, support for renewables infrastructure, public goods, social safety nets	European Union Green Deal, United States Inflation Reduction Act
<b>Public investment banks</b>	Channels concessional and blended capital to energy transition	DBSA, Brazilian Development Bank green credit lines
<b>Taxes / Pricing</b>	Raises revenue and internalizes costs of energy transition, adverse climate impacts	Sweden, Chile
<b>Bonds</b>	Raises long-term finance for energy transition	Nigeria, Indonesia, Colombia
<b>Monetary instruments (credit guidance)</b>	Focuses on price stability and inflation control (important in managing transition risks); lowers interest rates for and uses open market operations to foster sector transitions	People’s Bank of China green re-lending, European Central Bank, United States Federal Reserve

<b>Central bank reserve adjustments</b>	Accepts “transition bonds” as collateral	European Central Bank, Bank of Japan
<b>Macroprudential regulation</b>	Focuses on financial system stability and managing systemic risks, adjusts capital risk weights for climate exposure (may also use countercyclical capital buffers, loan-to-value limits, debt-to-income ratios, stress testing, etc.)	Often coordinated by central banks, financial supervisory authorities or regulatory bodies (see Bangladesh, European Union, Brazil pilot rules)

Achieving stable and scalable energy and resilience transitions requires moving beyond disconnected tools to coherent, country-tailored capital stacks. Monetary and fiscal policy play a central role in designing these stacks and aligning investment, credit, regulation and governance into a coordinated engine for energy transition and resilience-building.

Designing large-scale transformation packages also raises difficult questions: How can governments balance public investment needs with debt sustainability? How can economies absorb transition-related risks like inflation and employment shocks? How do governments sustain public support and political momentum through the transition?

Effective capital stacks include diagnostics, sequenced reforms, capital mobilization for high-impact projects and institution-building. When done right, they blend public budgets, development bank financing, concessional instruments and private capital into a long-term strategy for resilience and growth.

Some countries are already moving in this direction. Social protection mechanisms are being used to support just transitions and shield vulnerable communities from the shocks of structural change (e.g., Chile’s Just Transition Strategy for the Energy Sector, Germany’s Coal Commission). Others are leveraging regional and global platforms for joint procurement (the African Union and AfDB’s Desert to Power Initiative), harmonizing regulations (the European Union’s Green Taxonomy) and integrating markets (cross-border electricity trading schemes in West Africa and South Asia).

What’s clear is that successful transitions at scale cannot rely on isolated financial levers; they require systemic alignment and political support. Mature, market-tested tools already exist. The challenge lies in coordination across public authorities, financial institutions and time horizons.

## Case Study: South Africa’s Just Energy Transition Partnership

Consider South Africa’s Just Energy Transition Partnership (JET-P). Announced at COP26 as the first of its kind, JET-Ps are plurilateral financing initiatives designed to accelerate the phase-out of fossil fuels in emerging economies, particularly those heavily reliant on coal production and consumption. These partnerships coordinate financial resources and technical assistance from Global North countries to help recipient nations transition to cleaner energy sources while addressing social equity concerns.

The South African JET-P, supported by an \$8.5 billion pledge, is intended to catalyse a transition plan estimated at \$96–98 billion. It served as a model for subsequent agreements: Vietnam (\$15.5 billion) and Indonesia (\$20 billion) in 2022, and Senegal in 2023, which received €2.5 billion. The initiative has been funded primarily by France, Germany, the United Kingdom, the United States and the European Union, with additional support from development banks and other international actors. Financing for these partnerships includes a mix of public and private grants, loans and investments.

Just 4 per cent of the funds are grant financing, primarily allocated to the “just” transition component. The remainder comes largely as loans, many at or near market rates. In a country where renewable energy projects face financing costs of 11 per cent or more, this isn’t transformative. In fact, as coal plants shut down and renewable financing remains too costly, South Africa is considering more oil imports. This highlights a core paradox: fossil fuels are expensive, but so is the capital needed to move away from them.

The stakes extend beyond energy. Existing coal plants face the risk of becoming stranded assets, both economically and politically. While coal employment accounts for less than 1 per cent of the national workforce, it supplies 85 per cent of South Africa’s electricity as well as significant export revenues. Without strong fiscal and social buffers, even well-intentioned transitions can spark backlash and instability. In October 2023, the National Union of Mineworkers called for a suspension of the



JET-P, citing potential losses of 51,000 jobs in the coal and power sectors. Historical experience in the United Kingdom, Poland, and the United States shows that transitions without adequate social and economic planning can trigger opposition lasting generations.

The lesson is that these packages must overdeliver on social and economic support, not underdeliver. More broadly, JET-Ps are a test case for transition finance: their success or failure will shape trust in the entire climate finance regime and influence the global capacity to meet mitigation targets while delivering adaptation and development.

JET-Ps also highlight the trade-offs inherent in large-scale energy transitions. Moving too quickly can destabilize industries and lead to job losses, while moving too slowly risks falling behind climate targets. Investment in new sectors may not immediately benefit workers in declining industries, creating social inequity and political opposition. Accepting international funding can bring terms that may not align well with national priorities, and large-scale public investment may generate inflationary pressures, raising capital costs for other priority investments.

**Table 3: Transition trade-offs and relevant tools**

TRADE-OFF	DESCRIPTION	RELEVANT TOOLS
<b>Decarbonization speed vs. economic stability</b>	Moving too fast can disrupt key industries and lead to job losses, while moving too slowly risks falling behind global climate goals.	Fiscal support for green industries, tax incentives for retraining, central bank credit guidance for renewables and flexible labour policies.
<b>Investment in new sectors vs. social protection</b>	Funding new technologies may not directly benefit workers in declining industries, creating social inequity and political opposition.	Adaptive social protection mechanisms, just transition funds, conditional cash transfers and public works programmes in renewable energy.
<b>National sovereignty vs. international commitments</b>	Accepting international funding can come with terms that may not align with national priorities or political realities.	Nationally-led country platforms, domestic capital mobilization (e.g., green bonds) and public credit rating agencies to reduce reliance on external assessments.
<b>Inflationary pressures vs. investment</b>	Large-scale public investment can stimulate the economy but may also increase the cost of capital for other productivity-enhancing investments and contribute to inflation, undermining the stability it seeks to create.	Coordinated fiscal and monetary policy, central bank reserve management and targeted credit policies to steer capital efficiently.

## Shifting market risk perceptions and improving the pricing of capital

Innovative financial instruments receive a lot of policy attention, but they are rarely effective in isolation. The greater innovation lies in the design of the overarching policy strategy – a coordinated package of fiscal, monetary and regulatory measures that together shift market risk perceptions and improve the pricing of capital. For example, a transparent and credible energy or carbon pricing mechanism (fiscal policy) combined with central bank guidance on climate-related prudential requirements or preferential risk-weighting for green assets (monetary and supervisory policy) can increase the predictability of project cash flows and reduce perceived policy risk. That means the significant investments in renewable energy and resilience measures can come at a lower cost and attract large investors like pension funds. Over time, such measures can narrow sovereign and corporate spreads, lengthen available maturities and expand the investor base – particularly among institutional investors with long-dated liabilities. In other words, countries can borrow money at better rates, for longer periods, and from investors who are in it for the long haul.

Within this stable policy framework, specific instruments such as green bonds, transition-linked loans and blended finance facilities can be deployed more efficiently, with pricing and tenor that reflect reduced risk premia. Moreover, the framework can support the creation of bespoke instruments tailored to national priorities and market conditions, such as:

- **Sovereign climate resilience bonds:** These finance large-scale adaptation projects, with coupon reductions linked to verified climate impact.
- **Sector-specific green bonds:** Targeting high-impact sectors like renewable energy or sustainable agriculture, with tenor and pricing aligned to sector-specific risks.
- **Climate impact-linked loans:** Loans where interest rates adjust based on the achievement of defined climate or sustainability targets.
- **Blended finance facilities with first-loss guarantees:** Pooling public, philanthropic and private capital, with first-loss protection to attract institutional investors to higher-risk climate projects.
- **Nature-based solutions investment funds:** Bundling payments for ecosystem services, biodiversity conservation or forest protection into investable instruments with measurable outcomes.

By embedding these instruments within a coherent macro-financial strategy, governments can make their markets more investable, deepen domestic capital markets and mobilize international private capital at scale.

## Strengthening regulatory frameworks for climate finance

A forward-looking regulatory framework is a critical enabler of a durable climate finance strategy, but its effectiveness depends on market confidence, institutional capacity and cross-border alignment. Regulatory guidance can connect climate considerations into the financial system, but only if rules are clearly defined, consistently enforced and supported by high-quality data and supervisory capability.

Key measures include:

- **Climate-related financial disclosures:** Requiring companies and financial institutions to disclose their exposure to climate risks and opportunities can improve the pricing of climate risk and help direct capital. However, for this to influence investment flows, disclosure standards must be internationally interoperable, audited to ensure quality and integrated into credit risk assessment and prudential supervision.
- **Climate risk stress testing:** Central banks and financial regulators can assess systemic resilience to physical and transition risks through stress testing. To be effective, stress scenarios must be based on credible data, use consistent methodologies across institutions and feed into concrete supervisory or capital adequacy responses.
- **Standardized green taxonomies:** Scientifically robust and jurisdiction-specific taxonomies can guide capital toward genuinely sustainable projects. Their market impact depends on legal enforceability, alignment with investor mandates and clarity to avoid unintended exclusion of viable transitional investments.

A regulatory framework designed and implemented under these conditions can improve market predictability, reduce perceived policy risk premia and foster the stability needed to attract long-term institutional capital into climate-aligned investments.

## Conclusion: Designing stability into the next economy

Stability in climate finance does not mean avoiding shocks – it means having the fiscal, monetary and institutional tools to absorb them without derailing long-term investment plans.

Well-designed transformation packages must embed flexibility to incentivize large-scale investment while managing climate volatility, demographic shifts and external disruptions. This requires a full-spectrum approach to climate finance that can scale rapidly, generate productivity gains and connect to the real economy without creating permanent fiscal burdens. Tools such as pre-arranged contingent credit lines to safeguard liquidity, labour force planning that anticipates structural changes, and operational countercyclical macroeconomic policies are critical for ensuring stability as economies transition toward predominantly renewable energy systems capable of withstanding increasingly severe climate impacts.

No single instrument can address the complexity of energy and resilience transitions. Countries will need integrated financing strategies that actively manage trade-offs and sequence policy adjustments. Examples include incorporating pause clauses into debt contracts to preserve fiscal space after climate shocks, partnering with public credit rating agencies or deploying risk-hedging platforms to lower capital costs for transition projects, and exploring regional buffer stock arrangements to stabilize food prices in vulnerable areas. The effectiveness of these tools depends on credible institutions, transparent fiscal reporting and close coordination between treasuries, central banks and sectoral ministries.

The next 5–15 years will be decisive. The challenge is to link global capital flows to real economy fundamentals that underpin resilience: jobs and productivity, exchange rate stability for trade competitiveness and interest rate conditions that balance inflation control with investment and the relative cost of production factors. Building systems that are climate-aligned, fiscally responsible and politically durable will determine to a large degree whether large-scale transitions can be sustained.

The encouraging reality is that many of the required tools already exist and have been tested. The challenge – and opportunity – is to assemble them into coherent, integrated systems capable of absorbing shocks, sustaining investment and achieving climate, social and economic objectives over decades. Successfully doing so will operationalize the Roadmap, mobilizing the \$1.3 trillion required annually and providing a practical pathway toward a stable, climate-aligned global economy.

## About UNU-CPR

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