Making Climate Finance Work for Africa: Landscape, Challenges and Opportunities

by Margherita Bianchi, Domenico Villano and Duccio Maria Tenti

IAI

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Foreword

Africa stands at a critical juncture in the global response to climate change. The continent holds extraordinary assets: abundant renewable energy resources, a young and growing population, strategic minerals, vast agricultural potential, forests and biodiversity; and is positioned to be a central actor in the global energy transition. At the same time, African economies are already absorbing the costs of climate change: droughts, floods, wildfires and land degradation that constrain productivity, undermine infrastructure investment and slow industrialisation.

This is why climate finance must be understood as investment in shared strategic interest. For Africa, the climate agenda and the development agenda are one and the same. Expanding clean energy access, modernising agriculture, building climate-resilient infrastructure and developing local industrial capacity are not separate tracks. They are mutually reinforcing priorities that create value for African economies and for global partners alike.

This paper, prepared by IAI together with UNDP, makes an important contribution to this debate. It shows that the issue is not only the volume of climate finance, although the gap remains significant. It is also the quality, predictability and accessibility of finance. Too much financing still arrives late, adds to debt burdens, or moves through procedures so complex that the countries most exposed to climate shocks are least able to deploy it effectively. The result is a structural inefficiency: ambition is real, project pipelines are growing, but implementation is constrained by financing architecture that was not designed for the speed or scale required.

Africa's opportunity is real and time sensitive. Falling costs in solar, wind, batteries and climate information services open possibilities that were not available a decade ago. But technology alone will not unlock them. Affordable capital, structured partnerships and country-owned pipelines of bankable projects are the missing links between resource endowment and productive transformation.

The paper rightly highlights the need for mission-based approaches, structured intermediation platforms and stronger alignment between national plans and finance flows. This is particularly relevant in the partnership between Angola, Italy and the Rome-based United Nations agencies.

Initiatives such as PISTA and Energy for Growth in Africa point in a promising direction: they reduce transaction costs, connect public priorities with private and multilateral finance, and help translate political commitments into investable projects. These mechanisms deserve to be scaled, with African institutional ownership at their centre.

Climate finance must also rebalance toward adaptation and resilience, not as secondary objectives, but as conditions for sustained investment and growth. Loss and damage must be addressed with credibility. Blended finance instruments should be assessed on their real impact on productive transformation, not on leverage ratios alone.

Africa is not asking the world to choose between climate action and development. The two are the same opportunity. If climate finance is well-designed and well-deployed in Africa, it will strengthen food systems, expand energy access, develop industrial capacity, protect ecosystems and contribute to global stability. That is a case for partnership, and a strong one.

I commend IAI and UNDP for this timely and policy-relevant paper. May it advance a practical and ambitious dialogue: one that moves from pledges to pipelines, from fragmentation to structured partnership, and from constraint to shared growth.

Josefa Leonel Correia Sacko
Ambassador of the Republic of Angola to the Italian Republic
and Rome-based United Nations Agencies

Introduction

Africa stands at a defining intersection of climate vulnerability and development opportunity. The continent already bears a deepening share of the global climate burden: despite contributing less than 4 per cent of cumulative greenhouse gas emissions, Africa is experiencing temperature increases averaging 0.3°C per decade between 1991 and 2023, and the frequency of extreme weather events has increased fivefold over the past fifty years, with associated economic losses rising sevenfold over the same period.[1] The macroeconomic and social consequences are commensurate in scale: the World Bank projects that unmitigated climate change could push an additional 40 to 49 million people in Africa into extreme poverty by 2030.[2] Climate-related losses are already estimated at 5-15 per cent of GDP per capita annually in the most exposed African economies,[3] with the heaviest costs concentrated in rain-fed agricultural systems, coastal and delta infrastructure and the large informal urban economy, which absorbs the majority of the continent's workforce.[4]

The scale of climate finance needed to address these impacts is massive. Sub-Saharan Africa alone requires an estimated 51 billion US dollars annually to only meet its adaptation needs, yet international public finance flows to the region reached just 12.9 billion US dollars in 2023 – meaning that actual disbursements cover barely a quarter of what is needed.[5] This shortfall reflects not only domestic fiscal constraints but also structural inequities in the global climate finance architecture, including risk-pricing mechanisms that disadvantage African borrowers, and the slow operationalisation of landmark commitments – including the Loss and Damage Fund agreed at COP28 in 2023.

1 World Meteorological Organization (WMO), *State of the Climate in Africa 2023*, Geneva, WMO, 2024, https://library.wmo.int/idurl/4/69000; Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2023: Synthesis Report*, Geneva, IPCC, 2023, https://www.ipcc.ch/report/ar6/syr.

2 World Bank, *Poverty, Prosperity, and Planet Report 2024. Pathways Out of the Polycrisis*, Washington, World Bank, October 2024, https://doi.org/10.1596/978-1-4648-2123-3.

3 Songwe, Vera et al., "Climate Change", in Aloysius Uche Ordu (ed.), *Foresight Africa 2024*, Washington, Brookings Institution, 2024, p. 36-61, https://www.brookings.edu/?p=1755595.

4 African Development Bank (AfDB), *African Economic Outlook 2022. Supporting Climate Resilience and a Just Energy Transition in Africa*, Abidjan, AfDB,2022, https://www.afdb.org/en/node/22379.

5 UN Environment Programme (UNEP), *Adaptation Gap Report 2024. Come Hell and High Water*, Nairobi, UNEP, 2024, https://doi.org/10.59117/20.500.11822/46497; Naran, Baysa et al., *Global Landscape of Climate Finance 2024: Insights for COP29*, San Francisco, Climate Policy Initiative, October 2024, https://www.climatepolicyinitiative.org/?p=80179.

Yet the climate challenge facing Africa is not only one of adaptation – it is equally and urgently one of mitigation. While Africa's current emissions are low in historical and per capita terms, the continent's energy systems remain heavily dependent on traditional biomass – which accounts for over 50 per cent of total primary energy supply across sub-Saharan Africa and is a significant source of deforestation, land degradation and black carbon emissions with potent near-term warming effects.[6] As Africa scales up its energy infrastructure, the investment decisions made today carry a generational consequence: locking the continent into fossil fuel-dependent systems that risk becoming stranded as the world decarbonises. The mitigation imperative is thus inseparable from the development imperative – and both are inseparable from the challenge of energy poverty.

Indeed, approximately 600 million people across sub-Saharan Africa currently lack access to electricity, while about 1 billion people lack access to clean cooking fuels, conditions that impose severe costs on health, education, gender equity and economic productivity while simultaneously forcing hundreds of millions of households to rely on solid biomass fuels whose combustion contributes to both local air pollution and global warming.[7] Meeting Africa's growing energy demand and climate goals requires more than doubling annual energy investment by 2030, to almost 240 billion US dollars annually, of which three-quarters would go to clean energy. What makes this challenge particularly acute is the demographic curve against which this problem must be addressed.[8]

The evidence however increasingly suggests that resolving this tension is economically feasible. Africa's renewable energy endowment, including over 60 per cent of the world's best solar resources and vast untapped wind, geothermal and hydropower potential, combined with the dramatic decline of over 90 per cent in the levelized cost of utility-scale solar PV since 2010, means that clean energy is now the least-cost option for new electricity generation

6 International Energy Agency (IEA), *Africa Energy Outlook 2022*, Paris, IEA, 2022, https://www.iea.org/reports/africa-energy-outlook-2022.
7 Ibid.
8 UN Department of Economic and Social Affairs Population Division, *World Population Prospects 2024: Summary of Results*, New York, United Nations, 2024, https://desapublications.un.org/node/4861.

across most of the continent.[9]

Indeed, the African Union's Agenda 2063[10] recognises this potential and calls for transforming Africa's economies through beneficiation from natural resources, manufacturing, industrialisation and value addition, while at the same time putting in place measures to sustainably manage the continent's rich biodiversity, forests, land and waters and using adaptive measures to address climate change risks. This argues for industrial policy frameworks that embed low-carbon standards, energy efficiency requirements, circular economy principles and pollution governance as core design parameters from the outset. Indeed, investments in renewable energy, sustainable agriculture, climate-resilient infrastructure and ecosystem restoration are not merely environmental expenditures; they are engines of labour-intensive economic activity that can absorb large shares of young, growing workforces across sub-Saharan Africa.

In this sense climate finance stands as the foremost instrument for translating Africa's sustainable development ambitions into reality. Today, Africa attracts less than 3 per cent of spending on energy. Yet the challenge is not only one of quantity – closing the vast funding gap that prevents African countries from pursuing green industrialisation, renewable energy expansion and climate-resilient economies – but equally one of quality and effectiveness.

This paper examines the climate finance landscape as it pertains to the African continent, with a view to understanding the structural dimensions of the current funding architecture, and to mapping the scale and composition of climate finance flows to Africa. The paper then turns to the principal challenges that constrain the effective mobilisation and deployment of climate finance in African contexts. Drawing on this analysis, this work identifies a set of best practices, solutions and reform pathways.

9 International Renewable Energy Agency (IRENA), *Renewable Power Generation Costs in 2023*, Abu Dhabi, IRENA, September 2024, https://www.irena.org/Publications/2024/Sep/Renewable-Power-Generation-Costs-in-2023.

10 African Union, *Agenda 2063: The Africa We Want*, September 2015, https://au.int/en/node/3657.

1. The current landscape of climate finance in Africa

1.1 The ambition vs. reality gap

Africa has made tangible advances in climate resilience over recent decades, with a growing number of countries developing national adaptation frameworks, integrating climate risk into sectoral planning and expanding early warning systems. National Adaptation Plans (NAPs) – the primary instrument under the UNFCCC for identifying medium- and long-term adaptation needs – have seen growing uptake across the continent. As of September 2025, 22 African countries had submitted NAPs to the UNFCCC,[11] reflecting a steady increase in adaptation planning capacity.

Progress on mitigation is also becoming increasingly visible, particularly in the energy sector. On the policy side, all African countries but one – Libya – have submitted their nationally determined contribution (NDC),[12] while 18 have pledged a net-zero target,[13] establishing a broad continental framework for mitigation commitments. On the ground, renewable energy deployment is accelerating in several sub-regions, with North Africa and parts of sub-Saharan Africa registering measurable growth in solar and wind capacity.

Despite this progress, the gap between policy ambition and actual implementation outcomes remains stark. While NDCs and, to a lesser extent, long-term strategies, have served as important blueprints for national-level climate action, they have so far fallen short of bending the emissions curve downwards and better positioning countries on a lower-emissions trajectory. Of the 1.2 gigatons of carbon dioxide emitted in Africa in 2020, 40 per cent

11 UNFCCC Secretariat, *National Adaptation Plans*. Presentation, Africa Climate Week 2, September 2025, https://unfccc.int/sites/default/files/resource/NAP_Presentation.pdf.

12 Freitas, Adeyemi Sandr and George Mwaniki, *Climate Finance in Africa: An Overview of Climate Finance Flows, Challenges and Opportunities*, New York, UNEP, September 2024, https://www.undp.org/node/484591.

13 IEA, "Regional Dashboards", in *World Energy Outlook 2024*, Paris, IEA, 2024, https://www.iea.org/reports/world-energy-outlook-2024/regional-dashboards.

came from fossil fuel-based electricity and heat generation, a quarter from transport and 17 per cent from productive uses,[14] underscoring that sustained and targeted investment will be required to deliver on commitments. What's more, despite the growing number of countries submitting NDCs under the Paris Agreement, these climate commitments too often remain aspirational documents disconnected from tangible financial planning. Across both developed and developing nations, NDCs are frequently crafted without accompanying investment roadmaps that outline how targets will be financed, by whom and over what timeline. This gap between pledge and plan undermines the credibility of national climate strategies and creates uncertainty for private investors, multilateral development banks and domestic budget authorities alike.

1.2 Imbalances and discrepancies in climate finance flows

Climate finance flows to the continent display mixed results and composition. After years of stagnation driven by the economic fallout of the Covid-19 pandemic, climate finance flows to Africa surged in 2022, crossing the 50 billion US dollars mark for the first time and reaching an annual average of 43.7 billion over 2021/22 – a 48 per cent increase compared to the 29.5 billion recorded in 2019/20. This trajectory is encouraging, but it masks a much more sobering reality: Africa's climate finance flows must at least quadruple annually until 2030 to meet the investment needs for implementing its current NDCs, with only 23 per cent of estimated annual needs currently being met.[15]

The composition of climate finance providers is as revealing as its overall volume. International sources provided 87 per cent of Africa's tracked climate finance, highlighting the region's ongoing domestic resource and capital mobilisation challenges. Within international flows, multilateral development finance institutions have emerged as the single most important actors, providing 43 per cent – or 19 billion US dollars – of the continent's overall climate flows and 53 per cent of public flows. Their financing is allocated broadly evenly between

14 Songwe, Vera et al., "Climate Change", cit.
15 Meattle, Chavi et al., *Landscape of Climate Finance in Africa 2024*, San Francisco, Climate Policy Initiative, October 2024, https://www.climatepolicyinitiative.org/?p=79064.

mitigation and adaptation. Private finance, while growing, remains structurally marginal. Although flows nearly doubled between 2019/20 and 2021/22 to reach 8 billion US dollars, this still represents just 18 per cent of total climate finance in Africa – well below the share observed in other regions globally.

The instrument mix compounds these structural concerns. As much as 51 per cent of climate finance to Africa comes in the form of debt – split equally between concessional and market-rate instruments – at a time when over 21 African countries are already in debt distress or at high risk of it.[16] This reliance on debt-based instruments to finance climate action risks deepening fiscal vulnerability rather than building resilience.

On the sectoral side, Africa allocates a comparatively higher share of climate finance to adaptation than other regions: 32 per cent of total flows in 2021/22, compared to a share ranging between just 1 and 14 per cent elsewhere. However, this share has been on a declining trajectory. Geographic concentration further amplifies these imbalances: the top ten recipient countries received 46 per cent of total funding, while the ten African countries most vulnerable to climate change received only 11 per cent of the finance, leaving them severely underfunded – a paradox at the heart of the current climate finance architecture. Private flows as well are distributed unequally: ten countries received 76 per cent of the total private climate finance in Africa.[17]

1.3 A growing set of actors

Beyond the traditional architecture of Western-led multilateral and bilateral finance, a new generation of actors is progressively reshaping the climate and development finance landscape in Africa. For instance, Chinese energy lending, investment and construction activity in Africa totalled 66 billion US dollars between 2010 and 2024[18] Arab development finance institutions have also become increasingly prominent actors in climate-related investment in

16 Ibid.
17 Ibid.
18 Boston University Global Development Policy Center, *Chinese Loans to Africa Database – Data Download*, 2026, https://www.bu.edu/gdp/?p=18665; Boston University Global Development Policy Center, *Chinese Loans to Africa Database*, 2025, http://bu.edu/gdp/chinese-loans-to-africa-database.

Africa, channeling concessional and blended finance through both bilateral and multilateral mechanisms. For instance, at COP28, the United Arab Emirates launched ALTÉRRA, a 30 billion-US dollar climate investment vehicle designed to mobilise 250 billion globally by 2030, with Africa identified as a priority region through a dedicated pipeline of over 5 GW of renewable energy projects.[19]

Together, these emerging actors are diversifying Africa's financing landscape and introducing new instruments, partnership modalities and geopolitical dynamics that both complement and, in important respects, challenge the norms and conditionalities of the established multilateral system – while raising open questions about additionality, debt sustainability and the effective alignment of these flows with the continent's own climate and development priorities.

1.4 The role of insurance in Africa's climate finance architecture

Insurance represents a critical, yet still underutilised, component of Africa's climate finance ecosystem, with the potential to operate simultaneously across three interrelated dimensions: as a catalyst for capital mobilisation, as a source of long-term institutional investment, and as a mechanism for risk transfer and management.

First, insurance instruments play a foundational role in de-risking investments in both climate mitigation and adaptation. Through mechanisms such as political risk insurance, the insurance sector can improve the risk-return profile of projects and help unlock both public and private financing flows, thereby supporting the implementation of national climate strategies.

Second, insurers are major institutional investors, managing large pools of long-term capital that could be strategically allocated to climate-related assets. This positions the sector as a potentially significant contributor to climate finance in Africa, including through investments in green bonds, climate-

19 Kiryakova, Elena et al., *China's Evolving Role in Africa's Energy Transition. Overseas Trade and Investment in Kenya, Mozambique and South Africa*, London, ODI Global, April 2025, https://odi.org/en/publications/chinas-evolving-role-in-africas-energy-transition.

resilient infrastructure and renewable energy systems. In practice, however, the allocation of insurance capital to climate-related investments on the continent remains limited.

Third, insurance provides a critical risk transfer function for households, firms and governments exposed to increasing climate and environmental hazards, including floods, droughts, wildfires and landslides. When accessible and affordable, insurance coverage protects livelihoods, enhances the creditworthiness of borrowers and reduces financing costs across sectors. These effects are particularly important for climate-sensitive investments, such as renewable energy infrastructure and climate-resilient agriculture.

Despite these potential benefits, insurance penetration across African economies (particularly in relation to climate risks) remains extremely low. The agricultural sector illustrates this gap clearly: although it is a cornerstone of employment and livelihoods across the continent, African agricultural insurance premiums account for only around 1 per cent of the global total. This stark disparity highlights a significant protection gap with most climate-related losses remaining uninsured.

This gap reflects a combination of structural constraints. A key barrier is the limited availability of reliable data, which undermines the accurate pricing and design of insurance products. In addition, insurance markets remain underdeveloped in many African countries, characterised by low penetration rates and weak distribution channels. Fragile institutional environments further constrain market development. On the demand side, low-income levels and limited financial literacy reduce both the ability and willingness of households and firms to purchase insurance, particularly when premiums are perceived as unaffordable relative to uncertain benefits.

Within this context, parametric insurance has emerged as a potentially transformative innovation. Unlike traditional indemnity-based insurance, parametric products provide payouts based on the occurrence of predefined, objectively measurable triggers (such as rainfall deficits, temperature anomalies, or wind speeds) rather than on assessed losses. This model offers several advantages in low-capacity environments: it enables rapid disbursement of funds, reduces administrative and transaction costs and enhances transparency.

These features are particularly valuable in rural and remote areas, where conventional loss assessment mechanisms are often impractical. By providing timely liquidity following climate shocks, parametric insurance can strengthen resilience among smallholder farmers, governments and humanitarian actors. A prominent example of this approach is ARC Ltd,[20] established in 2014 as a financial affiliate of the African Risk Capacity, a specialised agency of the African Union. The institution provides parametric insurance services to African Union member states and farmer organisations, pooling climate-related risks across countries and transferring them to international markets. To date, the initiative has reached approximately 160 million people across the continent.

However, despite its potential, the uptake of parametric insurance remains constrained.[21] A central challenge is basis risk: that is, the potential mismatch between index-based triggers and the actual losses experienced by policyholders. For example, a farmer may incur significant crop losses even if the relevant climatic index does not reach the payout threshold, resulting in no compensation; conversely, payouts may be triggered in the absence of substantial losses. Addressing this challenge requires substantial improvements in data quality, availability and granularity, which are essential for designing more accurate and reliable parametric products.

2. Key challenges of climate finance in Africa

2.1 High transaction costs and persistent matchmaking failures

A central constraint to scaling climate action in Africa lies in the high transaction costs and persistent difficulties in matching available climate finance with viable projects. These challenges arise from structural weaknesses on both the supply side of climate finance and the demand side of project development,

20 See the official website: https://arcltd.org.

21 Villano, Domenico et al., "Shifting Tides: A Decade of Business Climate Adaptation and Resilience Research (2013–2023)", in *Corporate Social Responsibility and Environmental Management*, 13 April 2026, https://doi.org/10.1002/csr.70600.

and they interact in ways that systematically disadvantage African countries – especially those classified as least developed countries (LDCs).

From the supply side, the global climate finance architecture is highly fragmented. Climate-related resources are channelled through a diverse and expanding set of actors, including specialised climate funds, multilateral development banks (MDBs) and national development finance institutions, each operating under distinct mandates, eligibility criteria and governance structures. Since the establishment of the Global Environment Facility in 1991, the number of dedicated climate funds has expanded rapidly: between 1991 and 2022, 94 climate funds were created, of which 81 remained active by the end of 2022.[22] Navigating this crowded and heterogeneous landscape poses significant challenges for countries and implementing entities seeking financing.

Moreover, a lack of harmonisation across application processes further amplifies transaction costs. There is limited mutual recognition of accreditation across institutions, requiring countries and national entities to undergo repeated and resource-intensive approval procedures. Eligibility criteria are often narrow and rigid, while application processes are complex, lengthy and highly technical. Fiduciary standards, environmental and social safeguards and reporting requirements – while essential for accountability – demand substantial administrative capacity and specialised expertise that many institutions in low-income settings struggle to sustain.[23]

Beyond institutional fragmentation and procedural complexity, a further, often overlooked driver of inefficiencies, as consistently noted by practitioners, lies in the excessive fragmentation of the project cycle as structured by donors and contracting authorities. The proliferation of separate and often weakly coordinated tenders across different phases of climate projects undermines continuity of knowledge and generates significant operational burdens. Firms or consortia engaged at different stages are frequently required to reconstruct

22 Le Houérou, Philippe, "Climate Funds: Time to Clean up", in *FERDI Working Papers*, No. P320 (10 March 2023), https://ferdi.fr/en/publications/climate-funds-time-to-clean-up.
23 Tyndall, Jo et al., *Investing in Climate for Growth and Development. The Case for Enhanced NDCs*, Paris, OECD, updated February 2026, https://doi.org/10.1787/16b7cbc7-en.

core elements of the project, including data collection, modelling assumptions and analytical frameworks, often with limited access to prior work. The absence of standardised methodologies and weak mechanisms for information sharing further exacerbate duplication of effort. As a result, project timelines are extended and the effective use of scarce technical and financial resources is diminished.

These frictions are particularly consequential for climate adaptation finance. Adaptation projects often respond to urgent and evolving risks affecting lives, livelihoods and ecosystems. Yet the time required to unlock funding can be so prolonged that resources arrive too late to effectively address the intended climate impacts, undermining both efficiency and credibility.[24]

On the demand side, many climate-relevant projects in Africa fail to progress from concept to bankable investment due to foundational capacity constraints. A persistent lack of reliable and granular data – particularly on climate risks and vulnerabilities – limits benchmarking, evidence-based planning and weakens project design. In addition, project proponents often face limited technical capacity to structure proposals at the level required by international financiers. This includes gaps in financial modelling, economic appraisal, risk assessment and compliance with environmental and social safeguards. These constraints are most acute at early stages of the project cycle, where domestic public and private resources are scarce. The costs of feasibility studies, pre-investment assessments and other "at-risk" expenditures are frequently prohibitive, preventing promising ideas from maturing into fundable proposals.[25] Moreover, proposed projects often lack alignment with existing initiatives operating in the same geographies or addressing similar challenges, as well as with national and regional frameworks for coordination and prioritisation of climate and development objectives. As a result, project design is at times fragmented and ad hoc, leading to duplication of efforts and inefficiencies. Additionally, both perceived and actual risks related to the market and institutional environment in which project developers operate further constrain progress toward bankability. Regulatory uncertainty, limited transparency and weak

24 Rodriguez Osuna, Andrea, "Accessing UNFCCC-linked Multilateral Climate Funds. Lived Experiences", in *iGST Discussion Series*, November 2022, https://www.climateworks.org/?p=30358.
25 Tyndall, Jo et al., *Investing in Climate for Growth and Development*, cit.

enforcement of legal frameworks can undermine confidence in project viability and expected returns. Procurement processes may also present challenges, including unclear procedures and risks of undue influence. These factors increase the risk profile of projects and the cost of capital, making it more difficult for otherwise viable initiatives to attract financing.

The combined effect of these supply- and demand-side constraints is a persistent bottleneck in the climate finance pipeline. Countries with the highest levels of climate vulnerability and the most constrained domestic fiscal space – many of them African LDCs – face obstacles at every stage of the process, from project ideation to the development and submission of structured, investment-ready proposals. This results in a paradox where those most in need of timely and scaled climate finance are systematically the least able to access it.

2.2 Declining international commitments and uncertainty

These structural challenges are unfolding in a context of weakening international financial commitments. The years 2024 and 2025 marked a sharp contraction in official development assistance (ODA), driven largely by sustained cuts from several major providers. This contraction is especially damaging for African LDCs, which rely heavily on concessional finance due to limited and volatile private capital inflows. Cuts to multilateral organisations – through which nearly half of ODA to LDCs is channelled – risk compounding these effects.

Climate finance has not been immune to these trends. Updated estimates indicate a 13 per cent year-on-year decline in public climate finance in 2023, driven largely by a sharp reduction in contributions from national development finance institutions. These cuts have disproportionately affected adaptation finance. This trend risks having particularly pronounced effects in sub-Saharan Africa, which, as discussed earlier, is highly dependent on international public finance and therefore especially vulnerable to external funding shocks.[26]

26 Naran, Baysa et al., *Global Landscape of Climate Finance 2025*, San Francisco, Climate Policy Initiative, June 2025, https://www.climatepolicyinitiative.org/?p=92829.

2.3 The unfulfilled promise of blended finance

Over the past decade, blended finance has been promoted as a key mechanism to mobilise private capital for sustainable development and climate objectives, by using public or philanthropic resources as catalysts for private investment. In practice, however, mobilisation levels have fallen well short of expectations, and several structural shortcomings have become increasingly evident.

Public concessional finance has often been used primarily to leverage additional public or multilateral resources rather than to crowd in private investment, calling into question the core narrative underpinning blended finance. Moreover, the emphasis has frequently been placed on headline leverage ratios – despite significant methodological challenges – rather than on development and environmental impact. Blended finance flows have also tended to concentrate in middle-income countries and in sectors with clearer revenue streams and lower perceived risks. As a result, many low-income and fragile African countries, as well as high-impact projects, remain underfunded.[27]

Risk allocation within blended finance structures has also often been asymmetric. Downside risks are frequently borne by the public sector, while upside returns accrue primarily to private partners. Consequently, when blended finance initiatives underperform, the financial burden falls on already constrained public budgets, further eroding fiscal space.

2.4 High sovereign debt burdens as a binding constraint

High and rising sovereign debt burdens constitute a major macro-financial constraint shaping climate finance access and effectiveness. External debt service has more than doubled over the past decade, reaching around 2 per cent of GDP in 2024. Rising debt service costs are increasing fiscal vulnerabilities and crowding out development spending, particularly where governments

27 Mazzucato, Mariana and Ulla Heher, "Mission-Oriented Country Platforms: Engines for a Just Green Transition", in *IIPP Working Papers*, No. 2025-20 (November 2025), https://www.ucl.ac.uk/bartlett/publications/2025/nov/mission-oriented-country-platforms-engines-just-green-transition.

rely more heavily on domestic financing.[28]

Debt dynamics constrain climate finance in at least two critical ways. First, climate finance continues to be delivered predominantly in the form of loans – accounting for nearly 70 per cent of public climate finance provided by developed countries and a large share of MDBs' portfolios.[29] Even when offered on concessional terms, additional borrowing can be politically and economically difficult for countries already facing high levels of debt. Second, elevated debt burdens reduce fiscal space for co-financing and for the recurrent expenditures required to operate and maintain green and climate-resilient infrastructures – including maintenance, staffing, subsidies and complementary social protection measures.[30]

2.5 Short-term and volatile funding frameworks

A final challenge is the temporal mismatch between climate needs and financing frameworks. Effective climate action requires long-term, predictable investment, yet much climate finance remains short-term, project-based and sensitive to donor political and budget cycles.

At the macro level, the pool of international finance has become more uncertain, with declining ODA and weakened investor appetite already cited as key downside risks for sub-Saharan Africa. At the fund level, replenishment and annual pledging cycles generate volatility that is poorly suited to sustained programming. The Adaptation Fund, for example, reported resource mobilisation outcomes well below its 300 million-US dollar target in both 2023 and 2024,[31] even as its active project pipeline continued to expand – illustrating the tension between growing demand and unstable supply.

28 Haines, Cleary et al., *Regional Economic Outlook. Sub-Saharan Africa: Holding Steady*, October 2025, https://www.imf.org/en/publications/reo/ssa/issues/2025/10/16/regional-economic-outlook-for-sub-saharan-africa-october-2025.

29 OECD, *Climate Finance Provided and Mobilised by Developed Countries in 2013-2022*, Paris, OECD, May 2024, https://doi.org/10.1787/19150727-en.

30 Haines, Cleary et al., *Regional Economic Outlook. Sub-Saharan Africa*, cit.

31 Adaptation Fund Board, *Update on the Resource Mobilization Strategy for the Adaptation Fund* (AFB/B.44/12/Rev.2), April 2025, https://www.adaptation-fund.org/?p=232546.

Even for larger institutions, predictability is affected by the gap between headline pledges and confirmed contributions. The Green Climate Fund reported record pledges for its second replenishment in late 2023, yet confirmed contributions reported in 2025 were significantly lower,[32] with implications for the Fund's ability to make forward commitments and for countries' capacity to plan multi-year investment programmes.

3. Policy solutions and best practices to unlock climate finance in Africa

3.1 Addressing structural climate finance challenges through a mission-based approach

A promising approach to addressing the structural challenges outlined in the previous section is the adoption of a mission-based framework. This approach entails the strategic alignment of policy instruments, financial resources, technical expertise and project pipelines around clearly defined public objectives.[33]

Mission-oriented strategies can help tackle the identified constraints in a systemic manner, rather than through fragmented or ad hoc interventions. At their core, such approaches place strong emphasis on national ownership and public sector leadership. Governments play a central coordinating role, defining priorities and mobilising a coherent mix of domestic public resources, international climate and development finance and private capital – both domestic and international – to achieve shared objectives.

This integrated framework has the potential to help countries address key bottlenecks across both the supply and demand sides of climate finance. First, in a context of declining international commitments and heightened

32 Green Climate Fund, *Fourteenth Report of the Green Climate Fund to the Conference of the Parties to the United Nations Framework Convention on Climate Change* (GCF/B.42/09), 9 June 2025, https://www.greenclimate.fund/document/gcf-b42-09.

33 Mazzucato, Mariana and Ulla Heher, "Mission-Oriented Country Platforms", cit.

uncertainty, a mission-based approach supports a more efficient allocation of scarce financial resources. By embedding individual projects within coherent medium- to long-term investment pipelines, it ensures that funding is directed towards strategic interventions with high transformative potential, rather than dispersed across isolated or short-term initiatives. Second, anchoring projects within a comprehensive national strategy reduces fragmentation and duplication. Projects are no longer designed primarily to fit the requirements of specific funding windows, but instead contribute to broader, programmatic objectives. This enhances policy coherence and strengthens the overall development and climate impact of investments. Third, well-defined missions can play a critical role in reducing perceived risks among investors and financiers. When projects are part of a credible, government-led strategy with clear priorities, robust governance and long-term commitment, they signal greater institutional reliability and implementation capacity. Finally, a mission-based approach allows for a more effective and purposeful use of blended finance instruments. Rather than focusing narrowly on maximising private capital mobilisation or headline leverage ratios, it reorients the operational focus toward clearly defined climate and development outcomes. In this framework, strong publicly defined objectives and policy direction serve as the primary drivers for attracting private investment, rather than relying solely on de-risking mechanisms or financial guarantees.

At the country level, NDCs and NAPs serve as practical mission-setting instruments, translating the Paris Agreement's objectives into national investment priorities and providing an agreed strategic framework around which project pipelines can be built and investor expectations anchored.

NDCs represent politically backed, short- to medium-term climate plans that are updated every five years with increasing ambition, and – if used effectively – constitute a structured pathway for tackling not only climate change but also interconnected development priorities such as energy access and food security. However, the continent's annual climate flows in 2021/22 accounted for only 23 per cent of the estimated amount required to implement African countries' NDCs by 2030 – underscoring the need for mission-aligned financing frameworks that can anchor investment pipelines around these national commitments and signal credible, bankable priorities to both public and

private financiers.[34] This gap also points to the importance of embedding NDC targets into national budgets and long-term development plans, so that climate objectives are treated as central pillars of national economic strategies.

Beyond the national level, a mission-based approach can also be effectively applied at the supranational and regional level. The African Union's Agenda 2063 stands as a clear illustration of this potential.[35] It is Africa's blueprint and master plan for inclusive and sustainable development – a concrete manifestation of the pan-African drive for unity, self-determination and collective prosperity, built around seven aspirations, twenty goals and thirty-nine priority areas. Among its core aspirations, Agenda 2063 explicitly calls for environmentally sustainable, climate-resilient development – including adaptive measures to address climate change risks and the expanded use of renewable energy. Critically, it is designed to be implemented at national, regional and continental levels simultaneously, with each country inspired by the same set of goals while developing policies adapted to its own circumstances.

These principles are finding concrete expression in several ongoing initiatives. On the recipient side, the Mission 300 initiative[36] – co-led by the World Bank Group and the African Development Bank – provides one of the most compelling illustrations of a mission-based approach applied at scale to clean energy access. Launched with the single, clearly defined goal of connecting 300 million Africans to electricity by 2030, Mission 300 secured the endorsement of 48 countries through the Dar es Salaam Energy Declaration in January 2025, explicitly aligning the initiative with the African Union's Agenda 2063. The first phase saw twelve countries – Chad, Côte d'Ivoire, the Democratic Republic of Congo, Liberia, Madagascar, Malawi, Mauritania, Niger, Nigeria, Senegal, Tanzania and Zambia – present National Energy Compacts,[37] serving as country-specific blueprints with targets and timelines for implementation of critical energy sector reforms. A second cohort of 17 countries presented their Compacts in September 2025, bringing the total number of African governments with finalised Compacts to 29, with each country setting its own

34 Alberti, Caroline, "Leveraging NDC Updates to Bridge the Climate Finance Gap", in *Climate Policy Initiative Blog*, 14 January 2025, https://www.climatepolicyinitiative.org/?p=83368.
35 African Union, *Agenda 2063: The Africa We Want*, cit.
36 AfDB website: *Mission 300*, https://www.afdb.org/en/node/89832.
37 Mission 300 Africa Energy Summit website: *Compacts*, https://mission300africa.org/compacts.

targets based on national context and governments encouraged to hold public consultations with civil society in their development. All Compacts share a common structure focused on five priority reform areas: expanding generation and transmission; promoting regional integration; scaling last-mile access; enabling private sector participation; and improving utility financial viability. This architecture – a clear continental mission, government-owned national compacts, coordinated multilateral financing and structured accountability mechanisms – exemplifies how mission-based approaches can reduce fragmentation, build investor confidence and anchor a structured pipeline of investable projects.

On the donor side, Italy's Mattei Plan for Africa,[38] launched in January 2024 with an initial envelope of 5.5 billion euros, represents an ongoing experiment in mission-oriented bilateral engagement. The Plan consolidates Italian development assistance under a single strategic framework organised around five priority pillars – education, health, energy, agriculture and water – with a results-oriented, co-creation approach involving pilot countries across the continent. While the Plan's implementation remains at an early stage and its coherence with climate commitments continues to be the subject of scrutiny, it illustrates a broader trend among donor governments toward organising their Africa engagement through structured, multi-sectoral missions – with clear objectives, dedicated governance mechanisms and coordinated financing – rather than fragmented, project-by-project assistance.

3.2 Structured intermediation platforms for climate finance mobilisation

To address the persistent difficulty of matching available climate finance with bankable projects – as well as the high transaction costs involved in achieving this alignment – recent initiatives have increasingly focused on the creation of structured intermediation platforms. These platforms operate across multiple stakeholders on both the demand and supply sides of climate finance, intervening at different stages of project maturity and providing a

38 Italian Government, *The Six Pillars of the 'Mattei Plan',*15 March 2024, https://www.governo.it/sites/governo.it/files/Italia-Africa_MatteiPlan_6pillars.pdf.

range of complementary services aimed at bridging the gap between project development and financing. In doing so, they help reduce information asymmetries, streamline project preparation processes and facilitate more efficient interactions between project developers and financiers. Two promising examples of this approach are represented by the UNDP programmes PISTA and Energy for Growth in Africa, whose operational models and early results are presented in Boxes 1 and 2 below.

Box 1 | Platform for investment support and technical assistance

Launched in 2024, PISTA is an initiative of the UNDP, developed in collaboration with Italy's Ministry of Environment and Energy Security and hosted at the UNDP Rome Centre for Climate Action and Energy Transition. PISTA aims to support developing economies in their decarbonisation efforts and in their transition toward climate-resilient development pathways. It does so by identifying promising climate-related projects proposed by public entities, public–private partnerships, or private developers, strengthening their technical and financial readiness and helping connect them with potential sources of financing.

Operationally, the programme provides different types of support depending on the maturity of the projects and the institutional environment in which they are proposed. This includes midstream support to improve project design, feasibility and environmental, social and gender safeguards, thereby enhancing bankability; downstream assistance for mature projects through financial structuring and transaction support to connect them with potential financiers. It also provides, where necessary, upstream interventions to improve enabling conditions for investment, including regulatory alignment and institutional capacity-building, helping governments translate climate commitments – such as NDCs and NAPs – into investment-ready pipelines.

By combining technical assistance with continuous engagement with financiers – including national development finance institutions (DFIs), MDBs and private investors – the platform seeks to address both demand-side capacity gaps and supply-side constraints that limit the effective mobilisation of climate finance. PISTA acts as an intermediary mechanism that reduces information asymmetries between project developers and financiers while

lowering the transaction costs and risks associated with preparing projects and structuring investments in developing economies.

UNDP's extensive field presence across 170 countries and territories, through its network of country offices and regional hubs, represents a key asset leveraged by the platform. This global reach, combined with UNDP's context-specific knowledge, long-standing partnerships with local communities and public and private stakeholders and decades of experience in climate and development programming as well as sustainable finance, enables the platform to operate effectively across diverse contexts. These strengths contribute to the identification and selection of robust, high-impact projects while fostering trust among stakeholders and reducing financiers' perceived risks regarding the credibility and bankability of the initiatives supported by the programme.

The platform currently focuses primarily on Africa and targets several sectors related to climate mitigation and adaptation, including climate-resilient agriculture, clean energy and green infrastructure. In 2026, it will expand to other regions, including Western Balkans, Latin America and Asia. Early results illustrate the potential of this approach. Within its first year of operation (2025), PISTA allocated more than 2.5 million US dollars in grants to support 16 projects across Africa, with the objective of unlocking up to 500 million in financing. Several of these projects have already entered into discussions with potential investors. A clear example in this regard is the partnership with Cassa Depositi e Prestiti (CDP), Italy's leading development bank. Currently, two projects are in the due diligence phase with CDP, with a combined value of 220 million euros in loans and grants – one focused on rural electrification in Mauritania and the other on industrial decarbonisation in Egypt.

The programme has also received international recognition. It is referenced in Article 33(d) of the "Compromiso de Sevilla", the outcome document of the Fourth International Conference on Financing for Development, approved by 192 United Nations member states and expected to become a key reference for the future architecture of international development finance. The document identifies PISTA as a key operational platform for climate-related projects and encourages its further scaling, including through the involvement of multilateral development banks, which are invited to consider establishing a common technical assistance mechanism.

Box 2 | Energy for Growth in Africa

Energy for Growth in Africa is an initiative proposed in 2024 by Italy's Ministry of Environment and Energy Security during Italy's G7 Presidency and implemented by the UNDP since 2025. Its objective is to accelerate the deployment of financing for clean energy projects that foster economic development across participating African countries. The initiative is currently active in ten countries (Republic of the Congo, Côte d'Ivoire, Ethiopia, Kenya, Mauritania, Mozambique, Rwanda, Tanzania, Tunisia and Zambia) and has already received significant international recognition, including endorsement by G7 leaders and seven African partner countries at the 2024 Apulia Summit.

Operationally, the programme provides multi-level support to clean energy projects addressing key barriers preventing promising initiatives from reaching the financing stage. UNDP Rome Centre for Climate Action and Energy Transition serves as the central coordinating unit for implementation and as the key interface with international financial partners. Delivery on the ground is ensured through dedicated programme staff – energy finance experts embedded within UNDP Country Offices in participating countries. This operational model enables the programme to combine strong engagement with donors with in-depth country-level knowledge and established local partnerships.

Energy for Growth in Africa intervenes along three complementary dimensions. First, the programme supports project origination and early-stage development. It identifies and supports clean energy projects at their early stages of development within each participating country. Projects are assessed through a comprehensive three-tier evaluation framework covering technical soundness, financial viability and social and environmental standards. This process helps identify each project's strengths and weaknesses and informs decisions on how it should progress within the pipeline – either through targeted technical assistance or through direct connections with potential financiers. The programme covers a wide range of clean energy technologies, including wind power, mini-grids, solar photovoltaics, hydropower, e-mobility, clean cooking, bioenergy and geothermal energy. Project pipelines are developed in close collaboration

with national stakeholders and tailored to the specific energy needs and market conditions of each country. They are designed to align with national energy strategies and development priorities while also supporting countries' international climate commitments.

A second area of support focuses on strengthening the robustness and investment readiness of identified projects. The programme facilitates access to technical assistance instruments – most notably PISTA, with which it operates in close synergy – as well as other external technical assistance facilities. These instruments support key activities such as feasibility studies, environmental and social safeguards assessments and the structuring of power purchase agreements. In parallel, the programme works to mobilise financial resources aimed at mitigating key project risks. These include credit risk, currency volatility and off-taker risk, which are addressed through de-risking mechanisms such as guarantees and insurance instruments.

A third level of intervention focuses on connecting project developers with international development finance institutions, particularly those with mandates focused on Africa and the energy sector. This engagement aims to unlock concessional financing and blended finance structures capable of mobilising private capital and scaling investment in clean energy.

In addition, the coordinating team based in Rome is responsible for building strategic partnerships with key stakeholders that are critical to the development of the project pipeline. These include DFIs, climate funds, private investors and technical assistance providers. Through these partnerships, the programme explores opportunities for external technical assistance grants, co-financing arrangements and risk-sharing mechanisms to support the advancement of projects within the pipeline. At the same time, global forums, investor platforms and targeted partnership events are leveraged to facilitate dialogue on best practices in energy project financing in Africa. These platforms also provide opportunities to showcase investment-ready clean energy projects and connect them directly with international financiers.

Preliminary results point to the potential of the Energy for Growth in Africa initiative. To date, the programme has supported the origination of 14 projects, representing an estimated combined investment requirement of over 2 billion US dollars. Of these, four projects have secured technical assistance grants through PISTA, totalling more than 650,000 US dollars.

In addition, three projects are currently under review by potential financiers and are progressing through discussions regarding possible financing.
The strategic value of Energy for Growth in Africa lies in its capacity to address one of the most pressing challenges facing the continent: expanding access to reliable, affordable and sustainable energy. Achieving widespread availability of clean energy is a prerequisite for economic development, industrialisation and improved living standards, while also enabling African countries to pursue development pathways consistent with both national and global climate objectives.

4. Emerging opportunities

4.1 Cost declines in climate technologies

The steep and sustained decline in the cost of key climate mitigation and adaptation technologies over the past decade has materially improved the economic viability of climate investments across Africa, transforming what were once prohibitively expensive interventions into increasingly scalable solutions.

In the power sector, the transformation has been most dramatic and is well documented. Solar PV experienced an 86 per cent reduction in total installed costs between 2010 and 2023 – falling from 5,310/kW to 758 US dollars/kW – while its levelized cost of electricity (LCOE) dropped 90 per cent, from 0.46/kWh to 0.044 US dollar/kWh; onshore wind simultaneously saw a 49 per cent decrease in installed costs and a 70 per cent decline in LCOE over the same period.[39] By 2024, solar PV was on average 41 per cent cheaper than the lowest-cost fossil fuel alternatives globally, and onshore wind was 53 per cent cheaper; 91 per cent of all new renewable power projects commissioned that year were more cost-effective than any new fossil fuel alternative.[40]

39 IRENA, *Renewable Power Generation Costs in 2023*, cit.
40 IRENA, *Renewable Power Generation Costs in 2024*, Abu Dhabi, IRENA, July 2025, https://www.irena.org/Publications/2025/Jun/Renewable-Power-Generation-Costs-in-2024.

These global trends have directly transformed the African energy landscape: global technology cost reductions have improved the competitiveness of clean energy, and solar PV now represents the least-cost source of power in many African countries – a dynamic that has contributed to a tripling of private sector clean energy investment on the continent, rising from around 17 billion US dollars in 2019 to almost 40 billion in 2024.[41] Yet despite Africa hosting 60 per cent of the best solar resources globally, the continent increased its renewables capacity by only 7.2 per cent in 2024 and accounted for just 2.8 per cent of total global renewables capacity additions, highlighting a stark and widening regional investment divide.

The economics of energy storage – critical for integrating variable renewables into Africa's fragile and often isolated grids – have also improved dramatically: the cost of battery energy storage systems declined by 93 per cent since 2010, reaching 192 US dollars/kWh for utility-scale systems in 2024, driven by manufacturing scale-up and improved materials.[42]

Falling technology costs have also widened the range of viable solutions for climate-resilient agriculture, a sector facing acute pressure across a continent where 90 per cent of cropland remains rain-fed. According to recent studies, standalone solar PV irrigation systems have the potential to meet more than a third of the water needs of small-scale crops across sub-Saharan Africa, with an estimated average investment requirement of 3 billion US dollars per year generating potential profits of over 5 billion US dollars per year from increased smallholder yields, alongside food security and energy access co-benefits.[43] Field evidence from East Africa extends this picture: agrivoltaic systems studied in Tanzania and Kenya – where solar panels are mounted above farmland – demonstrated improved crop survivability during warm periods, reduced irrigation demand, and simultaneous contributions to energy security, climate-resilient food production and water conservation.[44]

41 IEA, "Africa", in *World Energy Investment 2025*, Paris, IEA, 2025, https://www.iea.org/reports/world-energy-investment-2025/africa.

42 IRENA, *Renewable Power Generation Costs in 2024*, cit.

43 Falchetta, Giacomo et al., "Solar Powered Irrigation: A Game-Changer for Small-Scale Farms in Sub-Saharan Africa", in *IIASA News*, 23 August 2023, https://iiasa.ac.at/node/2984.

44 Cinderby, Steve et al., "Harnessing the Sun for Agriculture: Pathways to the Successful Expansion of Agrivoltaic Systems in East Africa", in *Energy Research & Social Science*, Vol. 116 (October 2024), Article 103657, https://doi.org/10.1016/j.erss.2024.103657.

On the adaptation side, early warning systems have become the paradigmatic illustration of high climate and economic returns at low cost. Early warning systems are now widely recognised as cost-effective tools that save lives, reduce economic losses and provide a nearly tenfold return on investment.[45] Progress under the UN's Early Warnings for All (EW4All) initiative is measurable: comprehensiveness scores for early warning system capabilities increased by an average of 45 per cent across all regions since 2015; Africa has seen the greatest progress of any region, with a 72 per cent increase in comprehensiveness, though it remains the region with the lowest absolute score.[46] These matters given the scale of Africa's climate vulnerability: according to institutional sources, African countries are on average losing 2-5 per cent of GDP and many are diverting up to 9 per cent of their budgets to responding to climate extremes, with up to 118 million extremely poor people at risk of exposure to drought, floods and extreme heat by 2030 in the absence of adequate response measures.[47]

Across all these technology domains, however, falling equipment costs have not neutralised Africa's deep structural financing constraints. While the average LCOE for onshore wind in Africa and Europe is broadly similar – around 0.051/kWh and 0.052 US dollar/kWh respectively – the underlying cost structures differ markedly: in Europe, LCOEs are driven primarily by capital expenditure, whereas in Africa, financing costs account for the majority share, with IRENA's weighted average cost of capital (WACC) assumptions ranging from 3.8 per cent in Europe to 12 per cent in Africa.[48]

4.2 Technological innovation

Beyond cost reductions in physical hardware, a distinct and rapidly accelerating layer of technological innovation – centred on artificial intelligence (AI), machine learning (ML) and satellite-based remote sensing – is beginning to transform what is operationally possible in climate planning, risk assessment

45 Early Warnings for All Initiative website: *Early Warnings for All*, https://earlywarningsforall.org/node/22533.
46 WMO, *Global Status of Multi-Hazard Early Warning Systems 2025*, Geneva, WMO, 12 November 2025, https://library.wmo.int/idurl/4/69684.
47 WMO, *State of the Climate in Africa 2023*, cit.
48 IRENA, *Renewable Power Generation Costs in 2024*, cit.

and environmental monitoring across Africa, a continent where the scarcity of ground-based observational infrastructure has historically constrained the quality and reach of climate information services.

The most documented application in the African context is AI-enhanced weather forecasting and early warning. Traditional numerical weather prediction systems require dense networks of observation stations and high-performance computing infrastructure that are largely absent across much of the continent; AI-based models overcome this constraint by learning from global patterns of atmospheric and hydrological behaviour, enabling skilful forecasts even in data-sparse settings. The World Meteorological Organization (WMO) has formally integrated AI into its operational agenda: its Executive Council in June 2025 approved a dedicated AI Action Plan, and an Extraordinary World Meteorological Congress in November 2025[49] adopted resolutions anchoring AI and ML within the WMO Integrated Processing and Prediction System (WIPPS), calling on public, private and academic sectors to collaborate on shared, open-data AI tools for forecasting, with explicit attention to the needs of low- and middle-income countries, LDCs and small island developing states (SIDS).

In the domain of climate risk assessment and agricultural adaptation, machine learning models trained on satellite remote sensing data are generating new analytical capacities for drought monitoring, crop yield forecasting and land degradation tracking.[50] Remote sensing is also being used to track carbon dynamics in African forests with increasing temporal granularity.[51] The WMO further documents that AI is already being used in Kenya to guide pastoralists through drought conditions via mobile applications integrating satellite and meteorological data and is being deployed to model displacement risks in climate hotspots such as Burundi and Chad to inform humanitarian planning – illustrating how the same underlying analytical capabilities can serve purposes

49 WMO, *World Meteorological Congress Endorses Actions to Promote AI for Forecasts and Warnings*, 24 October 2025, https://wmo.int/node/32955.

50 Sseguya, Fred and Kyung-Soo Jun, "Drought Quantification in Africa Using Remote Sensing, Gaussian Kernel, and Machine Learning", in *Water*, Vol. 16, No. 18 (2024), Article 2656, https://doi.org/10.3390/w16182656.

51 Csillik, Ovidiu et al., "Rapid Remote Monitoring Reveals Spatial and Temporal Hotspots of Carbon Loss in Africa's Rainforests", in *Communications Earth & Environment*, Vol. 3 (2022), Article 48, https://doi.org/10.1038/s43247-022-00383-z.

ranging from agricultural resilience to anticipatory humanitarian response.[52]

At the international policy level, the UNFCCC Technology Mechanism – through its joint #AI4ClimateAction initiative led by the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN) – has conducted a systematic review of AI's role in climate action in developing countries. A CTCN analysis of 169 nationally determined contributions (NDCs)[53] found that, as of February 2024, 57 developing countries referenced digital technologies in their NDCs, with AI explicitly named as a delivery mechanism by five; the TEC's July 2025 technical paper on AI for climate action,[54] launched at the AI for Good Global Summit, identifies flood early warning systems, food security monitoring, drought prediction and renewable energy grid management as the most mature AI application domains for LDCs and SIDS, while also flagging risks including the widening of the digital divide, data security concerns and the risk of reinforcing existing inequalities.

These structural constraints are directly relevant to Africa: the continent's climate AI ecosystem remains limited by fragmented observational infrastructure, low density of labelled training data, insufficient computational capacity at national meteorological services – needed to develop, validate and maintain AI systems locally rather than depending on externally produced tools whose assumptions may not reflect African climatic and socioeconomic realities.

Conclusions

The analysis presented in this paper points to a climate finance landscape in Africa defined by a persistent divergence between the scale of resources required and those actually deployed. In addition, the fiscal space of traditional institutional donors is reducing, making the role of private capital and actors

52 Jean, Michel et al., "Forecasting the Future: The Role of Artificial Intelligence in Transforming Weather Prediction and Policy", in *WMO Bulletin*, Vol. 74, No. 2 (2025), https://wmo.int/node/31403.
53 UNFCCC Technology Executive Committee, *Artificial Intelligence for Climate Action in Developing Countries: Opportunities, Challenges and Risks*, November 2024, https://unfccc.int/ttclear/tec/AI4climate.html#infonote.
54 UNFCCC Technology Mechanism website: *Technology Mechanism Initiative on AI for Climate Action*, https://unfccc.int/ttclear/artificial_intelligence.

more and more crucial to enhance Africa's infrastructure, energy and climate resilience capacity.

The continent currently mobilises only around 23 per cent of the annual climate finance needed to implement its NDCs by 2030,[55] and private finance – despite recent growth – remains structurally marginal at 18 per cent of total flows, concentrated in a handful of middle-income markets and commercially mature sectors.[56] Closing this gap cannot rely on public finance alone, nor on incremental adjustments to existing blended finance instruments whose structural shortcomings are by now well-documented. The cost of capital for utility-scale clean energy projects in Africa remains at least two to three times higher than in advanced economies,[57] and with average WACC in Eastern Africa reaching 15.6 per cent,[58] even economically sound projects struggle to reach bankability without concessional support. What is required is a more fundamental rethinking of what private sector engagement in Africa's climate transition should look like – and of the conditions that make it productive rather than merely transactional. Three dimensions stand out as particularly consequential.

Technology transfer and innovation

The first, and most significant, contribution of private sector participation to climate action in Africa is not capital alone – it is the bundle of technology, operational knowledge and long-term market commitment that structured private engagement can catalyse. The dramatic decline in the cost of solar PV, battery storage and onshore wind has fundamentally altered the economics of the clean energy transition – yet Africa increased its renewables capacity by only 7.2 per cent in 2024 and accounted for just 2.8 per cent of global capacity additions.[59] This gap reflects not a failure of economics but of access: the absence of private actors with the technical expertise, supply chains

55 Meattle, Chavi et al., *Landscape of Climate Finance in Africa 2024*, cit.
56 Ibid.
57 IEA, *Financing Clean Energy in Africa*, Paris, IEA, November 2023, https://www.iea.org/reports/financing-clean-energy-in-africa.
58 Clean Air Task Force (CATF), "Evaluating the Weighted Average Cost of Capital (WACC) in the Power Sector for African Countries", in *CATF Working Papers*, October 2024, https://www.catf.us/?p=32347.
59 IEA, "Africa", cit.

and implementation experience to deploy and adapt technologies to local conditions (including the traditional reliance of countries on the use of fossil fuel resources mostly for export and driven by western demand).

When private companies invest in African markets through structured development partnerships rather than purely transactional arrangements, they bring with them proprietary technology platforms, engineering methodologies, quality assurance systems and operational know-how that domestic actors would require years to develop independently. This is an important element that needs to be progressively strengthened for the long-term benefit of host countries and for the creation of durable local market conditions. Private clean energy investment on the continent nearly tripled between 2019 and 2024, rising from 17 billion US dollars to close to 40 billion,[60] and where this engagement has been deepest, positive spillover effects to local technical skills, regulatory frameworks and financial institutions are discernible.[61]

Technology transfer of this kind does not, however, occur automatically. It requires deliberate structuring: concession design, joint venture requirements, open data-sharing commitments and technology localisation standards embedded in procurement frameworks. Platforms such as PISTA and Energy for Growth in Africa are well-placed to shape the contractual architecture of private entry in ways that treat technology diffusion as a programmatic objective rather than an incidental benefit.

Strengthening local capacity for long-term value

The second dimension concerns the private sector's role in building durable local productive capacity – the foundation on which a self-sustaining pipeline of African-owned climate projects ultimately depends. The most binding constraints on Africa's climate finance pipeline are demand-side: a shortage of investment-ready projects, limited technical capacity to structure proposals and financial instruments, and institutional environments characterised by

60 Ibid.
61 IEA, *Financing Clean Energy in Africa*, cit.

regulatory uncertainty.[62] Addressing these constraints requires sustained investment in people, institutions and local business ecosystems – not only in physical infrastructure.

Private sector actors engaged in climate projects in Africa through long-term concessions, public-private partnerships, or blended finance structures are structurally positioned to make this investment, provided their engagement is designed to do so. The most effective models are those in which private companies treat local capacity not as a compliance requirement but as a business asset: investing in local workforce development, subcontracting to domestic suppliers, integrating local professionals into project management and technical functions, and progressively transferring operational responsibility to in-country teams. This approach builds a local contractor and supplier base that reduces project costs over time, generates the organisational knowledge needed for domestic actors to originate and structure future investments independently, and creates the political legitimacy that sustains private sector access to markets over the long term. Private actors with genuine long-term market commitments have strong economic incentives to build the local capacity on which the competitiveness and sustainability of their own operations depend.

The Mission 300 National Energy Compacts reflect a growing multilateral recognition of this logic, explicitly listing the enablement of local private sector participation as one of their five priority reform areas.[63] The operational model of Energy for Growth in Africa similarly integrates country-level pipeline development through local stakeholder partnerships as a structural feature of programme design. The implication for private sector engagement frameworks more broadly is clear: local content provisions, workforce development commitments and institutional partnership requirements are not secondary or discretionary elements of investment agreements. They are conditions for the long-term developmental impact and commercial sustainability of the climate finance mobilised.

62 Tyndall, Jo et al., *Investing in Climate for Growth and Development*, cit.; IEA, *Financing Clean Energy in Africa*, cit.

63 Mission 300 Africa Energy Summit website: *Compacts*, https://mission300africa.org/compacts.

Mobilising private climate finance into projects

The third dimension concerns the direct mobilisation of private climate capital into development projects at scale. The International Energy Agency estimates that 28 billion US dollars in concessional capital per year is required to mobilise 90 billion in private investment annually by 2030 – a more than tenfold increase from current levels.[64] This ratio underscores a structural reality: public and private capital are not alternative channels but co-dependent ones. Public de-risking – through guarantees, concessional equity, political risk insurance and currency hedging instruments – creates the conditions for private capital to move; private capital at scale in turn reduces the burden on public budgets for subsequent investment cycles.

Private climate capital flowing into Africa originates from a heterogeneous set of actors with distinct risk tolerances and return expectations. DFIs – including the International Finance Corporation, British International Investment, Proparco and the European Investment Bank – remain among the most active, typically providing long-tenor debt or equity in blended structures that crowd in commercial co-investors. Among purely commercial players, infrastructure-focused private equity funds and specialised climate funds have shown the greatest appetite, particularly for utility-scale renewables in markets with established regulatory frameworks. European institutional investors, driven by Directive (EU) 2022/2464 (or CSRD) obligations and net-zero portfolio commitments, represent a growing source of demand, though they remain sensitive to currency and political risk. By contrast, US private capital has shown declining engagement following its early 2025 withdrawal from the Just Energy Transition Partnership (JETP) process.[65]

The strategies currently in place are necessary but not yet sufficient. Blended finance and DFI de-risking instruments reduce the headline risk premium but do not fully resolve the structural deterrents – currency volatility, offtaker creditworthiness and regulatory unpredictability – that keep commercial

64 IEA, *Financing Clean Energy in Africa*, cit.

65 Csanadi, Alexander and Daniel Helmeci, "The Just Energy Transition Partnership Crossroads", in *Carnegie Papers*, October 2025, https://carnegieendowment.org/research/2025/10/the-just-energy-transition-partnership-crossroads.

capital on the sidelines. What is missing is a more systematic approach to sequencing: building the enabling environment first, then deploying de-risking instruments, rather than using concessional capital to paper over the absence of fundamentals. Platforms like PISTA and Energy for Growth are moving in this direction, but the gap between instrument design and deployment at scale remains significant.

The Just Energy Transition Partnerships represent the most prominent recent attempt to operationalise this logic at the country level. South Africa's JETP mobilised a total package of 13.7 billion US dollars from international partners and multilateral development banks,[66] and despite well-documented implementation challenges – including delayed disbursements, the US withdrawal in early 2025,[67] and slower-than-anticipated private capital mobilisation – the partnership produced a replicable institutional architecture: a dedicated programme management unit, systematic DFI and private investor engagement, and a monitoring framework that has been formally characterised as a model for future country platforms.[68]

Looking ahead, two channels deserve particular attention as sources of additional private climate finance, alongside a structural risk that requires dedicated policy treatment.

The first is Africa's domestic institutional investor base. Africa's pension funds and sovereign wealth funds hold over 1.3 trillion US dollars in assets under management,[69] yet the AfDB has estimated that over 80 per cent of those assets remain locked in government treasuries, with less than 1.5 per cent allocated to infrastructure or alternatives.[70] This allocation gap represents one of the most significant and underutilised pools of long-term capital on the continent.

66 UK Government, *12-Month Just Energy Transition Partnership Leaders' Update 2025*, 9 December 2025, https://www.gov.uk/government/news/12-month-just-energy-transition-partnership-leaders-update-2025.

67 Csanadi, Alexander and Daniel Helmeci, "The Just Energy Transition Partnership Crossroads", cit.

68 UK Government, *12-Month Just Energy Transition Partnership Leaders' Update 2025*, cit.

69 NextBillion and AVPA, *Mobilising Pension and Sovereign Wealth Funds for Africa's Sustainable Growth* (webinar summary), 30 September 2025, https://nextbillion.net/?p=118059.

70 AfDB, *AfDB Annual Meetings 2025: Billions in Domestic Capital to Drive Africa's Development Idling in Pension Funds, Experts Say*, 29 May 2025, https://www.afdb.org/en/node/84220; Africa Financial Summit Platform (AFIS), *2025 Programme*, 3-4 November 2025, https://www.afis.africa/en/?p=3689.

Where regulatory frameworks and appropriately structured instruments exist – including climate infrastructure bonds and locally rated project finance vehicles – domestic institutional capital has shown it can move at meaningful scale: pooled consortia of pension funds, insurers and sovereign wealth funds in Kenya and South Africa have already mobilised 500 million US dollars for infrastructure over three years.[71] Africa's domestic institutional investor base therefore represents a structurally underutilised source of long-term capital rather than a primary or near-term solution to the financing gap. Unlocking even a modest share of this capital would be meaningful at the margin, but it is best understood as a complementary channel alongside DFI leverage and international private finance, not a substitute for either. Regulatory reform, the development of a regional green taxonomy, and a deeper domestic capital market are preconditions for this channel to scale.[72]

The second is voluntary carbon markets: the Africa Carbon Markets Initiative targets 6 billion US dollars in annual carbon credit revenues by 2030 and has already secured over 1 billion in corporate demand commitments.[73] With the Science Based Targets initiative surpassing 10,000 companies with validated targets,[74] corporate demand for high-integrity African credits is set to grow – provided the integrity architecture, including Africa-owned verification standards, keeps pace with market ambition.[75]

A third, cross-cutting challenge that runs through both channels is currency risk. Currency risk represents one of the most persistent yet under-addressed barriers to private climate investment in Africa: the vast majority of debt financing is denominated in hard currency, creating dangerous mismatches when project revenues are in local currency – and in frontier markets, where

71 AFIS, *2025 Programme*, cit.

72 OECD, *Africa Capital Markets Report 2025*, Paris, OECD, https://doi.org/10.1787/7d26e1d3-en.

73 Global Energy Alliance, *Africa Carbon Markets Initiative Builds on Momentum from COP27, Announces 13 Action Programs*, 16 January 2023, https://energyalliance.org/?p=8327; Bekele-Thomas, Nardos, "Africa's Carbon Market Awakening: From Potential to Power", in *African Business*, 23 June 2025, https://african.business/2025/06/partner-content/africas-carbon-market-awakening-from-potential-to-power.

74 Science Based Targets initiative, *Corporate Climate Target-Setting Up 40% in 2025*, 9 April 2026, https://sciencebasedtargets.org/news/corporate-climate-target-setting-up-40-in-2025-with-asia-emerging-as-a-centre-of-gravity.

75 Africa Carbon Markets Initiative, *Status and Outlook Report for 2024-25*, July 2024, https://africacarbonmarkets.org/wp-content/uploads/2024/07/ACMI_Status-and-Outlook-Report-2024-_v2.pdf.

currency volatility is highest, risk-reflective hedging costs are often prohibitively expensive.[76]

The structural reforms and platform initiatives analysed in this paper – from PISTA's transaction-level technical assistance to Mission 300's continental mobilisation architecture – are best understood not as isolated interventions but as complementary elements of an emerging paradigm for public-private climate partnership in Africa. What distinguishes this paradigm from its predecessors is its insistence on the primacy of climate and development outcomes over financial engineering, on African institutional ownership over donor-driven design, and on the sustained reinforcement of local capacity and business ecosystems over the extraction of short-term returns. Private capital at the scale Africa requires will follow when these conditions are met – not before.

76 TCX, "Blended Finance for Local Currency Solutions", in *TCX Insights*, February 2026, https://www.tcxfund.com/wp-content/uploads/2026/02/TCX-Insights-Blended-finance-for-local-currency-solutions.pdf.

Abbreviations

AI	Artificial intelligence
CDP	Cassa Depositi e Prestiti
CSRD	Corporate Sustainability Reporting Directive
CTCN	Climate Technology Centre and Network
DFI	Development finance institution
GDP	Gross domestic product
GW	Gigawatt
JETP	Just Energy Transition Partnership
kW	Kilowatt
kWh	Kilowatt per hour
LCOE	Levelized cost of electricity
LDC	Least developed country
MDB	Multilateral development bank
ML	Machine learning
NAP	National Adaptation Plan
NDC	Nationally determined contribution
ODA	Official development assistance
PISTA	Platform for Investment Support and Technical Assistance
SIDS	Small island developing states
TEC	Technology Executive Committee
UN	United Nations
UNDP	UN Development Programme
UNFCCC	UN Framework Convention on Climate Change
US	United States
WACC	Weighted average cost of capital
WIPPS	WMO Integrated Processing and Prediction System
WMO	World Meteorological Organization

Making Climate Finance Work for Africa: Landscape, Challenges and Opportunities

Climate finance stands as the foremost instrument for translating Africa's sustainable development ambitions into reality. Today, Africa attracts less than 3 per cent of spending on energy. Yet the challenge is not only one of quantity – closing the vast funding gap that prevents African countries from pursuing green industrialisation, renewable energy expansion and climate-resilient economies – but equally one of quality and effectiveness. This paper examines the climate finance landscape as it pertains to the African continent, with a view to understanding the structural dimensions of the current funding architecture, and to mapping the scale and composition of climate finance flows to Africa. The paper then turns to the principal challenges that constrain the effective mobilisation and deployment of climate finance in African contexts. Drawing on this analysis, this work identifies a set of best practices, solutions and reform pathways.

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