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The Contemporary Issues in African Trade and Trade Finance (CIAT) is introduced by the bank to provide a platform for the staff of Afreximbank and other individuals knowledgeable in African trade and trade finance to publish articles in the areas of trade, trade finance and economic development in Africa. The CIAT publishes technical and non-technical papers. Edited by a committee, drawn from both internal and external sources, it also publishes relevant papers at conferences or seminars and those presented at the bank's internally organised Knowledge Sharing Sessions. The journal welcomes editorial comments and responses which will be considered for publication to the extent that space permits.

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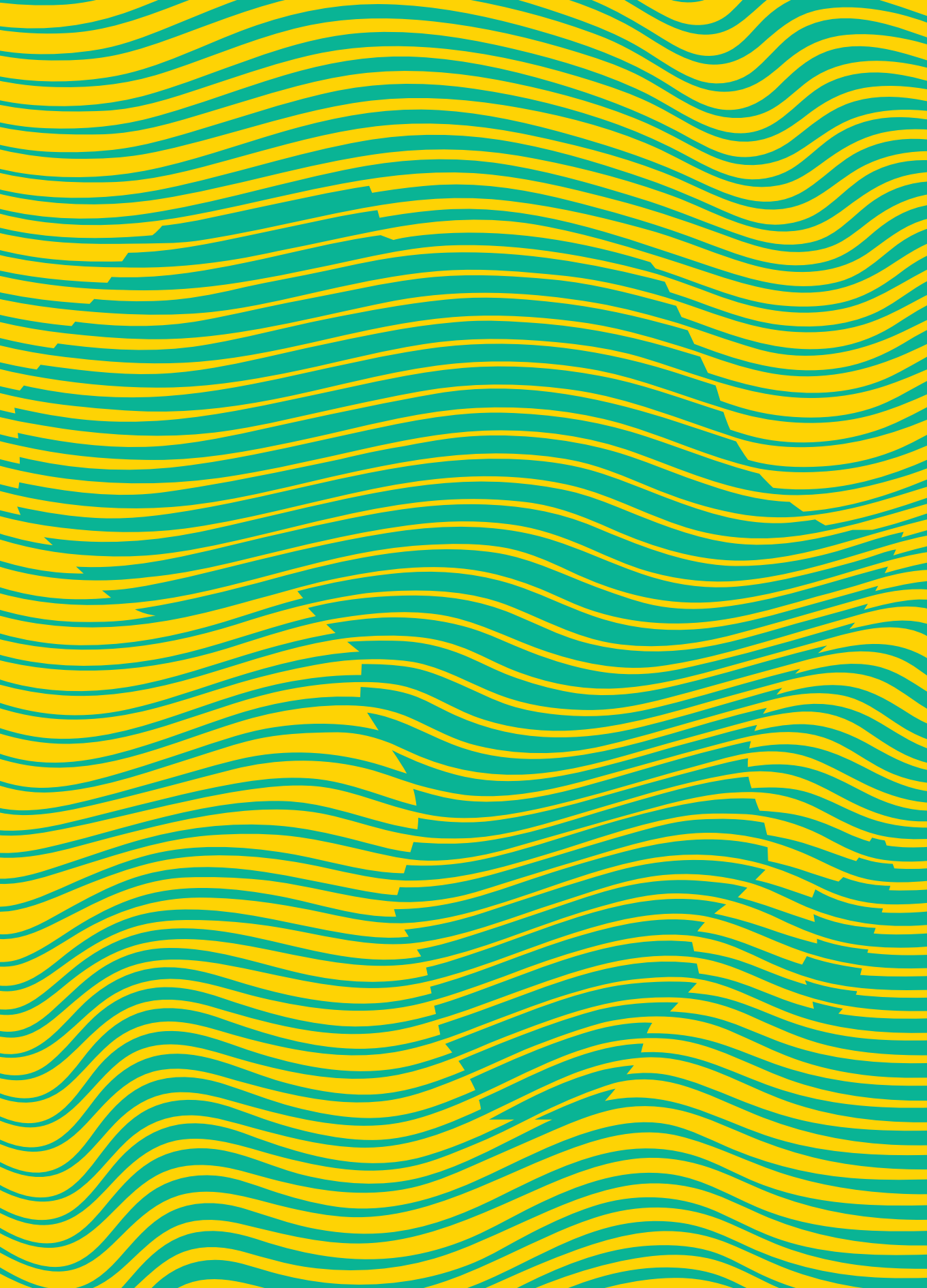


Foreword

In an era marked by rising protectionist sentiments, escalating geopolitical tensions, shifting economic alliances, and pervasive policy uncertainty, the global economic landscape presents significant challenges for developing economies, particularly in Africa.

The region is confronted with a significant finance deficit that hinders its growth. Accordingly, this edition of our journal brings together eight insightful articles that collectively examine the transformative potential of innovative financial and trade mechanisms in driving economic change across global African nations.

The central theme of these articles is the critical role of existing and emerging financial tools, trade policies, and strategic alliances in addressing the continent's challenges and leveraging its vast opportunities.

Roberta Allport's paper highlights on the systemic bottlenecks in trade finance that impede the participation in global trade by developing and emerging economies. Drawing on the World Trade Organisation's and, the International Finance Corporation's diagnostic studies, the paper offers practical and context-specific solutions to improve access to trade finance. A pioneering multi-theoretical framework integrating artificial intelligence (AI) and blockchain technology into African trade finance is proposed by **Ogechi Adeola** and **Olaniyi Evans**. The framework proposed would enhance efficiency, inclusivity, and auditability in the financial sector, marking a significant step towards modernising Africa's trade finance infrastructure.

In exploring the potential of digital currencies in Africa's trade finance landscape, **Anthony Kyereboah-Coleman** and **Kezia Boateng** emphasize the importance of establishing robust regulatory frameworks, adopting advanced technologies, and strengthening digital infrastructure. Their work underscores how digital currencies could revolutionize trade finance in Africa, provided these foundational elements are addressed. **Joshua Yindenaba Abor** and **George Nana Agyekum Donkor** further extend this discussion by examining the transformative power of central bank digital currencies (CBDCs) for trade and investment. They highlight the potential of CBDCs to reduce transaction costs, enhance cross border payments, and encourage financial inclusion across the continent.

Paul Terna Gbahabo's paper on trade finance as a policy tool for climate change action illustrates how green trade finance can mobilise private capital to support climate initiatives in Africa. His call for integrating climate criteria into trade finance regulations, is a pivotal step in aligning economic and environmental goals, ensuring sustainable development and economic diversification.

Oyeyemi Kale's paper presents a forward-thinking framework for Africa-Caribbean integration, grounded in shared challenges and strategic interests. By focusing on sovereign development, financial cooperation, and policy innovation, he outlines a path toward resilience and shared prosperity. The paper emphasizes the transformative potential of collaboration in trade, finance, and culture, positioning both regions as key players in shaping the global economic landscape. The paper also challenges conventional perspectives, offering a roadmap for a stronger and more integrated partnership in the global economy. **Raymond Boumbouya** and **Matthew Ocran** explore the potential of commodity-based industrialisation in Africa, advocating for the exploitation of the continent's mineral wealth and energy resources to build domestic processing industries and spur growth. Finally, the paper by **Khadijah Iddrisu** examines the impact of Chinese foreign direct investment (FDI) on Africa's economic development. She argues that improving the quality of local institutions is key to maximising the benefits of Chinese FDI, which can create jobs, reduce poverty, and enhance growth.

Collectively, these articles offer a forward-looking perspective on the financial and trade innovations needed to propel global Africa's economic transformation. We trust that this edition will inspire policymakers, researchers, and practitioners to embrace these transformative ideas and implement them to achieve development and prosperity.

George Elombi
President and Chairman of the Board of Directors African Export-Import Bank

Trade Finance and Financial Market Maturity: Practical Insights From WTO-IFC Diagnostic Studies

Roberta Allport

Abstract: This paper frames trade finance constraints as systemic bottlenecks to trade participation in developing and emerging economies. The paper draws on regional diagnostic studies conducted by the World Trade Organization (WTO) and the International Finance Corporation across West Africa, the Mekong, Central America, and Mexico and explores how modest improvements in access to, and affordability of, trade finance can yield meaningful trade gains when tailored to local financial ecosystems and embedded in broader institutional reform. The studies reveal limited formal coverage, persistent exclusion of small and medium enterprises, high market concentration, and elevated costs linked to gaps in financial infrastructure, weak credit information systems, limited regulatory support, and risk perceptions. Situating these challenges along a spectrum of financial sector maturity, the findings highlight how institutional, regulatory, technological, and market conditions shape the provision of trade finance. WTO model simulations suggest that easing constraints could raise trade volumes substantially, underscoring the need for context-specific reforms and coordinated multi-actor responses.

Keywords: Trade Finance Gaps; Financial Market Maturity; Small and Medium Enterprise Access to Finance, Correspondent Banking Relationships: WTO.
JEL Classification: F10, F34, G21, O16, O19, L26.

Acknowledgements: I would like to express my sincere gratitude to Marc Auboin for his invaluable guidance and support throughout the drafting of this note. His insights, critical feedback, and deep expertise in trade finance were instrumental in shaping the analysis and strengthening the quality of the work. Any remaining errors or omissions are my own.

Introduction

Trade finance is essential for Africa's integration into global markets, yet it remains both limited and unevenly distributed across the continent. Persistent gaps in provision undermine the continent's ability to participate fully in global trade, and they constrain the growth of small and medium enterprises, which form the backbone of African economies. The African Export-Import Bank (Afreximbank) and the African Development Bank estimate unmet demand for trade finance in Africa at about US$81 billion annually, or roughly 40% of Africa's total trade finance needs (African Development Bank and African Export Import Bank, 2020). Small and medium enterprises are most affected, with more than half their requests rejected compared with fewer than 1 in 10 for multinational corporations (African Development Bank and African Export Import Bank 2020). These shortfalls are not marginal; they are structural and systemic, with direct implications for Africa's capacity to expand exports, participate in value chains, and to achieve both regional integration and inclusive growth.

The absence of a comprehensive global dataset on bank-intermediated trade finance makes it difficult to understand the scale and drivers of the trade finance gap (Bank of International Settlements 2014). Current analyses must therefore rely on a patchwork of sources, including national statistics and data from the Society for Worldwide Interbank Financial Telecommunication (SWIFT) and the International Chamber of Commerce Trade Register. While proposals have been made to compile a comprehensive dataset (van Wersch 2019), coverage remains incomplete, estimates are inconsistent, and aggregation is often unreliable (Bank of International Settlements 2014).

Even so, available data provide some indication of the size and resilience of global trade finance markets. SWIFT reported more than US$2 trillion in annual letter of credit flows in 2021. The Berne Union, the global association for export credit and investment insurers, reported about US$2.5 trillion in trade credit insurance, which overlaps with letters of credit. In 2022, the ICC Trade Register recorded bank-intermediated exposures of roughly US$2 trillion, or 23% of global traditional trade finance flows. Earlier estimates by the Bank for International Settlements placed annual flows of bank-intermediated finance at US$6.5 trillion to US$8 trillion in 2011 (Committee on the Global Financial System 2014), while the Trade Register put them closer to US$9 trillion several years later (International Chamber of Commerce 2020). According to the International Chamber of Commerce (2023), global trade and supply chain finance revenues increased by an estimated

6.3% between 2021 and 2022, reaching US$63 billion (International Chamber of Commerce 2023). The growth of open account operations, digitization of trade, and expansion in emerging markets such as India and the Association of Southeast Asian Nations (ASEAN) also indicate market resilience (International Chamber of Commerce 2023).

Despite methodological differences, what is clear is that large trade finance gaps persist, and they most affect developing economies. The Asian Development Bank estimated global unmet demand for trade finance at US$1.4 trillion in 2014, US$1.7 trillion in 2017, and US$2.5 trillion in 2023 (Asian Development Bank 2015, 2023). For Africa, unmet demand represents a significant barrier to trade expansion.

On the supply side, African banks are constrained by high transaction costs, weak collateral, limited capacity, and loss of correspondent banking relationships due to global derisking trends (African Development Bank and African Export Import Bank 2020). In fact, more than 70% of small and medium enterprises on the continent rely on cash-in-advance or open account arrangements, significantly increasing payment and liquidity risks for exporters (African Development Bank and African Export Import Bank 2020). On the demand side, small and medium enterprises frequently lack the documentation and credit history needed to qualify for trade finance, while underdeveloped credit information systems further limit banks' ability to assess risk (African Development Bank and African Export Import Bank 2020).

To address these constraints, regional and multilateral institutions have developed instruments such as guarantees, liquidity facilities, and technical assistance. Yet those instruments remain underutilized where enabling legal and regulatory frameworks are absent and awareness and institutional capacity are weak (African Development Bank and African Export Import Bank 2020). This underuse points to a broader pattern: institutional maturity, regulatory capacity, and market structures strongly influence how trade finance is provided and who can access it.

This paper draws on three World Trade Organization–International Finance Corporation (WTO–IFC) regional diagnostic studies to explore how differences in institutional development and financial sector capacity correspond to variations in trade finance outcomes across developing regions. It describes how embedding targeted improvements in trade finance access within broader financial sector reforms can unlock meaningful trade gains, highlighting practical reform pathways that are relevant across a diverse range of African economies. The rest of the paper is organized

as follows: Section 2 explores trade finance's essential role in facilitating international trade by mitigating risks and providing liquidity, especially for firms in emerging economies. Section 3 describes regional variations in trade finance coverage, with West Africa facing limitations, the Mekong region showing disparities, and Central America and Mexico underutilizing available resources. Section 4 outlines the need for tailored reforms to enhance trade finance access and diversify products, requiring coordinated stakeholder action.

Centrality of Trade Finance

Trade finance refers to the financial instruments and techniques that facilitate cross-border transactions. The literature highlights its pivotal role in enabling and sustaining global trade by mitigating financial and operational risks and bridging working capital needs for firms. Trade finance instruments are essential for addressing the gap, and thus the risk, between production and payment. These instruments provide liquidity, reduce uncertainty, and facilitate trust among trading partners, especially in international contexts where creditworthiness is hard to verify and enforcement mechanisms are weak.

Contessi and de Nicola (2013) estimate that roughly 90% of international trade transactions rely on some form of trade finance. The need for trade finance is particularly acute for firms operating in emerging economies, where financial markets may be underdeveloped and credit access constrained. Empirical evidence confirms that access to trade finance is a significant determinant of export participation. Studies based on firm-level data, that is, data drawn from individual companies rather than sectoral or national aggregates, consistently find that credit-constrained firms are less likely to enter export markets, and when they do, their export volumes tend to be lower (Manova 2013; Chor and Manova 2012). Access to trade finance is particularly strongly connected to whether firms export at all, where access to finance affects a firm's ability to overcome fixed costs associated with international market entry (Contessi and de Nicola 2013). There is broad consensus that external finance plays a foundational role in determining the scope and sustainability of firms' trade activities.

Beyond firm-level evidence, systemic shocks highlight the vulnerability trade finance flows. The 2008–2009 global financial crisis provided stark evidence of the fragility of trade finance flows. World trade volumes plummeted, with empirical analyses attributing a non-trivial share of this decline to the sudden contraction of trade finance (Amiti and Weinstein 2011; Auboin 2009). These disruptions exposed the vulnerability of the trade finance ecosystem to systemic financial

shocks and highlighted the need for coordinated policy responses and regulatory flexibility. As noted in the literature, the Basel I and II Accords of a generation ago, and which established comprehensive banking regulation frameworks to safeguard financial stability, initially overlooked the low-risk profile of trade finance instruments, inadvertently reducing their availability, especially in developing countries. Institutional responses, such as the establishment of the ICC Trade Register and dialogues between the WTO and the Basel Committee, helped improve the regulatory treatment of trade finance and underscored the importance of aligning financial regulations with the realities of global trade (Auboin and Engemann 2014).

While global studies emphasize firm-level constraints and systemic shocks, research on markets in Africa reveals that improved access to trade finance can significantly enhance intra-regional trade efficiency (Mazorodze,2024). Further evidence strongly links financial sector development, including measures of depth, access, efficiency, and cross-border banking flows, with strong, positive and robust impact on intra-African trade, particularly in the industrial and services sectors (Gakpa et al. 2025).

Persistent structural barriers such as high costs, weak risk-sharing mechanisms and fragmented regulatory frameworks continue to constrain access to trade finance across Africa. One of the articles concludes that African export credit agencies and export-import banks remain undercapitalised when compared with international peers, restricting their ability to underwrite large transactions and forcing reliance on non-African export credit agencies and external financiers (Klasen 2024). Another finds that sub-national governments operate under fragmented legal and regulatory frameworks, raising transaction costs and obstructing implementation of the African Continental Free Trade Agreement (Awani 2024). Another article finds that African nations face systematically inflated borrowing costs due to structural biases in global credit rating methodologies, leading to higher debt service costs and constraining affordable access to capital markets (Kyereboah-Coleman et al. 2024). Together, these findings reinforce that structural barriers such as high costs, weak risk-sharing mechanisms, and regulatory limitations continue to constrain inclusive access to trade finance.

The literature affirms that trade finance is not merely a technical tool but a core enabler of trade-led growth. Its strategic importance lies not only in facilitating transactions but also in enabling broader participation in international markets, especially for firms in credit-constrained or high-risk

environments. It is important to note, however, that much of the literature either examines global aggregates or focuses narrowly on Africa, with limited comparative analysis of how institutional maturity shapes trade finance provision across regions. This note contributes to filling that gap by drawing on WTO–IFC diagnostics.

Regional Insights

The IFC–WTO studies examine trade finance across 10 countries in three regions, quantifying how trade is supported by various trade finance instruments, sectors and costs, rejection rates and causes, and potential trade gains from improved access. The studies provide insights on the main instruments used on imports and exports, as well as the levels of concentration in trade finance supply.

The diagnostic study of West Africa (WTO and IFC 2022) determined that trade finance availability is structurally limited in the region, despite a relatively higher share of bank-intermediated coverage available when compared with other developing regions. On average, an estimated 25% of merchandise trade flows in Côte d'Ivoire, Ghana, Nigeria, and Senegal are supported by instruments such as letters of credit and trade loans. This coverage, however, is primarily concentrated in well-established sectors such as commodities, largely excluding small and medium enterprises from access to external financing. The study finds that the high cost of trade finance and the systematic request for cash or land collateral are major impediments for local firms to access trade finance (WTO and IFC 2022). Local financial institutions also face multiple constraints, including the erosion of correspondent banking relationships, elevated sovereign and counterparty risk, and the absence of reliable credit information infrastructure. These constraints are exacerbated by the limited depth and breadth of domestic financial markets, which restricts banks' capacity to extend trade finance and diminishes their eligibility to implement global risk mitigation mechanisms.

In the Mekong region (WTO and IFC 2023), trade finance coverage exhibits significant heterogeneity, with Vietnam outperforming its neighbours due to its stronger financial infrastructure and deeper integration into global value chains. While roughly 21% of Vietnam's trade is bank-intermediated, coverage in Cambodia and Laos is substantially lower. Firms primarily rely on open-account and cash-in-advance forms of payment, in absence of local offerings for trade finance, or availability at very high cost. The limited supply of structured trade finance instruments in Cambodia and Laos reflects systemic weaknesses in financial sector development, including underdeveloped regulatory frameworks, weak collateral enforcement, and limited access to correspondent banking services.

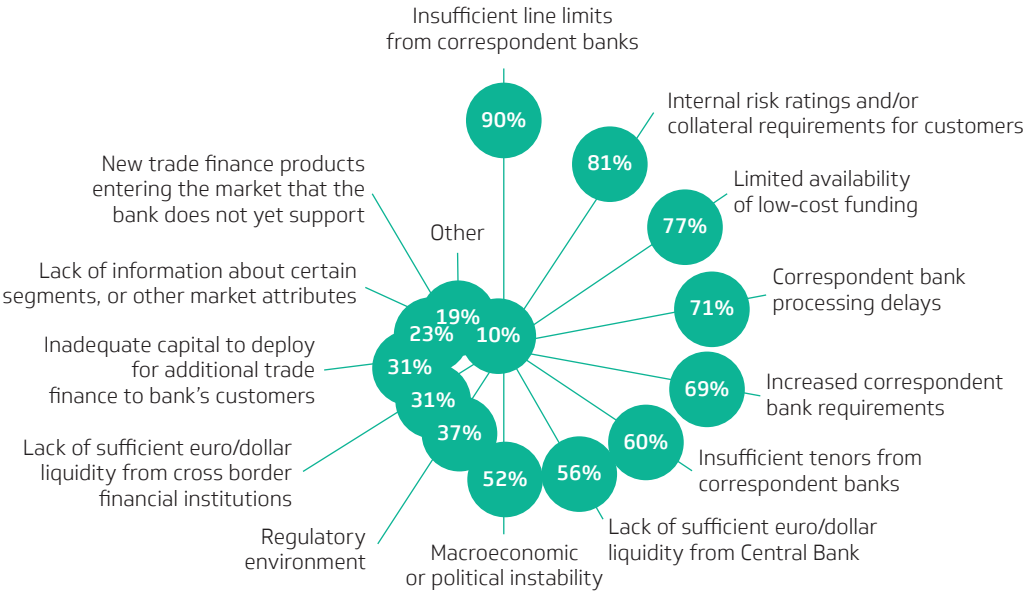
Moreover, financial institutions in these markets face high costs of compliance, related largely to anti-money laundering and know-your-customer obligations, as well as skill and capacity gaps that constrain their ability to develop bespoke trade finance solutions.

In Central America and Mexico (WTO and IFC 2025), trade finance remains underutilized relative to trade volumes and the maturity of the banking sector. The proportion of trade supported by bank-intermediated finance remains low, at 8% in Mexico, 10% in Honduras, and 12% in Guatemala. Despite regulatory advances, particularly in Mexico, trade finance markets are characterized by high levels of concentration, with three financial institutions accounting for the majority of activity in each country. Intra-firm payment, especially among multinational corporations,

Figure 1: Drivers of Trade Finance Rejections

Insufficient Collateral and Credit Risk are Top Causes of Rejection

Share of respondents mentioning the following reasons for denied trade finance applications



Source: International Finance Corporation & World Trade Organization. (2022). Trade finance in West Africa: A study of Côte d'Ivoire, Ghana, Nigeria, and Senegal. https://www.wto.org/english/res_e/publications_e/tfinwestafrica_e.htm

reduces the need for external finance. Access to trade finance of small and medium enterprises remains constrained. Supply chain finance products, including factoring and reverse factoring, are not yet widely available or operationalized for cross-border trade. In addition, liquidity constraints, low levels of financial inclusion, and limited awareness among small and medium enterprises of available instruments hinder broader development of the trade finance ecosystem across the subregion.

When viewed collectively, the three regional diagnostic studies reveal a set of consistent, cross-cutting insights into the global trade finance landscape. First, formal trade finance coverage remains limited across all regions, with a maximum of 20% to 25% of trade flows in the main surveyed economies (Nigeria, Vietnam, and Côte d'Ivoire) supported by instruments such as letters of credit or trade loans. However, this masks substantial variations across countries: Mexico reports coverage as low as 8%, while Cambodia and Laos exhibit even lower levels of trade finance utilization. Second, the supply of trade finance is heavily concentrated. In some countries studied, a small number of banks dominate the market, with the top three institutions accounting for more than 75% of trade finance activity. Concentration among a few large banks makes access harder for small and medium enterprises. Third, the cost of trade finance is often prohibitively high and unevenly priced, particularly in lower-capacity markets. High inflation, regulatory inefficiencies, weak credit infrastructure, and burdensome administrative processes all contribute to elevated financial costs for trade.

High trade finance rejection rates are most often the consequence of insufficient collateral, incomplete or informal financial records, weak credit histories, and lack of familiarity with bank procedures (figure 1). Region-specific challenges also emerge. In West Africa, macroeconomic volatility and exchange rate risk significantly heighten banks' perceived exposure, while in the Mekong region, banks cite inadequate internal capacity and limited product development as key obstacles to financing trade. In Central America and Mexico, rejection patterns are closely linked to market concentration and risk aversion, with banks disproportionately favouring established corporate clients. Despite these regional distinctions, overarching constraints are universally related to compliance, transaction costs, risk management, and institutional capacity, indicating these are global challenges that must be addressed in each area to increase trade finance supply.

The studies also provide evidence that significant gains can be achieved through improved access and affordability. For example, an

expansion of bank-intermediated trade finance in Mexico could boost annual trade by more than US$85 billion, while Honduras and Guatemala could each realize gains in the range of US$2 billion to US$3 billion (WTO and IFC 2025). Finally, the diagnostics highlight that financial sector maturity plays a critical role in access to trade finance. More mature systems offer a broader suite of trade finance instruments, though inclusion remains a challenge across all contexts.

Financial Market Maturity: Commonalities and Divergences

There is some evidence that trade finance supply is related to the level of development of local financial sector (Chen, Poncet, and Xiong 2020). A review of the three reports indicates that the maturity of a banking sector with regard to trade finance can be understood along a spectrum. These categories are not explicitly defined in the reports, but several key institutional and functional indicators consistently emerge (table 1).

Table 1: Characteristics of Trade Finance Capacities by Financial Market Maturity

Feature	Developing (e.g., Cambodia, Lao PDR)	Expanding (e.g., Ghana, Senegal, Guatemala, Honduras)	Maturing (e.g., Viet Nam, Mexico)
Trade Finance Staffing	No specialized staff; limited awareness of instruments	Some trade finance staff; often manual processes	Dedicated teams and procedures in place
Product Offering	Basic import/export loans; L/Cs rare or unavailable	L/Cs and trade loans common; limited supply chain finance	Full suite including L/Cs, guarantees, and some supply chain finance
Credit Infrastructure	No functional credit bureaus or collateral registries	Incomplete or inaccessible credit reporting and weak collateral enforcement	Credit bureaus, collateral registries, and receivables frameworks in place
Correspondent Banking	Minimal relationships; high vulnerability to de-risking	Moderate relationships; shrinking due to compliance burdens	Established and diversified relationships; stronger resilience
Compliance & KYC Capacity	High burden; banks lack internal systems	Compliance processes exist but remain costly and manual	Automated systems for AML/KYC in most institutions
Regulatory Framework	Fragmented or underdeveloped; lack of legal basis for new products	Some progress in factoring, guarantees, but gaps remain	Supportive regulation for trade credit, supply chain finance, electronic invoicing
Liquidity & Risk Tools	Liquidity constraints; no use of guarantees or insurance	Limited liquidity; guarantees/insurance underused or not well understood	Reasonable liquidity; risk tools exist and are selectively used
Digital Infrastructure	Minimal or non-existent	Moderate digitalization; few digital trade platforms	Digital trade systems emerging; some paperless transactions operational
Access to Trade Finance Among Small and Medium Enterprises	Extremely limited; structural exclusion	Partial inclusion; still underserved	Better inclusion potential; capacity exists but uptake varies

Source: Author's elaboration

Cambodia and Laos display characteristics of limited product offerings and trade finance expertise, limited credit infrastructure, or functional collateral registries (WTO and IFC 2023). Some of these characteristics are present in parts of West Africa, limiting banks' ability to expand trade finance beyond large corporate clients. In West Africa, however, banks generally have stronger correspondent banking networks and higher levels of trade finance expertise, even though the digitalization of trade finance operations remains limited (WTO and IFC 2022). Similarly, Honduras and Guatemala face liquidity constraints and insufficient regulatory support for instruments such as factoring or receivables finance (WTO and IFC 2025).

By contrast, Vietnam and Mexico exhibit higher levels of maturity in their financial ecosystems, with greater product diversity and stronger regulatory and digital infrastructure. Constraints persist in those nations as well, however. For example, access to credit is available to only a quarter of importers and exporters in Mexico, with trade finance concentrated among large corporations, while supply chain finance in both Mexico and Vietnam is underutilized (WTO and IFC 2023, 2025).

In all countries, small and medium enterprises face systemic barriers, including high compliance costs, weak risk mitigation tools, limited familiarity with banking procedures, and a persistent preference among banks for low-risk, high-volume clients. This persistent exclusion highlights that maturity alone is not sufficient to ensure inclusivity. Targeted policy interventions and tailored financial products are necessary to expand access to underserved firms.

Regional case studies reinforce patterns while also revealing important local distinctions. In West Africa, macroeconomic volatility and exchange rate instability heighten banks' perceived risks. In the Mekong region, low institutional capacity and lack of product development are key constraints, while in Central America and Mexico, market concentration and conservative lending practices dominate. These factors interact with the maturity of local financial systems, amplifying challenges where infrastructure is weakest.

Trade Finance Instruments and Simulation Takeaways

The WTO–IFC regional studies estimate the additional trade that could be generated by increasing trade finance coverage and by a reduction in its costs. The methodology employed, using WTO's global trade model, is described in Auboin, Bekkers, and De Qarti (2023). The results suggest that expanding trade finance supply and lowering its costs can increase merchandise trade flows, both on imports and exports,

by an average of 5%, depending on the country. These effects are significant, even in economies where broader trade costs remain high, highlighting the pivotal role of trade finance in enabling trade. A more detailed description of the model's results by country is available in each of the reports.

Research Implications

It can be derived from the WTO-IFC studies that there is a link between the type and intensity of trade finance constraints and the maturity of national financial system, even though this link is complex. A context-specific approach may help tailor reforms to the institutional capacities, market structures, and levels of financial infrastructure already in place. For the benefits of trade finance to materialize, the corporate sector, financial institutions, national policymakers, and international agencies need to implement the coordinated actions outlined in the WTO–IFC studies. These actions include diversifying the range of trade finance products, strengthening regulatory frameworks, broadening the local customer base to include small and medium enterprises, and improving the agility of banks to expand and tailor their product offerings and risk management capacity.

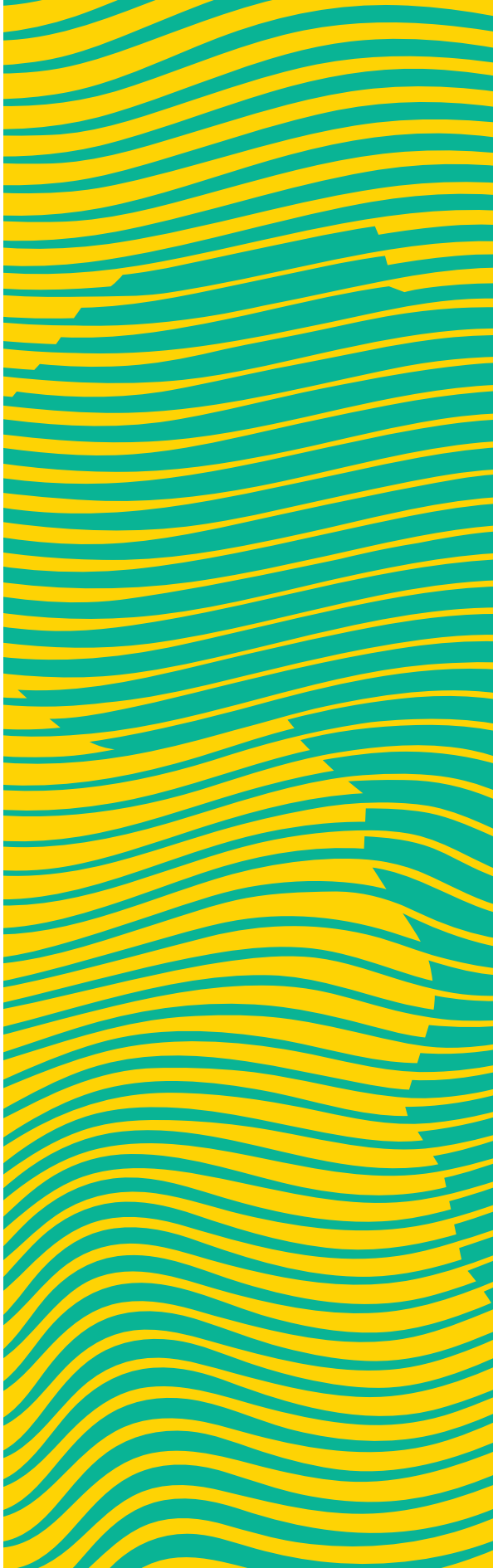
In markets where legal and credit infrastructure is still evolving, institutions need to develop and expand non-traditional trade finance techniques such as credit insurance and receivable financing. This effort may require strengthening of legal frameworks. Measures are underway in Africa and elsewhere to promote model laws for factoring and reverse factoring, to recognize payment receivables as collateral, and to establish digital invoice registries.

The expansion of trade credit insurance markets may also address issues of risk in intercompany credit or payment lags. In financial systems where operational capacity remains constrained, local banks' digitization efforts can support the expansion of these markets, thereby reducing costs to process traditional instruments such as trade loans and letters of credit. Banks in some countries have benefitted from technical assistance in improving risk assessment and management of smaller firms and in offering pilot programs such as payable financing and working capital lending for traders. Small and medium enterprises could reduce liquidity constraints by increasing their awareness of and familiarity with available trade finance products and by becoming more proficient at presenting compliant applications. Such efforts could do much to bridge the perception among international investors that small and medium enterprises present high risk. International financial institutions have long developed guarantees, liquidity enhancement, and risk relief measures as part of their trade

finance programs to support trade finance operations of local banks in low- to middle-income countries. Those institutions are currently active in Africa's trade and supply chain finance markets.

In more mature financial systems or advanced market contexts, improving banks' agility, risk management, and international relationships would, in general, allow local financial institutions to reach riskier segments of markets and onboard customers in new, unserved economic sectors. New investor digital platforms that bring together large buyers, smaller firms, banks, financial technology companies, and other investors represent opportunities for pooling risks while mobilizing cross-border capital. The effective participation of firms in these platforms may depend on firm behaviour. For example, firms can improve their ability to attract investor support by adopting formal procedures for cross-border trading and ensuring proper identification and due diligence of their accounts and invoices.

Across all settings, the WTO–IFC studies underscore the value of coordinated, multi-actor approaches to improving trade finance access. Ensuring alignment between public and private stakeholders, including regulators, commercial banks, international financial institutions, and development partners, can help address persistent liquidity constraints and mispricing of risk.



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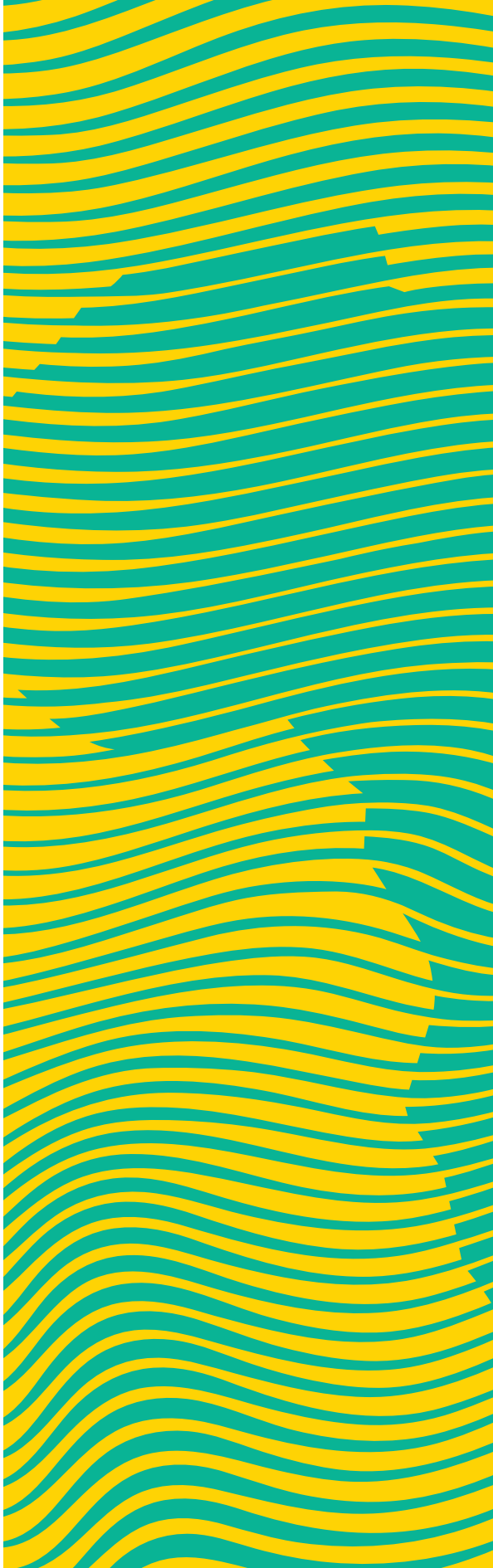


Reimagining Trade Finance in Africa: A Multi-Theoretical Framework for Artificial Intelligence and Blockchain Integration

Ogechi Adeola & Olaniyi Evans

Abstract: The trade finance gap in Africa disproportionately affects small and medium enterprises due to enduring structural and institutional barriers. Traditional financing systems remain inefficient and exclusionary, impeding realisation of African Continental Free Trade Area (AfCFTA) objectives. This study proposes a conceptual framework that integrates artificial intelligence and blockchain technology to revolutionise African trade finance. Drawing on the technology–organisation–environment framework, transaction cost economics, and institutional theory, the framework positions artificial intelligence for credit scoring and fraud detection while using blockchain to build trust through immutable records and smart contracts. Cross-border infrastructure such as Flutterwave, the Pan-African Payment and Settlement System, and M-PESA Africa demonstrate the real-world applicability of these technologies in enhancing efficiency, inclusivity, and auditability in the financial sector. The framework presented herein provides a strategic pathway for technological integration that aligns with Africa's developmental goals under the AfCFTA.

Keywords: Trade finance, artificial intelligence, AI, blockchain, SMEs, AfCFTA
JEL Classification: E25; F10; F13; N77; O39; O55; P45

Introduction

Africa faces a persistent and widening trade finance gap, estimated at more than US$120 billion annually (Oji 2025). This disproportionately impedes the participation of small and medium enterprises (SMEs)—which comprise most businesses and employment on the continent—in regional and global trade. Institutionally, the barriers include underdeveloped credit information systems, weak collateral registries, and fragmented regulatory frameworks, which restrict lenders' capacity to effectively assess and price SME risk (Carvajal & Didier, 2024; European Investment Bank [EIB] 2024). Operationally, SMEs often have

limited credit histories, insufficient collateral, informal ownership structures, and low digital literacy, all of which impede their ability to satisfy lending requirements. Financial institutions often view SME loan applications as high-risk, leading to high rejection rates, especially when financial statements are unavailable, unaudited, or lack credibility. These financing challenges are further intensified by macroeconomic volatility, currency instability, and restricted access to foreign exchange in certain markets (African Development Bank 2024). Moreover, the fragmented and paper-intensive nature of trade documentation increases processing time, operational costs, and vulnerability to fraud (Muchena 2019; SmartCityMall 2024).

The traditional structure of trade finance systems in Africa is often exclusionary and inefficient (International Finance Corporation [IFC] 2022; African Development Bank [AfDB] 2024). Most banks prioritise lending to large, well-established firms with verifiable credit profiles and asset-backed guarantees. Consequently, informal and micro enterprises (many of which engage in cross-border trade) are often shut out of formal financing channels. This misalignment undermines the core objectives of the African Continental Free Trade Area (AfCFTA), which aims to deepen economic integration by expanding intra-African trade and supporting inclusive economic development (AfDB 2024).

Emerging digital tools, particularly artificial intelligence (AI) and blockchain technology, present transformative potential for Africa's trade finance ecosystem. Artificial intelligence encompasses computational systems that learn from data to make predictions, classifications, and decisions without explicit human programming (Mramba 2024). In contrast, blockchain is a distributed ledger technology that records transactions across a network securely, immutably, and transparently (Tapscott and Tapscott 2016). Within the realm of trade finance, AI can analyse alternative and unstructured data sources—such as mobile money usage, utility payments, and geospatial activity—to generate dynamic credit scores. These scores serve as viable alternatives to traditional metrics, thereby expanding lending opportunities to underbanked segments of the population (Khalil et al., 2025). Blockchain technology can address structural inefficiencies by creating tamper-proof trade documentation (e.g., invoices and bills of lading), automating payment and settlement through smart contracts, enabling real-time cross-border transactions without intermediaries, and providing auditable trails that enhance compliance with know your customer and anti-money laundering requirements (Patel and

Ganne 2020). The convergence of AI and blockchain technology can thus streamline verification processes, reduce operational costs, accelerate settlements, and build trust among trade actors, directly addressing some of the institutional and operational barriers in Africa's current trade finance systems.

However, technology alone cannot drive systemic change without an accompanying framework. This paper introduces a conceptual model based on a multi-theoretical lens to guide the strategic integration of AI and blockchain into Africa's trade finance infrastructure, drawing on technology–organisation–environment (TOE) (Tornatzky and Fleischer 1990), transaction cost economics (TCE) (Coase 1993; Williamson 1981), and institutional theory (DiMaggio and Powell 1983; Scott 2004). The TOE framework enables the analysis of technological readiness, organisational capacity, and environmental factors that affect adoption of the technology, while TCE explains how technology can minimise the costs associated with information asymmetry and contract enforcement. Institutional theory captures the role of normative, coercive, and mimetic pressures in shaping financial innovation in Africa's regulatory and market context.

Digital solutions are shaping Africa's financial ecosystem, as demonstrated by cross-border infrastructure such as Flutterwave's AI-enabled fraud prevention systems, the Pan-African Payment and Settlement System (PAPSS) blockchain-based settlement rail, and the mobile-driven credit delivery model of M-PESA Africa, a flagship initiative in East Africa.

Flutterwave operates in more than 35 countries and is valued at more than US$3 billion. In 2024 alone, the platform processed US$31 billion in transactions, bringing its cumulative total to about US$34 billion from more than 890 million transactions to date (Njeri 2025).

PAPSS—launched within the West African Monetary Zone and now expanded to 16 countries with 15 financial institutions and 14 national switches—enables instant cross-border payments in local currencies, bypassing costly USD/EUR routing. Early outcomes are compelling. For example, a US$1 million business-to-business transfer between Nigeria and Kenya via PAPSS costs about US$2,150 in fees, versus more than US$100,000 via legacy correspondent banking, while being settled in less than two minutes (Njeri 2025).

M-PESA—active in the Democratic Republic of the Congo, Kenya, Mozambique, Tanzania, and beyond—processed Kshs 38.29 trillion (US$270 billion), equivalent to about 2.5 times Kenya's GDP, in 37.15 billion transactions in the year ending March 2025. Its 62 million

active users across Africa engage in payments, savings, and AI-driven microcredit services through both the legacy platform and the M-PESA Super App, which now serves 6.7 million active customers and 301,000 businesses monthly (Njeri 2025).

The scope of the present work is non-empirical and conceptual, offering a foundation for future empirical enquiries and implementation. By synthesising theory and literature, the paper provides a structured pathway for integrating emerging technologies that align with Africa's development goals under AfCFTA, contributing to both academic scholarship and applied policy discourse.

Foundations

Technology–Organisation–Environment Framework

The TOE framework enables an integrated understanding of the factors that affect the adoption of digital trade finance systems (Kumar et al. 2025). While it offers a holistic adoption structure, the framework underemphasises the political economy factors (e.g., vested interests in incumbent systems) that can slow or block adoption, even when technological and organisational readiness exists. It also treats the three dimensions, detailed below, somewhat independently, whereas in practice, they are highly interdependent, especially in emerging economies.

- **Technological dimension:** African trade finance suffers from fragmentation due to siloed systems, inconsistent protocols, and limited Application Programming Interface (API) standardisation (SmartCityMall 2024). PAPSS partially addresses these gaps through a unified settlement infrastructure; however, challenges arise in scaling API integration across multiple banking platforms. Due to the uneven maturity of AI capabilities, some banks lack infrastructure for advanced analytics, while blockchain platforms face interoperability and legal recognition hurdles (RegTech Africa 2024).
- **Organisational dimension:** Institutional readiness varies across organisations. Banks partnering with financial technology (fintech) platforms such as Flutterwave have deployed AI-driven fraud detection and credit profiling (Signé 2024). However, SMEs often lack digital literacy and infrastructure, creating a digital divide that limits participation in innovation-driven trade finance models (EIB 2024).
- **Environmental dimension:** Regulatory openness and supranational frameworks shape AI adoption. Nigeria's blockchain sandbox (the Accelerated Regulatory Incubation Program) illustrates how controlled testing environments encourage

innovation under regulatory supervision (Securities and Exchange Commission [SEC] 2024), while AfCFTA's trade harmonisation efforts provide a regional framework for interoperability (AfDB 2024).

Transaction Cost Economics

The TCE theory explains how digital technologies reduce the cost of conducting trade transactions (Nagle et al. 2025). In African trade finance, blockchain reduces search and verification costs by providing immutable transaction records and automating contract enforcement. For example, PAPSS shortens settlement times and lowers fees by bypassing correspondent banking channels (Muchena 2019). Smart contracts further reduce agency costs by automatically executing payments upon meeting predefined conditions (Khalil et al. 2025). By using behavioural and transactional data to generate dynamic credit scores, AI algorithms address information asymmetries, as exemplified by M-PESA's micro-lending practice based on mobile money history (Appui au développement autonome 2020).

While the TCE theory clarifies efficiency gains, it may overstate the determinism of cost reduction, ignoring the fact that institutional inertia, legal uncertainty, and user trust issues can maintain high transaction costs despite technological improvements. Additionally, the theory does not fully capture the role of social norms and informal networks in African trade finance, which can influence transaction behaviour independently of cost structures.

Institutional Theory

Institutional theory elucidates how regulatory (coercive), professional (normative), and competitive (mimetic) pressures influence the adoption of digital finance technologies (Abayomi et al. 2020). For example, the mandates of central banks and the African Export–Import Bank (Afreximbank) exemplify coercive pressures, dictating compliance with emerging technological standards (e.g., Nigeria's blockchain regulations) while the harmonisation of trade documentation by AfCFTA demonstrates normative pressures to adopt and promote shared principles (African Union Development Agency–NEPAD 2024). On the other hand, the replication of M-PESA's mobile money platforms across the continent demonstrates mimetic pressures, as does the influence of Flutterwave's AI infrastructure on banks to adopt intelligent risk tools (Signé 2024).

A critical reflection reveals that while institutional theory highlights the mechanisms for building legitimacy, it often presumes that convergence results in positive adoption outcomes. In practice, mimicry without contextual adaptation

can lead to failures, as seen in the transplantation of mobile money models into countries with weak agent networks. Furthermore, the theory provides limited guidance on overcoming resistance from entrenched actors who benefit from maintaining the legacy systems.

Mapping Digital Trade Finance Initiatives to Theoretical Foundations

To demonstrate the practical application of these theories, Table 1 maps current initiatives to the TOE, TCE, and institutional theory lenses, showing how they address specific drivers, constraints, and transaction cost elements. For instance, PAPSS aligns with TOE's technological and environmental conditions, reduces verification and enforcement costs under TCE, and responds to coercive and normative pressures in institutional theory. M-PESA's microlending model illustrates how AI reduces information asymmetries (TCE) while benefiting from normative acceptance and mimetic diffusion across regions. Flutterwave's AI-powered cross-border infrastructure demonstrates organisational agility (TOE) and mimetic influence on bank–fintech collaborations.

Table 1: Mapping Digital Trade Finance Initiatives to TOE, TCE, and Institutional Theory

Initiative	TOE	TCE	Institutional theory	Limitations
ARIP (Nigeria Securities and Exchange Commission [SEC])	Tech: blockchain sandbox	Cuts compliance costs via pre-market testing	Coercive: SEC requires sandbox entry	Depends on regulator capacity; weak without legal integration
M-PESA microlending (Kenya)	Tech: mobile money Org: Safaricom capability	Cuts search/verification costs with behavioural credit scoring	Mimetic: spread of mobile money models	Success tied to Kenya's mobile penetration/trust; limited transferability elsewhere
Flutterwave AI infrastructure	Tech: APIs and AI Org: bank–fintech synergy	Cuts agency costs; strengthens fraud detection and onboarding	Mimetic: banks copy cross-border tools	Limited by fragmented regulation and capital dependence
Bank of Ghana fintech regulatory sandbox	Tech: API/DLT trials Env: BoG-led sandbox	Cuts negotiation and compliance costs	Coercive: BoG rules steer fintech adoption	Dependent on market readiness and funding; small market constrains scale
AfCFTA digital trade protocol	Env: unified trade rules and digital customs	Cuts friction in inter-country trade	Normative: regional alignment	Slowed by uneven adoption and weak institutional capacity
Project Khokha II (South Africa)	Tech: DLT settlements Org: bank-led innovation	Cuts enforcement and settlement costs via real-time checks	Coercive + mimetic: regulator mandate and peer adoption	Requires advanced infrastructure; limited scalability in low-resource states.

Source: Author's elaboration

Applied Technologies in Trade Finance

Blockchain Applications

Blockchain technology introduces transformative capabilities into the African trade finance ecosystem by addressing foundational issues related to trust, verification, and settlement. One of its key applications lies in enhancing the integrity and transparency of trade documentation. Traditional trade finance in Africa often relies on paper-based systems that are susceptible to manipulation, forgery, and administrative delays. Blockchain technology mitigates these challenges by maintaining immutable, time-stamped digital records of trade-related documents (e.g., invoices, bills of lading, and customs declarations). This tamper-proof documentation reduces the incidence of fraud and enables stakeholders such as auditors, regulators, and trade partners to verify compliance with contractual terms swiftly and confidently (SmartCityMall 2024).

Moreover, blockchain facilitates the decentralised and real-time settlement of cross-border transactions. Through PAPSS, blockchain infrastructure can reduce reliance on intermediary banks and foreign currencies for intra-African trade (Muchena 2019). By enabling instant, multi-currency clearing and settlement across African central banks, PAPSS reduces transaction delays, foreign exchange risks, and transfer costs. This function is particularly vital for SMEs, which often face liquidity constraints and cannot afford long processing cycles or high remittance charges.

Another strategic application is the use of blockchain in regulatory sandboxes, which provide a safe environment for testing financial innovations. The SEC has launched a regulatory sandbox that allows startups to experiment with blockchain-enabled services under supervisory guidance (RegTech Africa 2024). These pilot initiatives generate key feedback loops for both innovators and regulators, helping to align new services with compliance standards while ensuring user protection. Importantly, such regulatory support signals to the market that blockchain is a legitimate and investable infrastructure.

Furthermore, blockchain enables the automation of contractual obligations through smart contracts, which are self-executing agreements coded on the blockchain that trigger predefined actions when specific conditions are met. In trade finance, smart contracts can be used to automatically release payments upon the successful delivery of goods or clearance of customs. This removes subjectivity from contract enforcement, improves operational efficiency, and strengthens transactional trust, particularly in multiparty supply chains (Khalil et al. 2025).

Despite these opportunities, blockchain adoption among African SMEs faces significant challenges. Many operate in environments with limited internet penetration and inadequate data infrastructure, characterised by high connectivity costs, which undermine the feasibility of integrating blockchain into daily operations (EIB 2024). The absence of harmonised legal recognition for blockchain-based documents and smart contracts in several jurisdictions creates further uncertainty for cross-border transactions (Akinfieva and Oppong, 2018). Moreover, the technical complexity of blockchain systems demands skills and resources that most SMEs lack, raising the risk of a digital divide in trade finance adoption unless targeted capacity-building initiatives and affordable technology access are prioritised.

Artificial Intelligence Applications

AI plays a key role as the intelligence layer of next-generation trade finance systems. Unlike traditional banking tools, AI leverages machine learning and big data analytics to process vast volumes of structured and unstructured data, thereby enhancing decision-making in ways that manual systems cannot achieve. One of AI's most notable applications lies in risk profiling and credit assessment (Raji et al. 2024). Financial institutions can use AI to generate real-time, adaptive credit scores for SMEs based on behavioural data (e.g., transaction patterns, payment histories, mobile wallet usage). This facilitation enables lenders to assess creditworthiness beyond conventional metrics such as collateral and audited financial statements (Signé 2024).

For example, M-PESA in Kenya has integrated AI algorithms to analyse user transaction data and provide microloans tailored to individual repayment behaviours (Appui au développement autonome 2020). This innovation facilitates access to finance for previously excluded groups, particularly informal traders and micro-enterprises that lack formal documentation. By capturing alternative data and translating it into actionable insights, AI increases financial inclusion while simultaneously improving portfolio quality for lenders. Another powerful application is fraud detection and anomaly surveillance. AI tools can monitor transaction flows in real time to identify suspicious patterns, flag inconsistencies, and trigger alerts before the execution of fraud. Flutterwave uses AI-driven mechanisms to verify customer identities, detect abnormal behaviour, and enforce compliance protocols (Signé 2024). These capabilities significantly reduce operational risks and improve the security posture of digital trade platforms.

Beyond credit and compliance, AI optimises workflow automation and customer engagement. Chatbots powered by natural language processing facilitate around-the-clock customer service for trade finance users, reducing reliance on human personnel and increasing operational scalability (Abiagom and Ijomah 2024). Also, AI can assist in supply chain forecasting by analysing demand patterns, shipment data, and global trade trends, helping firms better align financing with inventory cycles and market needs (AfDB 2024).

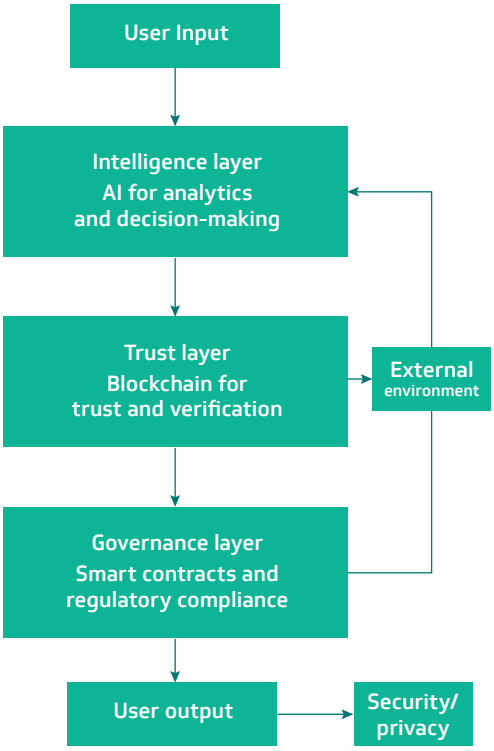
The real strength if AI lies in its adaptability. Unlike rule-based automation, AI systems learn from evolving data and continuously refine their outputs. This dynamic capacity makes AI an ideal solution for Africa's complex trade ecosystem, where financial transactions are often fragmented, data sources are decentralised, and user behaviours are diverse (Mramba 2024). With appropriate regulatory oversight, AI can mitigate biases in algorithmic decision-making, improve auditability, and ensure ethical deployment across financial services.

However, infrastructure gaps, high deployment costs, and a shortage of AI-skilled personnel constrain AI uptake by SMEs in African trade finance (Alice and Ebuka 2024). Many SMEs operate with basic mobile devices and lack the computing power, secure cloud services, and quality datasets needed for effective AI integration. Concerns about algorithmic bias, opaque decision-making processes, and compliance with emerging data protection laws further discourage adoption among smaller enterprises that lack in-house technical and legal expertise (Mugimu 2021). Elimination of these limitations will require coordinated policy, investment in digital infrastructure, and SME-focused training to ensure that the benefits of AI are inclusive rather than concentrated amongst larger market players.

AI–Blockchain Synergy

The integration of AI and blockchain creates a synergistic architecture that aligns intelligence with trust, enabling a seamless flow from decision-making to execution while maintaining continuous learning and feedback (Chiswa 2025). Artificial intelligence serves as the intelligence layer, processing user inputs, analysing transactional data, and generating real-time credit and risk assessments (Figure 1). Blockchain operates as the trust layer, encoding and executing trade contracts via decentralised, transparent protocols. These layers are connected by a feedback loop, whereby blockchain-verified outcomes inform and refine AI models, enabling adaptive learning and improving decision-making (Khalil et al. 2025).

Figure 1: AI–Blockchain Synergy



Source: Authors' elaboration.

The functional model begins when an SME initiates a trade finance request via a digital portal (user input). Artificial intelligence systems first validate the applicant's identity, process transactional histories, and calculate a dynamic risk score using behavioural, transactional, and contextual data (Christensen 2021). Once eligibility is confirmed, blockchain records the loan agreement using smart contracts that define disbursement terms, repayment schedules, and conditional triggers. As the transaction progresses, blockchain automatically enforces compliance, while AI continuously monitors borrower activity, market shifts, and potential fraud signals. Verified outcomes from the blockchain are fed back to the AI systems to improve scoring accuracy and risk models. This layered framework contains the following four integrated components:

- **Intelligence (AI):** Acts as the decision engine, performing credit scoring, fraud detection, and adaptive loan structuring using real-time data analytics. It also interprets signals from the trust layer to refine its algorithms, which improves predictive accuracy.
- **Trust (blockchain):** Provides the protocol infrastructure to record, verify, and execute agreements in an immutable manner. It underpins contractual integrity, supports secure multi-party settlements, and supplies validated data to the intelligence layer for model refinement.
- **Governance:** Serves as the regulatory and compliance interface, which ensures that transactions meet cross-border legal standards under AfCFTA protocols. This layer integrates security and privacy safeguards (e.g., digital identity verification, encryption protocols, and compliance with data protection

laws). It also manages smart contract auditing, dispute resolution mechanisms, and interoperability with multiple national regulatory environments, thereby bridging legal fragmentation that often hinders intra-African trade.

- **External environment:** Captures the broader technological, organisational, and environmental factors highlighted in the TOE framework, including infrastructure readiness, market adoption levels, and policy frameworks that influence performance.

Transactions culminate in user output, such as loan disbursement, settlement confirmation, and contract execution, accompanied by transparent and auditable records. This design ensures that trade finance processes are not only automated but also secure, adaptive, and responsive to both market demands and regulatory requirements. By integrating the computational capabilities of AI with the integrity assurances of blockchain and embedding both within a governance structure attuned to environmental realities, the model represents a paradigm shift in trade finance. It transitions from reactive, paper-based systems to proactive, data-driven ecosystems. The outcome is a resilient, agile, and inclusive financial infrastructure that supports Africa's expanding intra-continental commerce while ensuring trust, security, and legal compliance. Furthermore, this framework aligns with AfCFTA's strategic objectives by facilitating faster trade settlements, reducing transaction friction, and promoting financial inclusion (AfDB 2024). For instance, the utilisation of decentralised protocols enables SMEs to bypass correspondent banking networks, while AI-based scoring broadens access to previously excluded segments. Regulatory integration ensures that these transactions are transparent and legally enforceable across jurisdictions (African Banker 2024).

Regional Case Reflections and Global Lessons

Africa demonstrates a growing capacity for trade finance modernisation through several noteworthy regional initiatives. For instance, PAPSS is a continent-wide settlement rail integrated with national central banks. It enables real-time, multi-currency, cross-border settlement, reducing dependency on intermediary banks and foreign currencies (Muchena 2019) and exemplifies how regulatory alignment, central bank cooperation, and blockchain-enabled infrastructure both simplify and accelerate intra-African trade settlements.

Mobile money platforms also play a crucial role in driving inclusive trade finance. M-PESA Africa has expanded from basic money transfers to

include AI-powered microcredit services. By analysing user behaviour (e.g., airtime purchases, payment history, and transaction patterns), M-PESA issues collateral-free microloans to millions of customers, including informal SMEs that have traditionally been excluded from banking systems (Appui au développement autonome 2020), demonstrating that alternative data and AI can reshape credit access.

Similarly, fintech platforms such as Flutterwave integrate AI for payment routing, fraud detection, and customer onboarding, reflecting a more effective approach to cross-border finance (Signé 2024). Flutterwave's growing partnerships with regional and global merchants demonstrate how fintech firms can set benchmarks for scalability, compliance, and innovation in digital financial ecosystems. Collectively, these examples reveal the critical importance of interoperable infrastructure, strong central bank engagement, and strategic use of mobile platforms to reach underbanked communities. The success of these models depends heavily on country-specific enablers. For example, user trust, smartphone penetration, regulatory clarity, and integration with national payment systems are all essential for replicability (Webb 2024).

International initiatives such as the Unified Payments Interface (India) and Pix system (Brazil) are instructive parallels. Lessons from these systems, particularly in terms of scale, interoperability, and financial inclusion, are relevant. For instance, both initiatives have demonstrated how simplified real-time payment frameworks can significantly broaden access to digital finance across diverse demographics (Baker 2024). Africa can glean strategic insights from these models by prioritising regulatory clarity, accessible digital identity, and user-centric interface design. As Brookings (2024) and Appui au développement autonome (2020) emphasise, African digital finance solutions must be mobile-first and tailored to informal economies, where flexibility, affordability, and decentralised access are paramount.

While these initiatives demonstrate the potential for technology-driven transformation, their success is often tied to context-specific enablers that are not uniformly present across Africa. For example, PAPSS benefits from strong central bank coordination and a shared regulatory vision, conditions that may be harder to achieve in countries where financial institutions are protective of settlement processes or wary of blockchain adoption due to cybersecurity and compliance concerns (EIB 2024). Similarly, factors such as high mobile penetration, robust agent networks, and deep consumer trust have supported M-PESA's rapid scaling, while comparable services in other regions

have struggled to reach critical mass without them (Musoni et al. 2023). These cases underscore that infrastructure readiness, policy alignment, and user confidence are prerequisites for replicability.

Moreover, scalability depends not only on technical design but also on the political economy of adoption. Flutterwave and similar platforms thrive in jurisdictions with flexible regulatory environments, cross-border licensing pathways, and access to venture capital, while others face constraints due to fragmented policies and underdeveloped payment ecosystems (African Union Development Agency–NEPAD 2024). International parallels such as the Unified Payments Interface and Pix reveal that nationwide interoperability mandates, public–private partnerships, and user-focused design are decisive factors in long-term viability (Baker 2024). Without them, African counterparts risk partial adoption or stagnation, which highlights the need for deliberate, context-aware strategies when replicating successful digital finance models.

Policy and Regulatory Considerations

Despite these technological advances, it is important to tackle several structural and policy challenges to fuel widespread adoption. One fundamental obstacle is the absence of comprehensive digital identity systems in many African countries (Musoni et al. 2023). Without unique, verifiable identification, financial institutions struggle to comply with know-your-customer and anti-money laundering protocols, primarily when serving informal sector clients. Additionally, regulatory fragmentation across jurisdictions hampers cross-border transactions and undermines the standardisation necessary for blockchain and AI interoperability (EIB 2024).

Another constraint lies in the lack of harmonised standards for smart contracts, e-signatures, and trade documentation (Akinfieva and Oppong 2018). Divergent legal interpretations and the absence of mutual recognition agreements among African countries create uncertainty and raise operational risks for firms engaged in digital trade finance. Furthermore, limitations in data infrastructure (e.g., insufficient broadband penetration, low cloud adoption, and fragmented data governance) impede both the effectiveness of AI and the secure deployment of blockchain technologies (Alice and Ebuka 2024).

Beyond these technical barriers, the political economy of digital finance plays a decisive role in adoption outcomes. Competing interests between regulators, incumbent banks, and fintech firms can slow or dilute reforms, particularly

where entrenched actors perceive digital transformation as a threat to existing market dominance (EIB 2024). In some jurisdictions, rent-seeking behaviour or political patronage influences licensing, sandbox participation, and regulatory enforcement, resulting in uneven access to innovation opportunities (African Union Development Agency–NEPAD 2024). Weak governance structures can exacerbate these challenges, making cross-border harmonisation more difficult to achieve in practice than on paper.

Capacity constraints in regulatory enforcement are another critical bottleneck. Many supervisory agencies lack the specialised technical expertise, digital forensic tools, and inter-agency coordination mechanisms required to oversee AI algorithms, audit smart contracts, and investigate cyber incidents effectively (Mugimu 2021). These resource gaps limit the ability to detect non-compliance or respond to complex cross-border disputes in a timely manner, which undermines trust in the system. Strengthening institutional capacity will require sustained investment in human capital, knowledge exchange between regulators, and collaboration among international standard-setting bodies (Santoro et al. 2022).

To address these barriers, policymakers should prioritise the development of interoperable digital identity platforms. Such systems must integrate biometric, mobile, and civil data while complying with privacy and data protection laws (Akinfieva and Oppong 2018). Digital identification initiatives should be aligned with financial inclusion strategies to ensure accessibility and trust among marginalised populations (Santoro et al. 2022). Concurrently, the establishment of regional regulatory sandboxes, modelled on Nigeria's SEC sandbox, can ease experimentation with AI-blockchain solutions in a controlled, multi-country environment (RegTech Africa 2024).

In parallel, regulatory bodies must invest in technical capacity for supervising algorithmic models and the validation of blockchain protocols. Building institutional literacy around emerging technologies is crucial for enforcing compliance and mitigating risks (e.g., AI bias, smart contract vulnerabilities, and cyber threats) (Mugimu 2022). Furthermore, AfCFTA should champion a pan-African digital regulatory framework that encompasses legally recognised e-signatures, standardised data-sharing protocols, and enforceable smart contract templates (African Union Development Agency–NEPAD 2024).

Strategic partnerships between governments, regional institutions, and private sector actors will

also play a key role. Collaborative platforms should focus on co-designing regulatory frameworks, sharing best practices, and creating scalable infrastructure for digital finance (Anjanappa 2024). The convergence of policy harmonisation, technological innovation, and institutional reform can provide the foundation for a robust, inclusive, and future-ready trade finance ecosystem in Africa.

Conclusions and Recommendations

Trade finance is one of the most under-digitised pillars of Africa's financial sector, which limits the continent's potential for inclusive economic growth. This paper argues that AI and blockchain, when integrated thoughtfully, can overcome key bottlenecks in credit access, documentation, verification, and settlement. These technologies can make trade finance faster, more secure, and widely accessible, particularly for SMEs that form the backbone of Africa's intra-regional trade.

Using a multi-theoretical approach based on TOE, TCE, and institutional theory, the present work constructs a conceptual model whereby AI operates as the intelligence engine and blockchain as the trust protocol. This layered model supports automation, auditability, and cross-border transparency, aligning with AfCFTA's objectives of facilitating seamless intra-African trade. Examples from PAPSS, M-PESA, and Flutterwave demonstrate the real-world viability of these technologies. These cases reveal that successful implementation depends not only on innovation but also on policy coherence, regulatory foresight, and infrastructure investment. To maximise impact, it is necessary to sequence policy and implementation efforts in three priority stages:

1. **Foundational stage (0–2 years):** Establish interoperable digital identity frameworks, harmonise core legal standards for smart contracts and e-signatures, and strengthen basic information communication technology infrastructure in underserved regions (Musoni et al. 2023; Akinfieva and Oppong 2018). This stage addresses prerequisites for trust, compliance, and connectivity.
2. **Enabling stage (2–5 years):** Launch AI-focused regulatory sandboxes, develop regional blockchain settlement pilots, and create data-sharing protocols for financial institutions and fintech companies (RegTech Africa 2024). These actions build the regulatory and operational capacity for innovation at scale.

3. **Expansion stage (5-plus years):** Scale successful pilots across AfCFTA member states, integrate cross-border interoperability into national payment systems, and promote SME onboarding via mobile-first, AI-driven credit scoring platforms (Signé 2024). This stage focuses on broad adoption and market deepening.

In addition, targeted SME support (through capacity-building programmes, financial literacy campaigns, and affordable access to digital tools) should run concurrently across all stages to ensure inclusivity. By sequencing reforms in this manner, governments and institutions can address critical dependencies sooner, reduce implementation risks, and accelerate adoption.

Future research should empirically validate the proposed AI–blockchain framework through both quantitative and qualitative studies on its implementation and impact across African countries. This work should include an assessment of the effectiveness of AI in improving SME credit access and an examination of blockchain benefits for trade documentation and cross-border settlements. Investigating socio-technical challenges, such as digital literacy and resistance to change, is also key. Comparative studies with successful digital finance initiatives in other developing regions could offer valuable insights. Ultimately, research should investigate the evolution of regulations and the role of pan-African bodies in promoting a harmonised and enabling environment for these technologies.

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Digital Currencies and Trade Finance in Africa: Opportunities for Multilateral Financial Institutions (MFIs)

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Abstract: The digital economy continues to gain significant traction globally in the wake of the COVID-19 pandemic – with digital currencies emerging as a promising tool to modernize traditional payment systems and to reshape the global financial architecture, particularly in trade finance. This paper examines emerging opportunities created by digital currencies in Africa's trade finance landscape, focusing on multilateral financial institutions (MFIs). The paper appraises current initiatives, regulatory frameworks, and implementation challenges, and it identifies actionable strategies for MFIs to optimize the potential of digital currencies. The paper concludes that while digital currencies hold enormous promise to revolutionize Africa's trade finance landscape, requisite building blocks—including regulatory regimes, technology adoption, sustained education, and enhanced digital infrastructure—require immediate attention. It makes proposals for an African-led digital currency development that serves African interests while remaining interoperable with global systems.

Keywords: Digital currencies; Trade finance; Multilateral Financial Institutions; Africa
JEL Classification: E52; E40; F10; F30; G21; N97; O32

Introduction

Multilateral financial institutions' (MFI) use of digital currencies presents unprecedented opportunities to narrow Africa's trade finance gap. The continent has a critical need for enhanced trade financing, since 40% of funding applications by its small and medium enterprises (SMEs) are rejected, compared with just 10% in developed markets (IFC 2022), and traditional correspondent banking relationships in Africa have declined by 30% since 2016 (SWIFT 2023). Despite these gaps, few MFIs have actively explored the potential of digital currencies for trade finance in Africa. Pioneering initiatives such as the African Export-Import Bank's (Afreximbank) Pan-African Payment and Settlement System (PAPSS)—which has already reduced cross-border transaction costs dramatically—demonstrates

the transformative potential of digital payment infrastructure. Yet beyond these pioneering examples, there remains no systematic analysis of how MFIs might scale digital currency adoption across Africa's trade finance ecosystem. The extant literature focuses primarily on individual countries' central bank digital currency (CBDC) pilots, examining CBDC development from central banking perspectives and analyzing trade finance gaps through traditional economic lenses. Much less attention has been given to the role MFIs could play in coordinating continent-wide digital currency initiatives that directly target Africa's trade finance deficit.

This paper expands on the literature by examining how MFIs can use emerging opportunities created by digital currencies in Africa's trade finance ecosystem. As digital currencies continue to gain traction in a highly technological age, the paper could contribute to shaping the strategic focus of MFIs and other key institutions. The rest of the paper is organized as follows: Section 2 discusses digital currency development and trade finance dynamics in Africa, Section 3 discusses the role of MFIs in digital currency adoption, Section 4 focuses on digital currency opportunities and benefits in Africa's trade finance landscape, Section 5 sheds light on challenges and implementation barriers, and Section 6 presents forward-looking recommendations.

Digital Currency Development and Trade Finance Dynamics in Sub-Saharan Africa

Digital Currency Development in Africa

While China, Eastern Caribbean countries, and the European Union are beginning or are about to issue digital currencies, African countries are still exploring them (IMF 2024). Prodan et al. (2024) show that Africa is underrepresented in global CBDC research, risking exclusion not only from emerging international standards but also from a rapidly growing financial ecosystem.

Across the African continent, it is estimated that more than 75% of central banks are engaged in CBDC research, yet technical and legal uncertainties mark their efforts (IMF 2024). The motivational framework driving African CBDC initiatives is financial inclusion and payment system efficiency; several countries acknowledge potential benefits such as reducing cash-related costs, fostering competition within payment systems, modernizing government-to-person and person-to-government payments, and strengthening monetary policy transmission. More than 60% of central banks noted that the COVID-19 pandemic and the emergence of crypto assets accelerated CBDC planning and development of other digital payment systems (IMF 2024).

However, Ozili (2023) shows that 70% of African countries have not formally pursued CBDC projects; only four are moving to pilot stages, and just one, Nigeria, is advancing to issuance. Despite widespread interest, implementation has been slow, with timelines varying considerably. Notably, while one-third of African countries plan to conclude pilots within two years and more than one-quarter target launches by 2028, many countries prefer waiting for international experience to mature or rely on existing mobile money systems (IMF 2024).

Key deployment challenges include underdeveloped legal frameworks requiring legislative reform, interoperability concerns across payment systems and jurisdictions, cybersecurity risks, and adoption difficulties in cash-based economies with high informality. Compared with Latin America and Asia, where regulatory sandboxes, private sector partnerships, and cross-border pilots are more advanced, Africa lags. Most of its central banks express a preference for hybrid operating models whereby they issue CBDCs and delegate intermediaries to interact with retail customers, aiming to balance financial stability with disintermediation risk.

Several central banks in Africa express interest in technical assistance and analytical support on CBDC risk assessments, legal frameworks, consumer protection, and infrastructure requirements, highlighting the continent's appetite for collaborative approaches to digital currency development. But while the policy discourse on CBDCs is gaining momentum, the translation of research and planning into implementation is progressing unevenly across the continent. These developments point to the need for actors with supranational mandates and convening power, such as MFIs, to support harmonization, interoperability, and capacity building with a view to accelerating widespread adoption and implementation.

Trade Finance Gap and Infrastructure Challenges

The limitations of digital currency adoption cannot be divorced from Africa's broader financial landscape. Afreximbank (2025) estimates the continent's trade finance gap at approximately US$100 billion, a shortfall exacerbated by the retreat of global correspondent banks and weak local financial systems. UNCTAD (2024) further highlights how infrastructure deficits raise trade costs to nearly 50% above the global average, contributing to the continent's low level of intra-African trade, which is estimated at about 16% of total African trade and which compares unfavorably with other

regions. Mazorodze (2024) confirms these patterns and suggests that the low level of intra-African trade is due to a combination of factors, of which financial constraint is the most significant. In summary, interest in digital currencies as an alternative settlement tool has intensified, but the persistence of structural barriers raises a central problem. Can these currencies genuinely overcome entrenched financing and infrastructure inefficiencies, or will they merely replicate them in new form?

Multilateral Financial Institution Innovation

Against this backdrop, MFIs have emerged as pioneers in experimenting with digital solutions. Afreximbank's PAPSS, launched in 2022, has reduced cross-border transactions significantly while processing billions of transactions. Other MFIs have similarly innovative initiatives: the the Eastern and Southern African Trade and Development Bank has piloted blockchain-based trade finance tools that cut processing times and costs, and the African Development Bank (AfDB) has committed significant resources to digital financial inclusion infrastructure. Although these projects differ in scale and design, they collectively highlight the potential of MFIs to act as catalysts for digital transformation in African trade finance. Yet the literature has only begun to capture this role, leaving an analytical gap regarding the institutional mechanisms through which MFIs can drive or hinder the adoption of digital currencies. This paper fills that gap by examining how MFIs can shape adoption pathways, reduce risks, and influence regional interoperability in Africa's trade finance landscape.

Implementation Challenges and Building Blocks

Even where policy intent and institutional innovation exist, substantial barriers impede the rollout of digital currencies in Africa. Commonly cited challenges include currency volatility, political instability, and inadequate digital infrastructure (Table 1). These issues highlight that technological readiness is insufficient without parallel progress in governance, regulation, and user capacity.

Table 1: Key Challenges to Digital Currency Rollout in Africa

Category	Specific Barriers	Implications for Adoption
Macroeconomic & Political	Currency volatility; Political instability	Undermines trust in digital money and discourages investment in cross-border systems.
Infrastructure	Inadequate digital infrastructure; High connectivity costs	Limits domestic uptake and scalability of digital currencies.
Human Capital & Inclusion	Low digital literacy; Unequal access to technology	Excludes SMEs and vulnerable groups from potential benefits.
Regulatory & Governance	Limited regulatory capacity; Weak governance structures	Creates risks of fraud, instability, and inconsistent enforcement.
Cross-border Coordination	Lack of harmonized standards; Fragmented legal frameworks; Weak institutional coordination	Blocks interoperability and regional integration needed for CBDC corridors.

Source: IMF 2024; UNCTAD 2024, Mazorodze 2024
SMEs = small and medium enterprises; CBDC = central bank digital currencies.

The Role of Multilateral Financial Institutions in Digital Currency Adoption

The widespread interest in international cooperation and technical assistance points to a critical role for MFIs in Africa's digital currency development. These institutions occupy a unique position in Africa's digital currency ecosystem, serving simultaneously as facilitators, innovators, and risk mitigators in the transition to digitalized trade finance. Their mandate to promote regional economic integration and development finance positions them as natural intermediaries between national central banks, commercial financial institutions, and the broader trade community. However, their role is not without limitations. Studies by the African Development Bank (2023) note that fragmented regional cooperation and reliance on external donors constrain cross-border projects, while analyses by the International Monetary Fund (IMF 2022a,b) emphasize that legal and regulatory processes often lag innovation, creating implementation delays.

Current MFI Digital Finance Initiatives

Beyond Afreximbank's PAPSS system, several MFIs have launched transformative digital initiatives, though with varying outcomes and adoption patterns. The African Development Bank (AfDB) has committed $2 billion through its Digital Financial Inclusion Facility, supporting digital payment infrastructure across 24 African countries. This initiative has facilitated the onboarding of more than 320 million previously unbanked individuals into formal financial systems through mobile money platforms and digital wallets. Other regional institutions have pursued complementary initiatives. The West African Development Bank has partnered with the Central Bank of West African States to explore a regional digital currency that would complement the CFA franc, potentially serving eight member countries with a combined population of 130 million (BOAD 2023; BCEAO 2023).

The Eastern and Southern African Trade and Development Bank has pioneered blockchain-based trade finance solutions, reducing letter-of-credit processing times from 10 days to under 4 hours while cutting associated costs by 40% (ESATDB 2023). Its digital platform has processed more than $3.2 billion in trade transactions since 2022, demonstrating the scalability of digital solutions in traditional trade finance operations. Similarly, the Development Bank of Southern Africa has integrated digital payment rails into its infrastructure financing programs, enabling real-time disbursements and monitoring of project funds across 14 countries (DBSA 2023).

Strategic Advantages of MFI Leadership

MFIs possess several structural advantages that position them as ideal catalysts for digital currency adoption in trade finance. Their supranational status enables them to navigate complex cross-border regulatory environments more effectively than individual commercial banks. Their established relationships with central banks, finance ministries, and regulatory authorities across multiple jurisdictions provide diplomatic channels for harmonizing digital currency standards and protocols. Furthermore, their development mandate aligns with the financial inclusion objectives that drive many digital currency initiatives, creating natural synergies between institutional goals and technological innovation.

The financial capacity of MFIs provides another critical advantage. With combined assets exceeding $150 billion, major African MFIs can absorb the initial investment costs and operational risks associated with digital currency infrastructure development. Their ability to provide patient capital and technical assistance enables

smaller financial institutions and businesses to participate in digital currency ecosystems without bearing prohibitive entry costs. A clear example is the African Development Bank's Africa Digital Financial Inclusion Facility, a blended finance vehicle capitalized with $100 million in grants and $300 million in concessional loans to scale digital financial services. The facility aims to extend access to formal digital financial services to 320 million additional Africans by 2030 (ADFI, 2019). This catalytic role has proven essential in markets where commercial banks remain hesitant to invest in unproven technologies.

Technical Assistance and Capacity Building Programs

MFIs have expanded their traditional lending operations to include comprehensive digital literacy and technical assistance programs. Afreximbank has trained more than 5,000 banking professionals across 42 countries in digital payment technologies and CBDC operations through its Trade Finance Leadership Programme. Such capacity-building initiatives address the human capital constraints that often impede digital transformation in African financial institutions.

The Islamic Development Bank has established Digital Economy Centers of Excellence in Cairo, Lagos, and Dakar, providing technical support for Shariah-compliant digital currency frameworks. These centers have developed standardized protocols for Islamic digital finance that accommodate religious requirements while maintaining interoperability with conventional digital payment systems. This innovation has opened digital currency opportunities for the 250 million Muslims across Africa who require Shariah-compliant financial services (IsDB 2023).

Risk Mitigation and Guarantee Mechanisms

MFIs have also developed sophisticated risk mitigation instruments specifically tailored for digital currency transactions. The African Trade Insurance Agency now offers cyber risk insurance for digital payment platforms, covering losses from system breaches, fraud, and operational failures. This coverage has been instrumental in encouraging commercial banks to adopt digital currency platforms, with insured transaction volumes growing from $500 million in 2022 to more than $4 billion in 2024 (ATI 2024).

Guarantee mechanisms have also evolved to support digital currency adoption. Afreximbank's Digital Trade Guarantee Facility offers partial credit guarantees for transactions conducted through approved digital currency platforms, thereby reducing counterparty risk for participating institutions. This facility has guaranteed billions in digital trade transactions, demonstrating market appetite for risk-shared digital

currency solutions. The facility's success has prompted other MFIs to develop similar guarantee products, creating a competitive market for digital trade finance risk mitigation.

Opportunities and Benefits of Digital Currencies in African Trade Finance

Cross-Border Payment Efficiency and Cost Reduction

High costs and delays characterize traditional cross-border payments in Africa. Transactions often route through correspondent banks outside the continent, with fees ranging from 5% to 20% and settlement times ranging up to five days (UNECA 2020). Digital currencies can streamline these processes by enabling direct peer-to-peer settlements. The Bank for International Settlements (2022) finds that CBDC pilots have consistently reduced transaction costs while increasing speed; several cross-border tests demonstrated settlement within seconds. In Africa, where annual cross-border trade volumes are estimated at nearly $1 trillion, even modest efficiency gains could translate into substantial savings for businesses.

For example, the PAPSS has processed transactions at costs significantly lower than those of traditional correspondent banking. Similarly, mobile money platforms such as M-Pesa in Kenya have reduced domestic transfer fees by more than half of the fees for bank wire services (GSMA 2022). These outcomes illustrate the efficiency gains digital currencies could bring to African trade finance.

Enhanced Financial Inclusion for Underserved Markets

The African Development Bank (2023) reports that SMEs face rejection rates for trade finance applications of more than 40% compared with less than 10% in developed markets. Digital currencies, when combined with distributed ledger technologies, can reduce these rates by providing alternative means of assessing creditworthiness. Evidence from digital finance more broadly supports this potential. For instance, Jack and Suri (2016) show that mobile money systems such as M-Pesa expanded access to savings and credit, lifting hundreds of thousands of households out of poverty in Kenya. Pilot programs across East Africa demonstrate that transaction histories recorded on digital platforms can serve as credible indicators of SME financial health, allowing lenders to extend credit in the absence of traditional collateral.

Transparency and Reduced Fraud in Trade Transactions

Fraud remains a major obstacle in African trade finance, with estimates placing annual losses from documentary fraud and double financing at several billion dollars (ICC 2020). The International Chamber of Commerce (2020) identifies fraud as a persistent problem costing billions annually worldwide; Africa is particularly vulnerable due to reliance on paper-based processes. The transparent nature of blockchain-based digital currencies would enable real-time tracking of goods and payments, reducing documentation fraud and double-financing schemes that plague traditional paper-based systems.

In South Africa, the use of blockchain-enabled systems for mineral exports has been documented to cut invoice processing times and enhance transparency in commodity exports (Deloitte 2021). These developments highlight how digital currencies, when integrated with blockchain, can mitigate risks of fraud and disputes in trade transactions.

Currency Risk Management and Trade Facilitation

Digital currencies also offer sophisticated mechanisms for managing currency volatility, a persistent challenge in African trade, wherein local currency fluctuations can exceed 20% annually. Exchange rate fluctuations frequently erode profit margins and complicate cross-border settlements (UNECA 2020). Digital currencies, particularly those backed by regional or central banks, provide new tools for mitigating these risks. The West African Monetary Zone's ongoing work on the "Eco" demonstrates regional interest in digital-first monetary integration (ECOWAS 2021). Similarly, the African Continental Free Trade Area (AfCFTA) Secretariat has highlighted digital payments as a priority for overcoming currency conversion costs and promoting intra-African trade (AfCFTA 2022). These institutional initiatives point to the strategic importance of digital currencies in supporting regional trade facilitation and reducing exchange-related barriers.

Trade-Offs and Risks

Despite their potential, digital currencies also present trade-offs that must be carefully managed. One concern is the impact on monetary sovereignty: the widespread use of regional or foreign-issued digital currencies could constrain the policy space of national central banks, particularly in smaller economies (BIS 2021). In addition, digital exclusion poses a major risk. With nearly half of Sub-Saharan Africa's adult population still lacking internet access, there is a danger that the shift to digital currencies could deepen rather than bridge existing financial divides (World Bank

2022). Cybersecurity vulnerabilities add another layer of uncertainty because large-scale attacks or technical failures could undermine trust and disrupt cross-border transactions (IMF 2021). Finally, the displacement of traditional financial intermediaries may challenge commercial banks' revenue models, potentially generating resistance from incumbents and slowing reform efforts (AfDB 2023). These risks do not negate the potential of digital currencies but highlight the importance of phased implementation, robust regulation, and parallel investment in digital infrastructure to ensure that the benefits are inclusive and sustainable.

Challenges and Implementation Barriers

Regulatory Framework Gaps and Inconsistencies

Across Africa, digital finance regulation remains fragmented. According to an IMF survey of Sub-Saharan African central banks, only one-third have legal authority to issue a CBDC, while at least 55% would need to change their laws before issuing a CBDC (IMF 2024). This regulatory vacuum creates legal uncertainty that deters institutional investment and limits the scale of digital currency initiatives. The absence of harmonized standards across regional economic communities means that digital currency systems developed for one market often cannot be deployed in neighboring countries without substantial modifications.

Regulatory inconsistencies extend beyond national borders, creating cross-border complications. Different approaches to know-your-customer requirements, anti-money laundering standards, and capital controls across African jurisdictions complicate the development of pan-African digital currency solutions. For instance, Nigeria's restrictive approach to cryptocurrency contrasts sharply with South Africa's more permissive regulatory stance, creating challenges for MFIs attempting to develop regional digital currency platforms. The lack of mutual recognition agreements for digital identity systems means that users verified in one country must undergo repeated verification processes in each new jurisdiction, increasing costs and reducing user adoption.

Technology Infrastructure Limitations

Despite significant improvements in recent years, Africa's digital infrastructure remains inadequate for widespread digital currency adoption. Internet penetration stands at 38% across the continent, considerably below the global average of 68%, with stark disparities between urban areas at 57% connectivity and rural regions at 23% connectivity, representing the widest urban-rural gap among all International Telecommunication

Union (ITU) regions (ITU 2024). These geographic divisions would create uneven digital currency accessibility, potentially limiting adoption to urban centers while excluding rural populations.

Affordability constraints present additional barriers to digital currency implementation. Africans allocate an average of 6.5% of their monthly income to basic mobile data packages, compared with just 0.5% for Europeans (ITU 2022). This thirteenfold cost differential significantly restricts the sustained internet access necessary for digital currency transactions, particularly among lower-income populations who might benefit most from alternative financial services.

The telecommunications backbone supporting digital currencies faces substantial coverage and capacity limitations. While mobile broadband infrastructure reaches 86% of the population in Africa, 14% remain completely unserved, with this proportion rising to 25% in rural areas, where traditional banking services are often limited (ITU 2024). Network quality varies considerably: although 70% of the population can access 4G networks theoretically capable of supporting digital transactions, 16% still depend on slower 3G infrastructure, while advanced 5G coverage reaches only 11% of the population, concentrated primarily in major urban centers (ITU 2024). These infrastructure constraints would limit both the geographic reach and transaction processing capacity of digital currency systems across much of the continent.

Digital Literacy and Trust Deficits

Low digital and financial literacy constrains the uptake of digital currency solutions. The United Nations Educational, Scientific and Cultural Organization estimates that only 39% of African adults possess basic digital skills, with rates dropping to below 20% in rural areas (UNESCO 2024). Financial literacy compounds this challenge, with surveys indicating that only about 32% of adults in Sub- Saharan African are financially literate (Fanta & Mutsonziwa, 2021). This knowledge gap makes populations vulnerable to fraud and reduces their willingness to adopt digital currency solutions, even when these solutions offer clear economic benefits.

Trust in digital financial systems remains fragile following numerous high-profile failures of digital platforms. The collapse of mobile money schemes in several countries, affecting more than 3 million users and resulting in losses exceeding $450 million, has created lasting skepticism about digital financial innovation. Cultural preferences for physical cash, particularly among older populations and in informal markets that account for 86% of African employment, further impede digital currency adoption.

Surveys indicate that 72% of African consumers prefer cash transactions due to concerns about digital fraud, system failures, and loss of transaction privacy.

Interoperability and Standardization Challenges

The proliferation of incompatible digital payment systems across Africa creates significant barriers to digital currency adoption. More than 270 mobile money services operate across the continent, most using proprietary technologies that cannot communicate with competing platforms. This fragmentation forces users to maintain multiple digital wallets, and it prevents the network effects necessary for digital currency success. The absence of common technical standards means that a digital currency developed for one country's infrastructure may be incompatible with neighboring systems, limiting cross-border utility.

Attempts at standardization face technical and political obstacles. Competing international standards from China (Digital Currency Electronic Payment), Europe (digital euro specifications), and the United States (FedNow protocols) create confusion about which technical architecture African countries should adopt. Regional economic communities have proposed different interoperability frameworks, with the Southern African Development Community favoring ISO 20022 standards and the Economic Community of West African States exploring alternative protocols. These competing visions delay implementation and increase development costs as institutions hedge their bets by building systems compatible with multiple standards.

Cybersecurity and Operational Risks

Finally, the sophistication of cyber threats targeting African financial systems has grown exponentially. Interpol's African cyberthreat assessments describe a sharp rise in cybercrime and show the financial sector among the most targeted industries in 2022–2023 (Interpol 2024). Digital currency platforms present attractive targets for cybercriminals due to their concentration of value and the irreversibility of many digital currency transactions. Digital currency/CBDC ecosystems are high-value targets for threat actors, and instant payments are generally irreversible, increasing the risk of loss if accounts are compromised. The region also faces a severe skills gap; an estimated shortage of 100,000 certified cybersecurity professionals will leave critical financial and payments infrastructure exposed (Meineke 2024).

Operational risks extend beyond external threats to include internal system failures and human errors. The complexity of digital currency systems increases the probability of technical malfunctions that could result in significant financial losses.

The lack of established disaster recovery protocols and business continuity plans for digital currency operations means that system failures could have cascading effects across interconnected financial networks.

Recommendations

The convergence of digital currencies and trade finance represents a transformative opportunity for Africa's economic development, with MFIs uniquely positioned to catalyze this change. This research has demonstrated that while significant challenges exist, the potential benefits of digital currency adoption in trade finance far outweigh the implementation costs and risks. Successful initiatives such as the PAPSS system provide proof of concept for broader digital currency deployment across the continent.

The path forward requires coordinated action across multiple dimensions. Regulatory harmonization must proceed in parallel with infrastructure development, while capacity-building initiatives ensure that African populations can effectively utilize digital currency innovations. MFIs must evolve from their traditional roles as financiers to become technology enablers, standard setters, and risk mitigators in the digital economy. Their ability to operate across borders, mobilize significant resources, and convene diverse stakeholders makes them indispensable to successful implementation of digital currencies.

The window of opportunity for African leadership in digital currency innovation remains open but will not persist indefinitely. As global powers advance their own digital currency agendas, Africa must move decisively to avoid the trap of over-promising and under-delivering that has characterized some previous technology initiatives. The recommendations presented in this paper provide a roadmap for African-led digital currency development that serves African interests while remaining interoperable with global systems.

Multilateral Financial Institutions

MFIs must adopt a coordinated approach to digital currency development that leverages their collective strengths while addressing individual market needs. First, establishing a Pan-African Digital Currency Consortium comprising major MFIs would create a unified platform for standard-setting, knowledge sharing, and resource pooling. This consortium should develop common technical standards for digital currency interoperability, ensuring that investments in one country or region can be leveraged across the continent. The consortium should also negotiate with global technology providers for continent-wide licensing agreements, reducing costs through economies of scale.

Second, building on this foundation, MFIs should establish dedicated digital currency innovation funds to support infrastructure development and pilot programs. These funds should operate on a blended finance model, combining concessional funding for public infrastructure with commercial returns from successful implementations. Priority investments should include upgrading payment system infrastructure, developing digital identity systems, and creating regulatory sandboxes in which new digital currency models can be tested without full regulatory compliance. The funds should support local technology companies developing African-specific digital currency solutions, fostering indigenous innovation capacity.

Third, MFIs must strengthen their role as neutral intermediaries between public and private sector stakeholders. This effort involves creating multi-stakeholder governance frameworks that include central banks, commercial banks, fintech companies, and civil society organizations in digital currency decision-making processes. MFIs should facilitate regulatory dialogue through regular forums bringing together regulators from different jurisdictions to harmonize approaches to digital currency oversight. Additionally, MFIs should provide technical assistance to help countries develop national digital currency strategies aligned with regional integration objectives.

Infrastructure Development Priorities

Addressing infrastructure gaps requires systematic investment prioritizing high-impact connectivity solutions based on current realities rather than aspirational targets. According to the International Telecommunication Union's 2024 estimates, only 38% of Africa's population uses the internet, significantly below the global average of 68% (ITU 2024). The urban-rural divide is particularly stark, with 57% internet usage in cities compared to just 23% in rural areas, the widest gap among all ITU regions. This represents the baseline from which digital currency infrastructure must be developed.

Mobile broadband coverage reaches 86% of Africa's population, yet 25% of rural dwellers have no possibility of internet access due to infrastructure gaps (ITU 2024). Investment priorities should focus on expanding this mobile infrastructure because it represents the most cost-effective path to connectivity. The success of mobile money systems across Africa, with more than 25 million users in major markets such as Ghana, Kenya, Tanzania, and Uganda, demonstrates the potential for mobile-based financial services (IMF 2024). Ghana, Cameroon, and Uganda have achieved mobile money transaction volumes representing

significant shares of gross domestic product (GDP), providing a foundation on which to build digital currency systems.

Power infrastructure improvements must parallel digital connectivity investments. Current energy challenges are substantial: less than half of Africans have reliable electricity access, and closing Africa's energy gap requires approximately $190 billion annually, about 6% of GDP (UNCTAD 2024). MFIs should prioritize financing renewable energy projects that provide reliable electricity to digital financial service providers. In 2023, the renewable energy investment in Africa totaled just $15 billion, or 2.3% of global renewable energy investment, highlighting the significant gap that must be addressed for sustainable digital infrastructure development.

Cybersecurity infrastructure requires immediate attention, given the rapid growth of the digital payment ecosystem. The expansion of PAPSS and similar systems creates new security requirements that demand coordinated regional responses rather than fragmented national approaches. MFIs should support the development of regional cybersecurity frameworks that can protect digital currency infrastructure while maintaining interoperability across different national systems.

Capacity Building and Education Programs

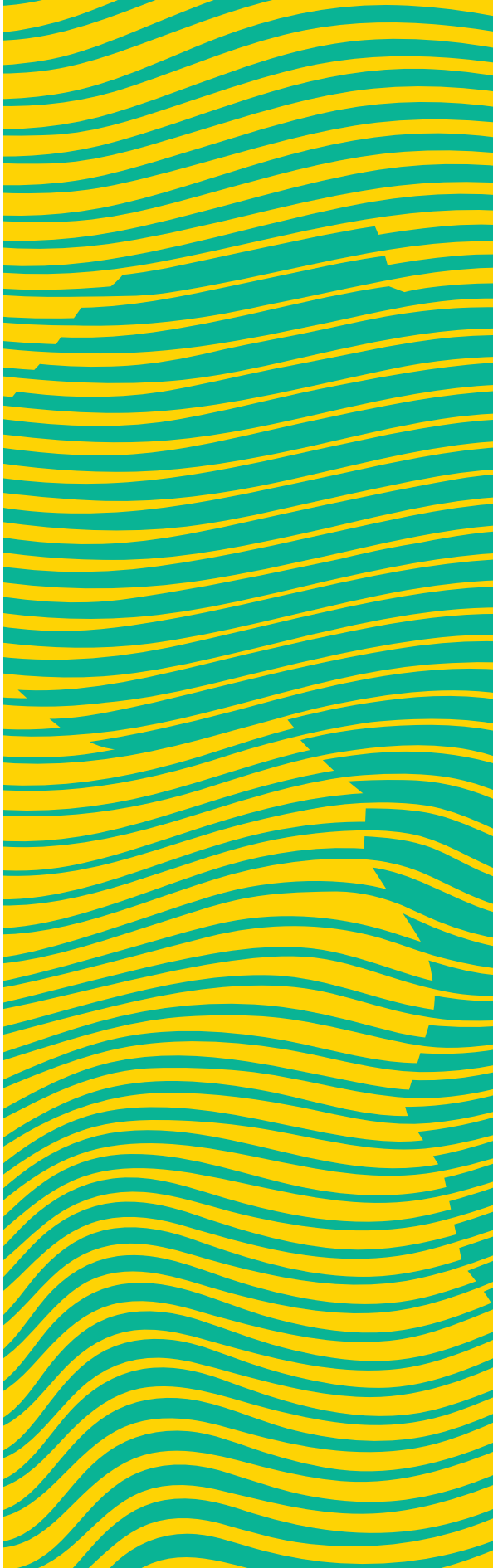
Comprehensive capacity building must address significant knowledge gaps revealed by recent research. A 2024 African Union Commission and the Organisation for Economic Co-operation and Development report shows that only 9% of youth aged 15 to 24 across 15 African countries have basic computer skills; just 10% of the male workforce and 7% of the female workforce possess these skills (UNESCO 2024; OECD 2023). Africa needs an additional 23 million science, technology, engineering, and mathematics graduates by 2030 to fill key roles in engineering, healthcare, IT, and other vital sectors, representing a massive skills development challenge that directly impacts digital currency implementation capacity.

For financial sector professionals, MFIs should support existing successful initiatives rather than creating parallel systems. As of 2024, the World Bank's Digital Foundations Project in Malawi had already trained 19,000 youth through tech hubs, demonstrating scalable approaches to digital skills development (Kwakwa 2024). In Tanzania, the East Africa Skills for Transformation and Regional Integration Project is establishing a regional flagship information and communications technology (ICT) centre that will train qualified ICT professionals for the East African market. These initiatives

can be adapted for digital-currency-specific training programs.

Public education campaigns must build trust and understanding of digital currencies among the general population. The adoption of mobile money across Africa offers valuable lessons about user education and trust-building. However, the challenges faced by Nigeria's eNaira—with only 1.5% of wallets engaging in transactions weekly, despite its successful technical implementation (CBN 2023)—highlight the critical importance of comprehensive user education and clear value propositions (Atlantic Council 2024). This experience underscores that technological capability alone is insufficient without addressing user needs, cultural contexts, and demonstrable benefits.

School curricula integration represents a long-term investment in digital currency adoption. MFIs should support education ministries in incorporating digital financial literacy into curricula, building on younger populations' high degree of familiarity with mobile technology: 74% of web traffic in Africa already occurs via mobile phones (ITU 2024). However, this integration must be realistic about current educational infrastructure constraints and teacher training.



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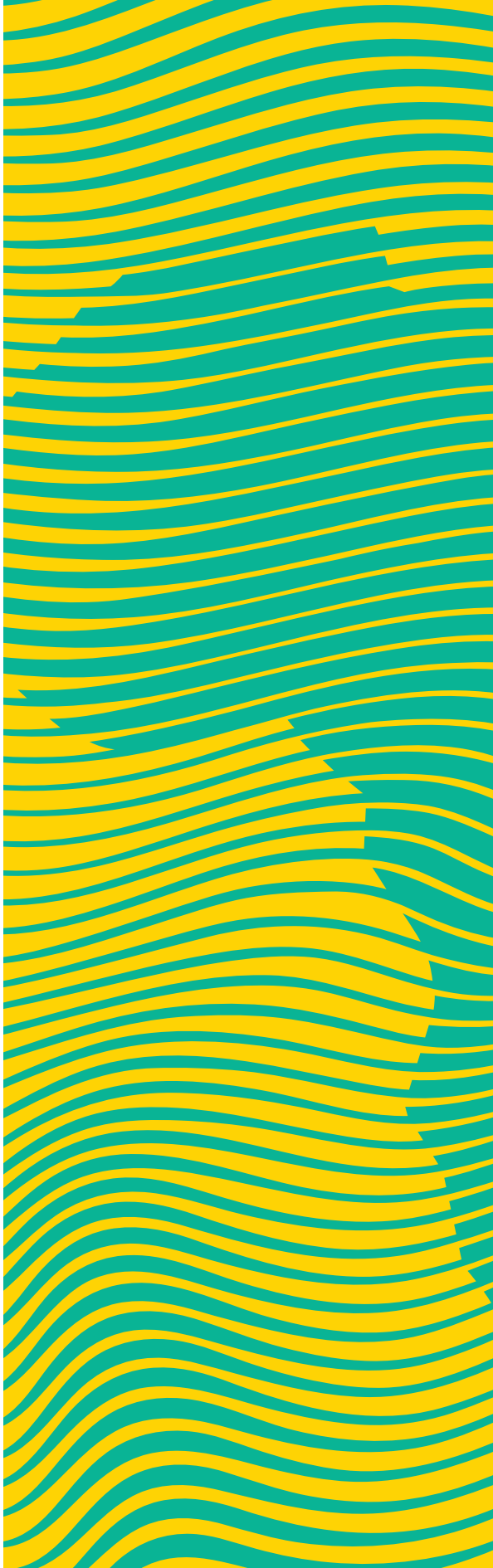


How Can Central Bank Digital Currencies Facilitate Trade and Investment in Africa?

Joshua Yindenaba Abor & George Nana Agyekum Donkor

Abstract: This paper examines how central bank digital currencies (CBDCs) present transformative trade and investment opportunities for Africa. They provide significant benefits to improve cross-border payments and boost trade and investment, including reduced transaction costs, faster transactions, improved transparency and traceability, and enhanced financial inclusion. CBDCs can streamline foreign exchange processes by enabling direct conversion of one digital currency into other digital currencies or even support multi-currency interoperability. The paper also identifies the challenges and risks associated with CBDCs, including limited technological infrastructure, cybersecurity threats, privacy concerns, limited interoperability and standardisation, regulatory uncertainty, reliance on government-backed digital currencies, scalability and performance, and dependence on external systems. Policy recommendations aim to maximise the opportunities that CBDCs offer while addressing Africa-specific challenges.

Keywords: Central bank digital currencies; cross-border payments; trade and investment; Africa
JEL Classification: E52; E58; F10; F30; O32

Introduction

Globalisation and digitalisation have changed the financial and payment systems. The emergence of innovative payment solutions from fintech and Big Tech companies has prompted central banks to consider the introduction of digital technologies to enhance payment systems and currencies, hence digital currencies. Central bank digital currencies (CBDCs) have emerged as a transformative concept in the global financial landscape, challenging traditional notions of money and its management (Abor et al. 2025). CBDCs are the digital equivalent of a country's fiat currency, which is issued and supported by that country's central bank. CBDCs are built to run on a blockchain, which makes them quick, safe, and reasonably priced. Unlike decentralised cryptocurrencies such

as Bitcoin, CBDCs are centralised and backed by the issuing central bank, ensuring stability and trust (Li 2011). They are designed to give consumers a digital substitute for cash, which is becoming less popular than digital payments (Lawack and Mziray 2024). As the digital equivalent of central bank-issued paper currencies, CBDCs store monetary value electronically and are used for making payments.

CBDCs come in two types: retail and wholesale. Retail CBDCs are intended for use by the public as a digital equivalent of physical banknotes. Wholesale CBDCs, on the other hand, are used in wholesale payment and settlement systems and are available only to a small group of wholesale market players (financial institutions), including commercial banks and central banks. Overall, about 86% of global central banks are investigating the benefits and disadvantages of CBDCs, with 60% conducting pilot programmes in countries such as Australia, Brazil, India, Japan, Russia, and Turkey. The Bahamas, Jamaica, and Nigeria are examples of countries that have fully implemented a CBDC (Auer et al. 2021). In 2021, Nigeria became one of the first countries in Africa to launch a CBDC, the naira. Ghana and South Africa are piloting CBDCs while Eswatini, Kenya, Mauritius, Namibia, Rwanda, Uganda, Zambia, and Zimbabwe are researching CBDCs (Fuje et al. 2022).

In recent times, the rapid population expansion, urbanisation, technological developments, and growing global integration have all contributed to dramatic changes in Africa's economic environment. The African continent, which has 54 countries and a population of more than 1.4 billion, offers enormous opportunities and presents enormous difficulties in terms of cross-border payments, trade, and investments. Trade is expected to rise under the African Continental Free Trade Area (AfCFTA); investment is pouring into high-potential industries and technology. Regional initiatives such as the Southern African Development Community Real Time Gross Settlement, the Système des Gros Montants Automatisé used by the Central Bank of Central African States for facilitating large-value payments within the Economic and Monetary Community of Central Africa, and the Regional Payment and Settlement System of the Common Market for Eastern and Southern Africa are all streamlining transaction settlements across their regions, replacing complex and expensive correspondent banking arrangements with a more efficient system. These initiatives point to a vibrant, globally influential market in the years to come.

This paper explores the potential impact of CBDCs on cross-border payments, international trade, and investment in Africa. Section

2 provides an overview of cross-border payments in Africa, Section 3 examines CBDCs and trade in Africa, Section 4 focuses on CBDCs and investment in Africa, Section 5 identifies the challenges and risks associated with CBDCs, and Section 6 offers policy recommendations.

Overview of Cross-Border Payments in Africa

Cross-border transactions in Africa are influenced by economic unification, digitalisation, and regulatory efforts. Such transactions primarily involve e-commerce marketplaces, border trades and sales, small and medium-sized enterprise (SME) exports, remittances, gig payments, and supply chains. The most prevalent forms of cross-border payments are person-to-person, customer-to-customer, customer-to-business, business-to-customer, and business-to-business payments. These payments may be intra-regional or diasporic inflows. Mobile money services such as M-Pesa, MTN/Telecel/AirtelTigo Money, and Orange Money have grown significantly on the continent and are now essential for enabling affordable, effective cross-border payments, particularly in East Africa and West Africa.

The AfCFTA seeks to revolutionise trade and foreign direct investment throughout the continent. It is driving momentum for more efficient financial and trade flows with programmes such as the Pan-African Payment and Settlement System (PAPSS) gaining traction to lower transaction costs and reduce reliance on foreign currencies such as the U.S. dollar. PAPSS provides small firms looking to benefit from the AfCFTA with a cost-effective and efficient multi-currency payments infrastructure that can handle a high volume of low-value payments (Lawack and Mziray 2024). Effective cross-border payments are essential to the ongoing expansion of this sector because they enable companies to conduct cross-border transactions with ease.

Existing digital solutions such as mobile money play a transformative role in cross-border transactions in Africa. Throughout Africa, mobile money is the most popular fintech innovation, and its use is growing steadily. The speed, ease, and affordability of mobile money transactions appeal to a variety of income levels, including the "bottom-of-the-pyramid," the rural poor, and the urban middle class (Osabutey and Jackson 2024). M-Pesa, pioneered by Safaricom in Kenya, has expanded across East Africa and beyond, enabling millions to send and receive money instantly via mobile phones. Particularly in trade corridors such as Ghana-to-Nigeria or Kenya-to-Tanzania, platforms such as M-Pesa, Airtel Money, and MTN Mobile Money have teamed up with regional banks and fintechs such as WorldRemit and Yellow Card to enable cross-border payments. These services are

essential for small businesses and remittance flows because they have transactional costs lower than those of traditional banking and because they increase financial inclusion and enable real-time payments. However, their scalability is limited by service providers' operation in silos across borders, resulting in inconsistent interoperability among various mobile money platforms. A smooth integration process is complicated by regulatory differences, such as varying know-your-customer (KYC) regulations and foreign exchange controls. Affordability is further undermined by difficult currency exchanges and expensive cross-network transaction costs. Furthermore, rural communities with poor access are left out when transactions rely on mobile network coverage. These technical and structural obstacles continue to limit mobile money's cross-border potential, even as programmes such as PAPSS seek to overcome them.

CBDCs present a promising entry point for enhancing cross-border transactions in Africa by streamlining payment processes and reducing reliance on external systems. Cross-border payments are complex and dependent on the required corresponding bank services. International banks that provide corresponding banking services are reducing their existing partnerships and are not interested in forming new ones. The risk of failing to meet regulatory and compliance requirements related to the KYC mandate has dampened enthusiasm for corresponding financial services (Ocran et al. 2024). The possibility of penalties and reputational harm due to a poor correspondent banking connection contributes to relatively low interest rates. The large international banks also contend that transaction volumes do not outweigh the expenses associated with compliance (BIS 2021). CBDCs can enable direct, near-instant settlements between countries, bypassing intermediaries such as correspondent banks and foreign payment networks that often use the U.S. dollar, thus cutting costs and avoiding delays.

Blockchain technology provides a transparent and safe means of exchanging information and recording transactions because it is a decentralised, immutable ledger. Blockchain-based communication has the potential to improve security, save expenses, and streamline procedures in banking (Udeh et al. 2024). By leveraging blockchain or distributed ledger technology with interoperable systems designed for Africa's many markets, CBDCs can make currency exchange easier, increase transparency, and reduce fraud. Integration with already-popular mobile money platforms could increase accessibility, particularly for those without access to traditional banking. AfCFTA's strategic framework for the implementation of CBDCs may align

with the PAPSS to establish a single digital payment ecosystem. Although issues such as infrastructure investment and regulatory harmonisation continue to be major obstacles, CBDCs could promote intra-African trade and increase monetary sovereignty by reducing reliance on foreign currencies and systems.

CBDCs and Trade in Africa

Current Trade Dynamics

Trade dynamics in Africa reflect a mix of progress and persistent challenges. Intra-continental trade has grown, driven by the AfCFTA, which aims to boost commerce among the continent's 54 nations. Intra-African commerce expanded by roughly 14.9% in 2023—an increase over the 13.6% recorded in 2022—due to tariff reductions and regulatory harmonization (Afreximbank 2024). However, intra-African trade continues to be low compared with other intra-regional trade. Additionally, almost half of all trade in Africa is settled in U.S. dollars, demonstrating the continued importance of the dollar as the third currency in trade settlement. Africa loses $5 billion annually due to the expenses of settling trades in U.S. dollars and U.S. banking systems. Sometimes, these trades take place between economic zones or next-door African nations. Other times, it involves partners abroad (Kioneki n.d.). This dependence exposes the continent to exchange rate volatility and limits the use of local currencies such as the rand, naira, cedi, and CFA franc. Efforts to shift to alternatives such as the PAPSS are underway but are slowed by trust, infrastructure, interoperability, and liquidity issues. For now, Africa balances cautious optimism in regional trade with structural reliance on external systems.

Trade Opportunities with CBDCs

CBDCs present transformative trade opportunities for Africa by streamlining cross-border payments and reducing reliance on the U.S. dollar. As the key drivers of African economies, SMEs will be able to access markets, broaden their reach, and improve their competitiveness through the AfCFTA. Creating an environment that allows SMEs to use digital payment and settlement systems can boost cross-border trade, both within and between regions (Lawack and Mziray 2024).

Externally, CBDCs offer Africa leverage in trade with partners such as China, which is advancing its digital yuan. Interoperability of CBDCs could simplify deals in commodities such as oil or lithium, bypassing forex volatility. Because applications, databases, and end users must share financial data for interoperability to exist, several payment networks or schemes can start and finish financial transactions, and companies can conduct business outside of the network that their own financial

service provider has established (Lawack and Mziray 2024). By lowering the costs for payment service providers and shortening transaction chains, interoperability of CBDCs could make it easier for consumers, corporations, and financial institutions to make cross-border CBDC payments. This interoperability could ultimately lead to faster transactions and lower end user fees (BIS 2022), helping boost trade with China, which is rapidly becoming Africa's biggest trade partner, and with other trade partners that may introduce CBDCs.

Furthermore, digital currencies improve financial inclusion, opening new trade marketplaces for the more than 40% of Africans who lack bank accounts (AfriCatalyst 2023). Enhancing financial inclusion is a key driver for issuing retail CBDCs in emerging markets and low-income economies. Issuing a CBDC increases the proportion of people with bank accounts when that CBDC is a more efficient payment method than deposits. CBDCs will help bank the unbanked and open new markets to boost trade (Tan 2023).

CBDCs can streamline foreign exchange processes by enabling direct conversion of one digital currency to other currencies or even supporting multi-currency interoperability. As digital currencies issued by central banks, CBDCs are intended to communicate directly with one another via compatible platforms or protocols. Additionally, CBDCs can be designed to function within a common framework that supports several currencies at once. This functionality lessens losses due to erratic exchange rates and exorbitant conversion costs, which is crucial for Africa's varied currency environment.

CBDCs and Investment in Africa

Current Investment Landscape

Investment in Africa is a blend of opportunity and complexity. Foreign direct investment (FDI) increased, according to the most recent EY Global 2024 Africa Attractiveness Report. Investments cover sectors from renewable energy to business services, showcasing a rich variety of investment opportunities. Intra-regional investments promoting economic integration are steadily growing in Africa, with renewable energy sources such as solar and wind attracting green funding (Sita et al. 2024). Intra-African investment is rising, fueled by the AfCFTA, as firms tap regional markets. South Africa and Morocco lead in intra-African investment, channeling capital into manufacturing and infrastructure on the continent. African countries accounted for 14% of all intra-regional investment initiatives on the continent. These investments were spearheaded by South Africa, Kenya, and Nigeria. Although intra-African direct investment makes up only 5% of jobs and less than 3% of capital, it has

enormous potential to boost regional economies (Sita et al. 2024).

Positive Impacts of CBDCs on Investment

CBDCs could significantly boost Africa's investment landscape by enhancing efficiency and accessibility. By streamlining cross-border transactions, CBDCs can lower costs and speed up settlement while improving transparency and reducing risks of money laundering and illicit activities through traceable, auditable transaction records (Lawack and Mziray 2024). Blockchain-based digital assets such as CBDCs can greatly lower investment risks, increase liquidity, enhance transparency, and reduce corruption risks, making them attractive to green and venture funds targeting high-growth markets. With fees lower than those in traditional banking, CBDCs could increase FDI, potentially increasing annual inflow. For intra-African investment, CBDCs could simplify payments across fragmented currency zones, encouraging regional players such as Algeria, the Arab Republic of Egypt, and Nigeria to fund infrastructure and manufacturing in neighboring countries, thereby amplifying the AfCFTA's momentum.

One of the main sources of external funding for Africa is remittances. Sub-Saharan Africa is the costliest region to send money to and receive money from, with an average transfer fee of just under 8% of the amount transferred (Fuje et al. 2022). The high expense and intricacy of conventional remittance routes continue to deter diaspora investments. Platforms such as Stellar Development Foundation, a nonprofit organisation that provides remittance services, has lowered transaction fees between Nigeria, South Africa, and East African countries from as much as 8% to less than 2%, significantly increasing the amount and frequency of diaspora-driven investments in local startups and businesses (Boison 2025). Interoperable CBDCs with wider coverage and greater efficiency could further reduce fees and boost investment. In addition to speeding up and lowering the cost of remittance procedures, CBDCs will increase transparency and motivate the diaspora to make more active investments in real economic ventures in Africa, thereby promoting direct assistance to SMEs and increasing economic expansion.

Challenges and Risks Associated with CBDCs

Although CBDCs hold promise for African trade and investment, potential drawbacks exist. To fully impact cross-border payments, central banks need to deal with the challenges and risks that can lessen the benefits of CBDCs. Some of these issues include limited technological infrastructure, cybersecurity threats, privacy concerns, limited interoperability

and standardisation, regulatory uncertainty, reliance on government-backed digital currencies, scalability and performance, and dependence on external systems.

Limited Technological Infrastructure

Cross-border CBDC systems need robust digital infrastructure, such as fast internet, secure networks, and interoperable platforms, to function effectively. However, many African countries lack the technological capacity to support such infrastructure. Inequality may increase if some groups or countries are excluded from full participation due to differences in digital preparedness. Infrastructure gaps present a significant barrier; unreliable electricity supply and limited internet access in rural areas risk exclusion of millions of people from digital trade systems, thereby widening existing inequalities. More than 40% of Africans lack bank accounts (AfriCatalyst 2023), and transitioning to CBDCs requires robust digital literacy and smartphone penetration, both of which many regions lack.

Cybersecurity Threats

Cybersecurity risks are detrimental to the digital currency ecosystems because they could lead to system malfunctions or intrusions that would deter investors, particularly in high-stakes industries such as mining or energy. Cybersecurity risk is the primary operational challenge for African central banks, ranking among the top three concerns for all and among the top concerns for more than half of the banks (Alberola and Mattei 2022). A successful cyber-attack on CBDCs could inflict severe and widespread damage, undermine central banks' credibility, and deter investment in affected countries. Due to their digital nature, CBDCs are susceptible to ransomware, phishing, and hacking. If security standards vary among nations, a breach in a cross-border CBDC system could jeopardise private financial information, interfere with payments, or result in large losses.

Privacy Concerns

CBDC systems, particularly those with centralised oversight or cross-border tracking, could raise privacy issues. Governments or foreign entities might monitor transactions, eroding user trust. Balancing anti-money laundering (AML) compliance with individual privacy will be a delicate task. Households in poor countries prefer the privacy of cash transactions and do not want the government to track their every payment, which may make CBDCs unpopular (Oh and Zhang 2020). According to Oxford Analytica (2021), cash is still widely used in many countries, and consumers will adopt CBDCs more slowly in those countries where they are hesitant to give up the anonymity of cash payments.

Limited Interoperability and Standardisation

Technological standards, protocols, and governance structures must be agreed on by nations for CBDCs to facilitate smooth direct conversions or multi-currency operations. Cross-border integration may be challenging because of diverse national agendas, legislative frameworks, and technical preferences, such as blockchain versus centralised systems.

Regulatory Uncertainty

Multiple jurisdictions are involved in cross-border payments, and each has its own capital controls, AML regulations, and financial laws. Harmonising these laws is a difficult legal and diplomatic task. Nonaligned CBDCs risk limitations or a lack of international confidence. Regulatory uncertainty regarding CBDC frameworks could confuse investors navigating all 54 African markets.

Reliance on Government-backed Digital Currencies

Reliance on government-backed digital currencies also raises concerns. In countries with unstable economies or corruption, trust in CBDCs could falter, undermining their use in trade and investment. Currency mismanagement or cyberattacks on central systems could destabilise trade flows. In the world of digital currency, which is prone to digital hazards at every stage of its existence, trust is essential. CBDCs offer a fresh opportunity to update antiquated payment systems with cutting-edge technologies to enhance usability, effectiveness, and performance. However, CBDC issuance and supporting activities introduce a broad and intricate ecosystem to Africa that intensifies pre-existing risk exposures and uncovers new ones (IMF 2024). Additionally, reducing U.S. dollar reliance might provoke pushback from global markets, risking trade friction with key partners.

Scalability and Performance

A CBDC system handling high volumes of cross-border transactions must be scalable and resilient. If the underlying technology (for example, a distributed ledger) cannot process transactions quickly enough or crashes, it could disrupt trade and investment and erode confidence in the system.

Dependence on External Systems

If CBDC platforms rely on third-party technologies (for example, foreign blockchain providers), countries risk losing autonomy or facing sanctions-related disruptions. Technical dependence could also expose systems to supply chain vulnerabilities.

Conclusion and Policy Recommendations

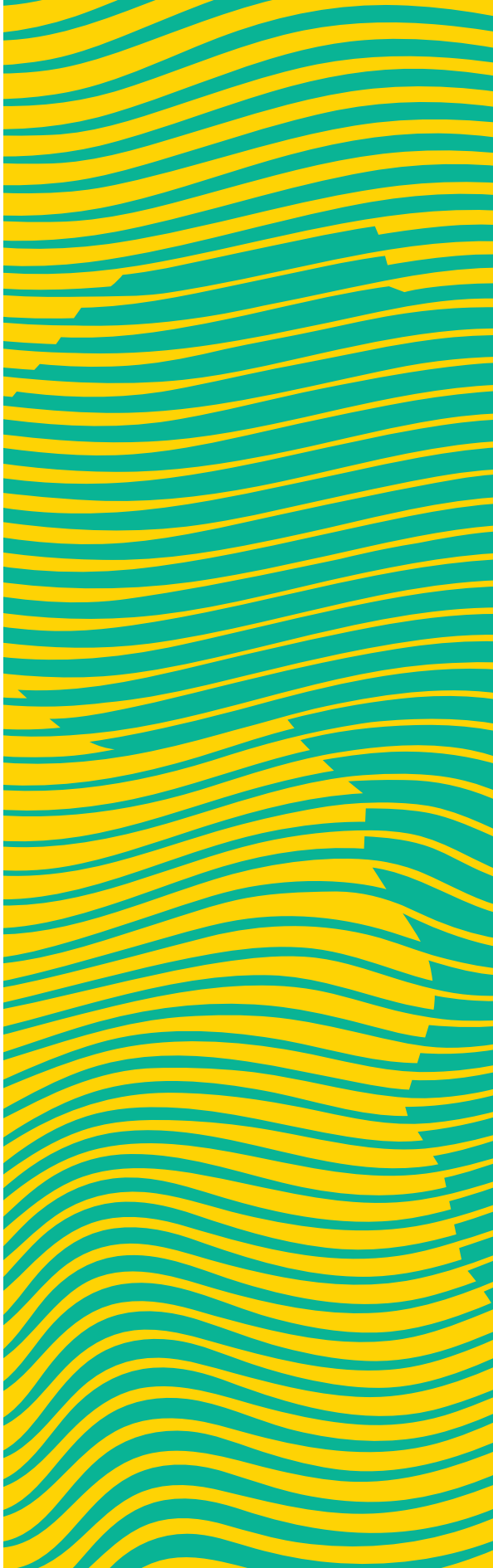
CBDCs present transformative trade and investment opportunities for

Africa. They have the potential to revolutionise financial inclusion because they can be accessed directly through a mobile device. This functionality could help the greater number of people on the continent who have access to a mobile device but not a bank account. CBDCs also could resolve Africa's fragmented payment systems and currency exchange issues. Facilitating faster, less expensive, and more transparent transactions could make the continent more competitive in international markets and boost intra-African trade under programmes such as the AfCFTA. However, CBDCs' success hinges on addressing major obstacles, including regulatory harmonisation, gaps in technology infrastructure, financial instability, and cybersecurity threats. CBDCs could spur economic integration and progress throughout Africa if they are handled carefully. However, their adoption needs to be tempered with strong safeguards to guarantee fair gains and minimise any potential drawbacks.

Given the growth of data protection and online privacy issues in an increasingly digital environment, privacy and cyberattacks are real concerns. The following policy recommendations aim to maximise the opportunities CBDCs offer while addressing Africa-specific challenges, thereby paving the way for a more connected and prosperous economic future.

- Create a robust technological infrastructure. To encourage the adoption of CBDCs, especially in underserved and rural areas, investments in scalable digital infrastructure, such as dependable wireless internet, energy, and mobile technology, are needed. For areas with a poor connection, collaborating with private sector entrepreneurs to implement affordable solutions such as offline transaction capabilities is critical.
- Harmonise cross-border regulatory frameworks. A pan-African regulatory agency or framework is needed to standardise CBDC regulations and guarantee interoperability among national digital currencies. To foster the confidence of foreign partners, counter-terrorism financing requirements and anti-money laundering requirements must be aligned.
- Initiate cross-border trade pilot CBDC programmes. To test the application of CBDCs in cross-border payments, it is necessary to start pilot programmes in important trade corridors (such as the East African Community or ECOWAS), concentrating on high-volume industries such as manufacturing and agriculture. Utilising pilot results will improve systems and show stakeholders real advantages.

- Encourage financial literacy and inclusion. Creating CBDCs with mobile-friendly interfaces that target unbanked people will help them join the formal economy. Educational initiatives are needed to dispel skepticism about digital systems and to improve public awareness of CBDCs.
- Reduce risks with robust safety measures. Strong cybersecurity safeguards are needed to guard against fraud and hacking of CBDC systems. Implementing financial system stabilisation measures, such as holdings limits for CBDCs, will help stop capital flight and bank dis-intermediation.
- Encourage international collaborations. African nations should leverage advanced technological expertise and attract investments by engaging with international financial organisations like the International Monetary Fund and World Bank) as well as countries with sophisticated CBDC systems like China and Sweden. Additionally, establishing agreements to integrate African CBDCs with major world currencies is crucial for facilitating seamless international trade and remittances.



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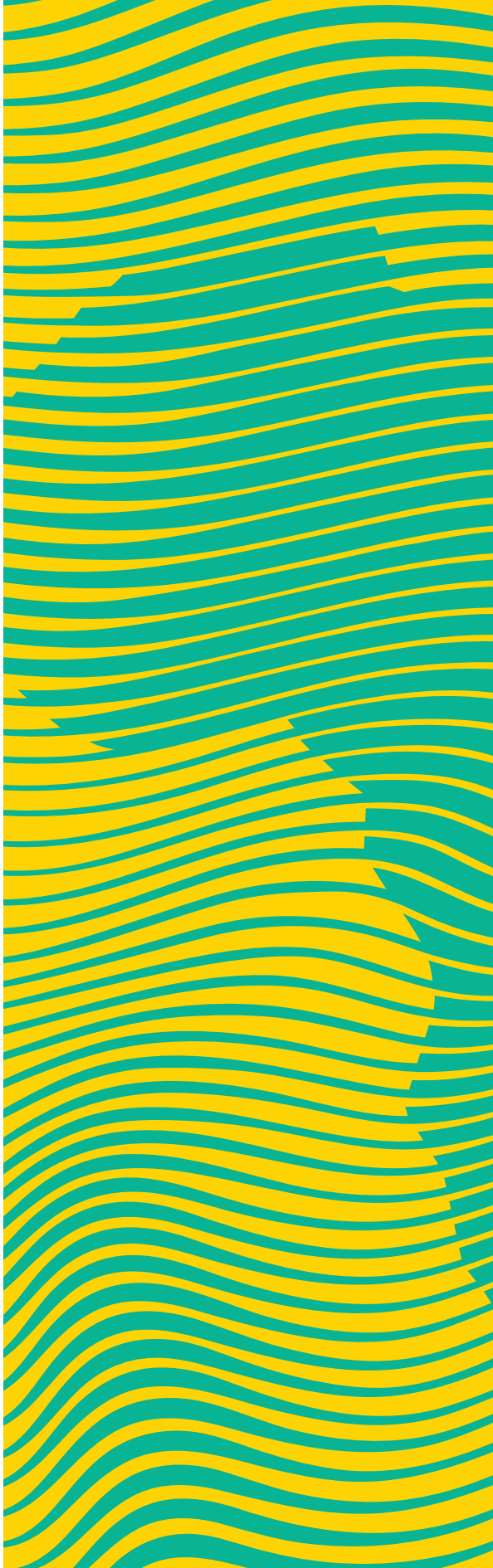


On Trade Finance as a Policy Tool for Climate Change Action in Africa

Paul Terna Gbahabo

Abstract: While trade plays a crucial role in providing essential goods and services, it also contributes to environmental degradation and is increasingly impacted by climate change. The greenhouse gases emitted during trade-related production and transportation lead to climate-related disasters, such as floods and droughts, which in turn disrupt trade by damaging industries and affecting logistics. Although Africa's contribution to global carbon emissions is minimal, the continent faces significant climate risks due to inadequate mitigation and adaptation measures. Africa holds the potential for climate action through renewable energy and sustainable land use. However, financing these actions is a major challenge. Trade finance, a financing arrangement aimed at facilitating international trade flows, as well as the efficient allocation and mitigation of counterparty risks, is a promising tool for mobilising private capital for climate initiatives in Africa. Key recommendations include establishing green trade finance facilities, integrating climate criteria into trade finance regulations, coordinating trade and climate policies, and enhancing African institutions' access to green trade finance. These measures can foster sustainable development and economic diversification in Africa.

Keywords: Africa, climate change, trade and the environment, trade finance, trade policy,
JEL Classification: F13, F10, F30, Q54, O55

Introduction

Trade is the backbone of modern society. It underpins the availability of critical goods and services such as food, energy, and medical supplies. Because international trade comes with high risks and costs, it requires trade finance to mitigate risks and funding constraints (Brenton and Chemutai 2021). Trade finance, a financing arrangement aimed at facilitating international trade flows as well as the efficient allocation and mitigation of counterparty risks, provides the critical capital required at various stages of the trade cycle. It enables stakeholders to better manage the risks and complexity of international trade (Abor, Bekoe, and Diagne 2024).

Trade also impacts the environment. It exacerbates climate change, which in turn disrupts trade itself (Copeland, Shapiro, and Taylor 2021). The production and transportation of goods generate significant greenhouse gases (GHG), contributing to climate-related disasters such as floods, droughts, and extreme temperatures (Felbermayr, Peterson, and Wanner 2025; Yang, Fang, and Sun 2025). Rising temperatures, changing precipitation patterns, rising sea levels, and the increasing frequency and intensity of extreme weather events pose severe threats to economic development, food and water security, and human health and well-being across the African continent. These events disrupt trade by destroying environment-dependent industries, diverting investment to less climate-risk-prone areas, interrupting logistics, and harming agricultural productivity (Brenton and Chemutai 2021).

Although Africa's carbon footprint is relatively small, the continent suffers disproportionately from climate-related risks due to inadequate climate change mitigation and adaptation strategies. Nevertheless, Africa can substantially advance climate action through renewable energy, sustainable land use, and ecosystem restoration (Tol 2009). One viable solution is to integrate climate considerations into trade policies, notably by using trade finance as a policy tool.

Trade finance plays a crucial role in global trade. About 90 percent of international transactions involve some form of trade finance and a market value of more than US$23 trillion (Beck et al. 2023; ICC 2023). In Africa, trade finance supports more than US$400 billion in annual trade. However, the trade finance market in Africa remains underserved, with an estimated US$81 billion to US$91 billion in unmet demand per annum (Nyantakyi 2023).

Trade finance includes various credit facilities that mitigate risks and cover delays in payment for cross-border transactions (WTO 2023). The main types of trade finance—exporter finance (open account), importer finance (cash in advance), and bank-intermediated finance (letter of credit)—each address different aspects of trade risk and financing. From the exporter's perspective, open account and documentary collection offer the least security, followed by letters of credit and cash in advance, respectively. From the importer's perspective, the reverse order of trade finance mechanisms offers the least security (Schmidt-Eisenlohr 2013).

Incorporating trade finance into broader trade policies could address climate change and other transboundary issues effectively. Policymakers should develop strategies that embed environmental, social, and governance (ESG) criteria into

trade finance, support green project financing, and integrate sustainability into government procurement processes (WTO 2023).

Trade and Climate Change in Africa: Some Stylised Facts

Global trade exacerbates climate change, but its effect is heterogeneous across regions. Although Africa emits a relatively small amount of carbon dioxide (CO2) and other GHGs into the atmosphere, it is disproportionately affected by the impact of climate change. This section lays out some important stylised facts on the trade-climate change nexus.

Fact 1: The relationship between trade and GHG emissions—kilotons (kt) of CO2 equivalent—is robust and positive, irrespective of the level of disaggregation of trade. The relationship holds even when trade is disaggregated into merchandise and service exports. For instance, data from the World Bank's 2023 World Development Indicators reveal that in 2020, the East Asia and the Pacific region earned US$6.3 trillion in merchandise exports with a corresponding 18.93 million kt of CO2 equivalent. Similarly, the Europe and Central Asia region earned US$7.07 trillion in merchandise exports with a corresponding 78.068 million kt of CO2 equivalent, while the Sub-Saharan Africa region only earned US$296 billion in merchandise exports with a corresponding 2.258 million kt of CO2 equivalent. Thus, higher trade volumes are associated with higher GHG emissions, indicating that trade's carbon footprint is damaging to the environment.

Fact 2: The climate change effects of trade vary by region. For instance, East Asia and the Pacific and Europe and Central Asia have the highest GHG emissions and the highest trade export value. Sub-Saharan Africa and South Asia have the lowest trade export value and the lowest GHG emissions. Although the correlation between international trade and GHG emissions is positive, subregional heterogeneities reflect subregional differences in trade specialisation. Sub-Saharan Africa, South Asia, and Latin America and the Caribbean have the lowest correlation between GHG emissions and trade in merchandise goods and services. East Asia and the Pacific and Europe and Central Asia have the highest GHG emissions and the highest volume of international trade.

Fact 3: Trade intensity varies by sector and, consequently, so does GHG emission intensity. Using data from the World Input-Output Database, Copeland, Shapiro, and Taylor (2021) show that transport, fuels, and mining and utilities are the most tradable sectors, with a correspondingly higher carbon intensity. Equipment rental, finance, and real estate services and wholesale and retail sectors are the least tradable and, thus, least carbon-intensive sectors. In

general, the data illustrates the existence of sectoral differences in carbon intensity and tradability; the industrial and transport sectors are the most tradable and the dirtiest. World Bank data show that manufacturing is the largest source of export earnings between 2000 and 2022 across all regions except the Middle East and North Africa and Sub-Saharan Africa, where fuels and travel (tourism) dominate the export sector. Notably, between 2000 and 2022, the largest source of foreign earnings receipts in Sub-Saharan Africa was travel and tourism, in sharp contrast to manufacturing, which dominated every other subregion except for the Middle East and North Africa, where fuels were the largest source of export earnings. This explains the low correlation of African trade with GHG emissions in comparison with the high correlation of European and East Asian trade with GHG emissions.

Fact 4: Despite experiencing fewer extreme climate events such as hurricanes, wildfires, storms, and earthquakes than Asia and the Americas (North America and Latin America and the Caribbean), Africa suffers the effects of climate change disproportionately. The typical profile of extreme weather events in Africa is droughts in the Sahel region, floods in Southern Africa, and cyclones in Madagascar and Mozambique. Data from the International Disaster Database (EM-DAT), which show the regional distribution of climate-related disaster frequency between 2000 and 2022, indicate that Africa has a 21 per cent likelihood of experiencing a climate event, lower than the Americas (22 per cent likelihood) and Asia (39 per cent likelihood). However, the data also show that Africa, which has some of the lowest GHG emissions and a relatively lower frequency of climate disasters, has some of the highest numbers of climate change-induced human displacements. Between 2000 and 2022, 15,000 people were rendered homeless due to climate-related disasters across Africa, compared with 11,270 in the Americas and 5,600 in Europe.

Fact 5: Africa has the lowest monetary value of climate disaster-insured damages. EM-DAT data show that the Americas have experienced some of the highest insured climate-related damages; climate events such as hurricanes, wildfires, and severe storms have led to substantial insurance payouts, averaging US$2.52 billion between 2000 and 2022. Oceania and Asia received US$1.128 billion and US$1.1 billion, respectively, in insured damages over the period. During the same period, Africa received the lowest insurance payout, averaging US$252.2 million. The low uptake of climate disaster risk insurance payout on the continent is indicative of its limited insurance coverage and low insurance penetration. This situation also reveals much about the scale of

climate risk exposure in Africa, given that insurance is climate-sensitive and remains a critical climate change adaptation strategy. Furthermore, the lower value of insured damages on the African continent explains why a disproportionate number of people are displaced from their homes without sufficient resilience and coping mechanisms to enable recovery. It also explains why, despite fewer climate disasters, Africa remains more vulnerable than other regions to the higher frequency and magnitude of climate change disasters.

In summary, these stylised facts confirm that although its contribution to the climate change crisis is minimal, Africa is disproportionately affected. EM-DAT data show that the total number of internally displaced persons due to climate-related disasters is higher in Africa than in other regions, which have a higher frequency of extreme weather events. Furthermore, the data also show that, despite its lower GHG emissions rate and lower frequency of climate events, Africa has lower insured damages arising from climate-induced disasters than other regions, which have a higher frequency of climate risks.

The Impact of Climate Risks on Trade Flows

Climate risks, such as frequent floods, drought, and extreme temperature variability, can significantly impact trade flows, particularly in developing countries with inadequate climate change mitigation and adaptation systems, as is the case in many African economies. Following are some of the ways that climate risks can disrupt trade flows.

Disruption to Transportation and Logistics

Climate change hazards for the transport sector largely stem from extreme weather events such as flooding, storms, hurricanes, and cyclones, particularly when the scale of these events overwhelms the maximum capacity they were designed to withstand. Extreme weather events can damage transportation and logistics infrastructure such as roads, railways, and ports, disrupting the movement of goods and services. Droughts can lower water levels in rivers and lakes, making inland waterway transport difficult. Extreme temperatures can disrupt air and sea freight operations, leading to delays and supply chain bottlenecks. Besides the direct damage costs to infrastructure, extreme weather events can take an economic toll on passenger and freight transport, leading to disruptions in the supply chain for goods and services (COACCH 2018).

Damage to Agricultural Production and Food Security

Droughts, floods, and temperature extremes can reduce crop yields and

livestock productivity, leading to food shortages and price volatility. This can disrupt the supply of agricultural exports from developing countries, reducing their trade volumes. Food insecurity and price spikes can also increase social and political instability, further disrupting trade. Climate change is likely to impact trade in agricultural raw materials, as production suffers from the adverse effects of climate change, such as lower rainfall, increasing seasonal variability, and extreme temperatures, and the positive effects of experiencing extended seasons. These climate change risks can directly impact crop production. Indirectly, they increase infestation of pests and disease, directly affecting crop yields, agricultural output, food prices, and trade (De Winne and Peersman 2021).

Destruction of Export-oriented Industries

Extreme weather events, such as floods, sea level rise, storms, wildfires, cyclones, and hurricanes, can cause significant damage to trade-related infrastructures, including industrial facilities, warehouses, and maritime port infrastructure, especially in low-elevation coastal areas. These disruptions could lead to temporary or permanent shutdowns, thus reducing production and storage capacity and adversely affecting trade flows (COACCH 2018). The tourism industry will be hit the hardest as rising temperatures, heat waves, and water scarcity will prevent people from visiting, leading to adaptive relocation of potential tourists to competing holiday destinations. Furthermore, given that many recreational activities are located around beach fronts, rising sea levels may cause erosion and coastline retreats, thus reducing the total receipts and earnings from tourism, especially for small island states that depend heavily on tourism (Tol 2009).

Increase in Trade Logistics Transaction Costs

Rerouting, delays, and other supply chain disruptions stemming from climate change can significantly raise the transaction costs of trade-related services ranging from transportation to insurance. High transaction costs render exports from developing regions, particularly exports of products with low profit margins, uncompetitive (Shear, Ashraf, and Butt 2023).

Reduction of Investment and Increase in Economic Uncertainty

The high frequency of climate-related disasters in developing countries with poor climate change adaptation mechanisms could discourage private sector investment in trade-related activities while diverting foreign direct investment to other locations (Gu and Hale 2023). The unpredictability of future climatic events worsens long-term

investment prospects in trade partnerships and infrastructural development (Linnenluecke, Stathakis, and Griffiths 2011).

Trade Finance as a Policy Tool for Climate Action

Trade finance is a key enabler of 90 per cent of global trade flows, underpinning an estimated US$23 trillion in annual trade activity while supporting about 40 per cent of the trade value in Africa, estimated to be more than US$400 billion per annum. However, the trade finance market in Africa faces significant gaps, with an estimated $81–$91 billion in unmet demand (ICC 2023; Nyantakyi 2023). Leveraging trade finance as a policy tool for climate action is a smart way to mobilise private capital, manage climate risk, and drive the transition to a sustainable, climate-resilient economy in Africa. Trade finance can be used as a climate policy lever in several ways.

Embedding ESG Criteria into Trade Finance Access

Policymakers at regional and national export credit agencies such as the African Export-Import Bank, the Export Credit Insurance Corporation of South Africa, and the Nigerian Export-Import Bank should introduce and strengthen their ESG compliance requirements for companies seeking trade finance products such as pre- and post-shipment export financing, import/export letters of credit, and buyer's credit. Linking access to these instruments with environmental metrics, such as GHG emissions, waste management, energy efficiency, biodiversity protection, and labour practices, can incentivise businesses to adopt sustainable operations, supported by climate policy tools such as carbon credits, offsets, and low-emission subsidies.

Mobilising Private Capital for Green Trade and Investment

Trade finance instruments such as green letters of credit, sustainability-linked bills of exchange, and preferential prepayment terms can be designed with green eligibility criteria to steer private capital toward climate-aligned trade and investment activities. For example, regional and subregional development finance institutions such as the African Development Bank and the ECOWAS Bank for Investment and Development can mobilise funds to provide green export credit insurance and sustainability-linked trade loans that could incentivise firms to integrate climate considerations into their import/export operations and supply chains.

Integrating Climate Risk into Trade Finance Operations

Financial regulators in African central banks should emulate the emerging trend across the world of incorporating climate risk assessment into prudential

regulations governing trade finance instruments, including letters of credit and documentary collections. Export credit agencies should also embed climate risk management into underwriting and portfolio oversight to reduce exposure of prepayment financing, bills of exchange, and other instruments to climate-related physical and transition risks.

Aligning Trade and Climate Policy

Policymakers at the African Continental Free Trade Area (AfCFTA) Secretariat and African Union Commission should set up frameworks linking trade and climate policies in the form of continental green trade standards with green financing guidelines to coordinate those policies. These frameworks will help create an enabling environment for the promotion of green trade and investment through tariffs, incentives, and border carbon adjustments. As Africa's premier trade finance institution, the African Export-Import Bank must champion the structuring of trade finance instruments such as letters of credit, documentary collections, and prepayment facilities to support cross-border flows of climate-friendly goods, services, and technologies.

Building Capacity for Green Trade Finance

Africa's leading trade-enabling institutions, such as the AfCFTA Secretariat, the African Export-Import Bank, and the African Development Bank, should continually embark on technical assistance and capacity-building programs to help strengthen the ability of African financial institutions and companies to access and effectively utilise green trade finance products. This can include training on climate risk assessment, green product structuring, and navigating climate finance regulations and standards.

Promoting Green Project Financing

Export credit agencies on the continent should establish dedicated trade finance programs and facilities to support importing and exporting green technologies, renewable energy equipment, and other low-carbon goods. By offering preferential financing terms, lowering interest rates, and providing risk guarantees for sustainable projects and products, export credit agencies can help mobilise private capital toward sustainable trade and investment.

Integrating Sustainability into Government Procurement

Sustainability considerations should be embedded as an integral component of trade-related public procurement. Policymakers in African government ministries and departments should set minimum thresholds for environmental performance, clean energy use, or circular economy principles in government tenders and contracts.

This can create a reliable market demand for sustainable trade and incentivise businesses to imbue sustainable practices in their import-export operations and supply chains.

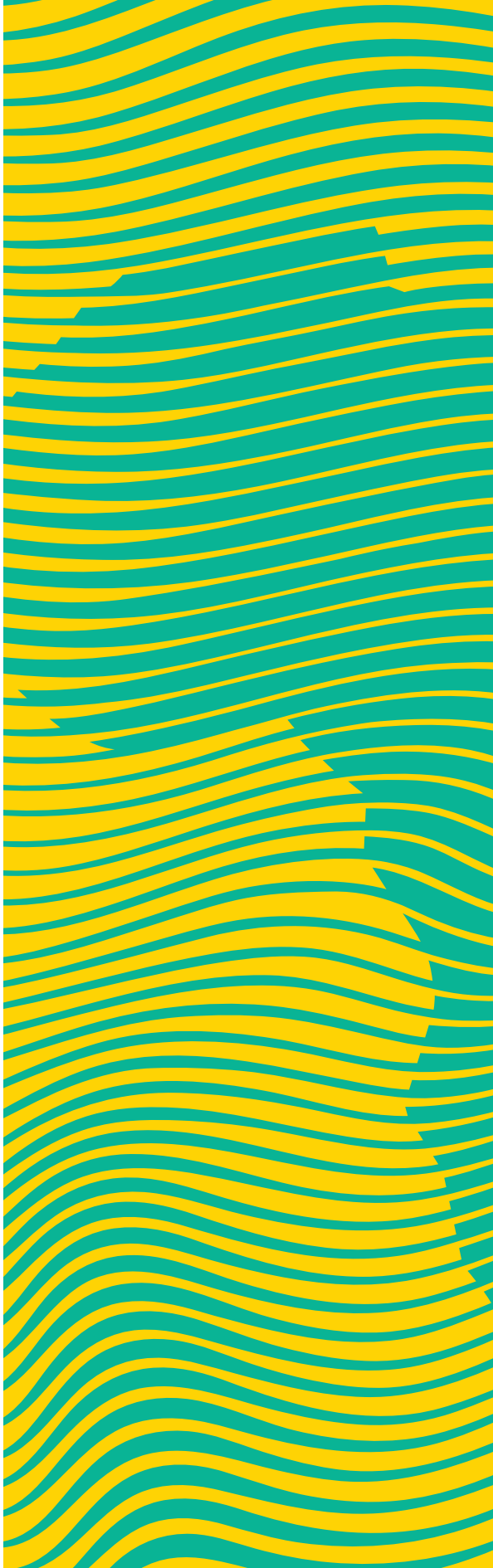
Conclusion

Trade is the backbone of modern society and an enabler of global economic prosperity. However, international trade comes with high costs and risks. Trade finance is a funding mechanism that provides crucial capital requirements at various stages of the trade cycle to enable importers and exporters to better manage the risks and complexity of international trade.

Among international trade's costs and risks are climate change and other negative environmental effects. Trade activities emit considerable greenhouse gases during the production and supply of goods and services, thus contributing to climate-induced disasters such as floods, drought, and extreme temperatures. Extreme weather events pose severe threats to economic development, food and water security, and human health and well-being across the continent.

This paper presents a series of stylised facts that confirm that, although African trade contributes little to GHG emissions overall, in part because its volume is relatively low, the continent is disproportionately impacted by climate-related disasters. These disasters displace a higher number of people in Africa than in other regions, and insurance coverage of climate-related disaster damages is lower on the continent than in other regions. This relative lack of insurance coverage is indicative of the broader issue of poor climate change adaptation mechanisms on the continent.

One solution to the climate financing constraint in Africa is to integrate trade and climate policy. Doing so could mobilise private capital for financing climate change mitigation and adaptation initiatives; such capital is especially needed in poor countries in Sub-Saharan Africa that are still reeling from the economic consequences of the COVID-19 pandemic. In short, leveraging trade finance as a policy tool for climate action in Africa is a promising approach to managing climate risk and aligning trade and climate policy for a sustainable and a climate-resilient economy.



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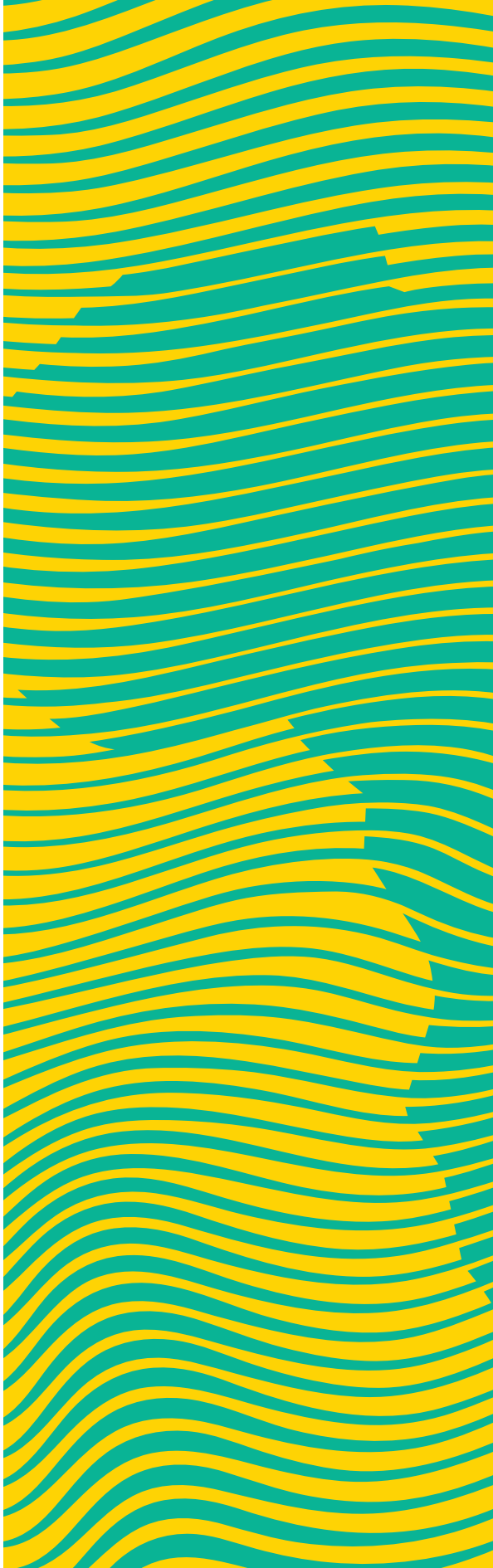


Reimagining Africa–Caribbean Integration amid Global Turbulence: From Shared Vulnerabilities to Strategic Sovereignty

Oyeyemi Kale

Abstract: Recent systemic disruptions have revealed deep shared structural vulnerabilities facing Africa and the Caribbean. Yet, embedded within these challenges lies a transformative opportunity to move beyond historical solidarity and forge a strategic alliance premised on sovereign development, South–South trade, financial cooperation, and shared prosperity. This paper reimagines the Africa–Caribbean relationship as one driven by mutual strategic interests, policy innovation, and a bold reconfiguration of trade, investment, and cultural linkages. Drawing on recent institutional efforts and the interventions of actors such as the African Export-Import Bank (Afreximbank), the African Union, and the Caribbean Community (CARICOM), the paper proposes a roadmap for strategic sovereignty grounded in institutions and a shared vision of resilience.

Keywords: Africa, Caribbean, economic development; integration, trade
JEL Classification: F10; F15; N76; N77; O10

Introduction

The global economy is undergoing a profound transformation, marked by shifts in industrial development and financial ecosystems, the rise of global trade dynamics, evolving economic patterns, and the far-reaching impact of globalisation. Concurrently, global climate change presents potentially catastrophic consequences for different regional economies. Despite these challenges, the pace of industrial and economic restructuring continues to accelerate. In this evolving landscape, globalisation, digitalisation, and the restructuring of global value chains are redefining traditional models of regional economic integration. As global trade and economic activities increase and diversify amid intensifying multiple global shocks and the lingering effects of persistent economic spillovers, the need for adaptive, resilient, and strategic regional integration has never been greater. Within this turbulent context, regions historically bound by common development goals

and shared legacies, such as Africa and the Caribbean, are reexamining and reimagining the underlying foundations of their cooperation.

African and Caribbean countries share similar vulnerabilities to both global developments and their capacity to adapt to them. The intensifying turbulence in the global economy marks a pivotal inflection point for Africa and the Caribbean, regions long on the periphery of global finance and trade. Both regions find themselves at a crossroads: either remain passive recipients of external shocks or reimagine their integration as a pathway toward strategic sovereignty. Both regions share histories of external dependence, small and fragmented markets, exposure to climate shocks, and constrained fiscal space. These shared vulnerabilities provide a foundation for collective action and mutual learning. Their structural vulnerabilities, narrow export bases, high debt burdens, and exposure to climate risks can serve as the impetus for deeper cooperation. By leveraging complementarities in natural resources, human capital, and emerging digital ecosystems, African–Caribbean integration can move beyond the traditional narrative of dependency to one anchored in resilience, innovation, and collective bargaining power in global governance.[1]

1. UNECA 2023; UNCTAD 2024.

Given their economic fragmentation and dependence on developed economies, combined with limitations of size, regional cooperation represents one means by which Africans can secure greater economic integration with the Caribbean vis-à-vis a structural realignment of the global economic architecture. Thus, the relationship between Africa and the Caribbean presents a timely and compelling case for reimagined integration.

This study proposes ways that strategic collaboration across trade, finance, climate governance, and digital innovation can shift both regions from adaptation to proactive global agency, contributing to the broader discourse on resilience and sovereignty in the Global South.

African–Caribbean Integration: An Overview

The escalating frequency and severity of climate-related disasters, coupled with mounting geopolitical fragmentation and technological decoupling, underscore the emergence of a global order in flux. For Africa and the Caribbean, these overlapping crises are not merely external shocks; they expose and amplify underlying structural vulnerabilities, including commodity dependence, limited fiscal space, low economic diversification, and exclusion from global value chains. Yet, paradoxically, they also present a generational opportunity to recalibrate their development trajectories.

The global economy has been more resilient than expected in recent years amid multiple shocks, but economic growth has slowed in the past decade. Despite these headwinds, reports indicated that economic growth generally outperformed expectations in recent years (IMF 2023; United Nations World Economic Situation and Prospects 2024).

Global output growth trends from 2021 to 2024 highlight significant differences across developing regions, with varying implications for resilience and future strategic positioning. Among the regions, developing Asia recorded the highest average growth rate of 5.5 percent, confirming its role as the locomotive of global expansion. The region benefited from strong export performance, robust domestic demand, and technological advancements that have helped sustain its growth momentum despite global turbulence. By contrast, developing Europe had the lowest average growth rate of 3.2 percent, reflecting structural weaknesses, energy disruptions, and slower post-pandemic recovery. This underscores the vulnerability to global shocks and geopolitical instability of regions heavily integrated with advanced European markets. For Latin America and the Caribbean, the average growth rate stood at 4.0 percent, a figure that reflects modest but steady performance. Commodity dependence, fiscal constraints, and exposure to external financial conditions remain central challenges. Yet, the region has also demonstrated a degree of resilience through domestic policy reforms and diversification strategies.

Africa averaged 4.0 percent growth in the same period, underscoring its potential as an emerging growth frontier. Africa's growth drivers included expanding services, investment in infrastructure, and the promise of regional trade integration through the African Continental Free Trade Area (AfCFTA). Nonetheless, the persistence of external shocks, climate vulnerability, and limited fiscal space constrained stronger performance. The COVID-19 pandemic, which led to a 3.1 percent contraction in global GDP in 2020 (World Bank 2023), hindered progress across both regions. In the Caribbean, where economies such as Saint Lucia and Barbados are heavily reliant on tourism, GDP fell by more than 14 percent, while in Africa, especially among commodity-exporting nations such as Angola and Nigeria, growth stalled, and macroeconomic buffers were eroded.

These trends reveal a common pattern: while developing regions are pursuing recovery, their progress is uneven, and their resilience to global shocks remains fragile. It is within this global context that Africa and the Caribbean must reconsider their pathways to integration. Both

regions share vulnerabilities, ranging from commodity dependence and external financial exposure to climate risks, that constrain their growth trajectories. However, there are also opportunities for collaboration. A renewed Africa–Caribbean integration agenda could unlock synergies by fostering trade, investment, knowledge exchange, and collective bargaining power in global economic governance. By moving from shared vulnerabilities to strategic sovereignty, Africa and the Caribbean can reposition themselves as proactive players in shaping a more inclusive and resilient global order.

Africa's external debt as a percentage of GDP rose sharply in recent years, increasing from approximately 18.8 percent in 2008 to 41.6 percent in 2023.[2] In 2023, Africa's total external debt reached about US$1.2 trillion, representing nearly 60 percent of its total public debt. In addition, Africa's average public debt-to-GDP ratio reached 71.7 percent in 2023,a substantial increase of about 39.3 percentage points since 2008. As of 2024, more than 60 percent of Sub-Saharan African and more than 50 percent of Caribbean countries are classified as being at high risk of, or already in, debt distress (IMF 2024), with debt service consuming up to 40 percent of government revenues in some cases. Africa's external debt ratio (≈41.6 percent) remains significantly higher than CARICOM's projected 2025 figure (~30.9 percent). This gap suggests that Africa bears a heavier external debt burden, which may constrain its fiscal flexibility and growth potential.

Average annual global inflation is generally easing, even though it is still higher than pre-pandemic levels. For the subregions of developing economies, Europe is the only significant driver of the global easing of inflation. Developing Asia has the lowest average (2.6), highlighting relative stability but also subdued growth in this metric. By contrast, developing Europe posts the highest average (19.1), though this reflects volatility, with a peak of 27.9 in 2022. Latin America and the Caribbean average 10.1, suggesting moderate but steady trends, while the Middle East and Central Asia (15.0) and Africa (13.6) record stronger averages,[3] driven by commodity dynamics and post-pandemic recoveries. These trends reveal how external shocks, commodity dependence, and policy responses shape regional outcomes differently. For Africa and the Caribbean, whose averages (13.6 and 10.1, respectively) reflect both

2. Afreximbank Research based on the IMF Global Debt Database, the IMF World Economic Outlook Database, and the World Bank International Debt Statistics.

3. Afreximbank Research, World Economic Outlook (April 2024 and October 2024), Economist Intelligence Unit 2025. Note: Data for 2026 is not available.

opportunity and vulnerability, a coordinated integration agenda could help mitigate volatility, leverage complementarities, and strengthen collective resilience in the face of global turbulence.

Total trade between African countries and CARICOM member states was negligible between 2000 and 2018, accounting for less than 0.2 percent of either region's total trade volume (UNCTAD 2022). Recent estimates indicate that trade between Africa and the Caribbean remains modest, accounting for less than 6 percent of either region's total exports in 2023-2024. Thus, in more recent years, bilateral trade volumes have struggled to gain traction, constrained by structural and logistical impediments. These include high maritime transport costs due to underdeveloped direct shipping routes, limited air connectivity, divergent regulatory and customs standards, and the absence of enabling financial and settlement infrastructure.

With respect to reimagining Africa-Caribbean integration, the contrast in output growth, external debt profiles, trade, and inflationary patterns offers a foundation for collaboration. Although external debt and inflationary pressures may limit Africa's fiscal space more severely than that of Caribbean countries, complementary strategies can offer lessons in fiscal resilience, particularly in the management and reduction of external debt burdens and inflationary targets over time. For example, Africa's experience in pursuing debt restructuring and relief provides valuable insights that could benefit Caribbean nations facing debt distress. Furthermore, strategies should be pursued to divert policy focus from historical overreliance on former colonial partners and extra-regional trade and investment.

Historical Solidarity and Institutional Gaps

Africa and the Caribbean are bound by a deep and enduring historical relationship, shaped by the transatlantic slave trade, colonial subjugation, and post-independence struggles for self-determination. This shared legacy has given rise to a deep-rooted tradition of pan-Africanist solidarity, anchored in the intellectual and political activism of visionary leaders on the continent. This articulated bold blueprint for trans-Atlantic unity is rooted not only in cultural reclamation but also in the aspiration for collective sovereignty and mutual economic empowerment. Despite the ideological strength of pan-Africanism and its enduring cultural resonance, translating political solidarity into durable institutional frameworks for economic and political integration has been limited. The 20th century saw symbolic gestures of unity, including shared diplomatic

platforms, cultural exchanges, and political endorsements, but there was little in the way of formalised economic cooperation or institutional convergence.

Institutional fragmentation has compounded these challenges. While both the African Union and CARICOM have individually pursued integration agendas within their respective regions, most notably through the AfCFTA and the CARICOM Single Market and Economy, there has been no coordinated mechanism to harmonize or align these frameworks across the Atlantic. As a result, engagement between Africa and the Caribbean has remained intermittent, reactive, and largely symbolic.

The inaugural AfriCaribbean Trade and Investment Summit in September 2021 marked a pivotal moment, revitalizing political commitment to advancing formal integration. It was accompanied by concrete institutional developments, most notably the establishment of Afreximbank's Caribbean Office and the launch of the US$1.5 billion AfriCaribbean Trade and Investment Programme designed to support trade finance, investment facilitation, and policy dialogue. These initiatives represent more than symbolic gestures; they mark the transition from aspirational discourse to operational engagement, laying the groundwork for a more structured Africa–Caribbean partnership. However, it now requires a multidimensional strategy to bring scale, coherence, and sustained institutionalisation to cooperation between the two regions. This includes the codification of preferential trade agreements, the harmonisation of regulatory standards, the establishment of joint investment platforms, and the integration of payments and settlement systems. It also calls for enhanced coordination between regional blocs and the diaspora, whose financial, political, and cultural capital remains an underutilised asset.

Even though the historical foundations of Africa–Caribbean unity remain vital, they must be anchored in institutions capable of translating shared values into shared prosperity and be rooted in a unique framework of interdependence and mutual gain. Subsequently, the next phase must be defined not by declarations of fraternity, but by frameworks of interdependence and mutual gain. In this regard, climate resilience, digital connectivity, and food security offer natural entry points for joint action. Moreover, by pursuing collective bargaining power in global trade and finance platforms, such as the World Trade Organization (WTO), the International Monetary Fund (IMF), and climate finance negotiations, Africa and the Caribbean can amplify their voices, reduce vulnerabilities, and carve pathways toward strategic sovereignty in an era of global

turbulence.

Global Turbulence as a Strategic Opportunity

The prevailing turbulence in the global economy, marked by conflict, inflationary shocks, climate volatility, and financial uncertainty, poses existential risks to developing economies and emerging markets. This presents an opportunity for Africa and the Caribbean to employ strategies to reshape their engagement with the global ecosystem to bridge the sustainable development gap amid the turbulence. Rather than remaining reactive to external forces, both regions have an opportunity to reframe their relationship with the world through deliberate, values-driven, and mutually beneficial integration.

Geoeconomic Fragmentation and Systemic Risk

The fragmentation of global trade and financial systems is no longer an aberration but a defining feature of the new world order. Interestingly, the emergence of the U.S.–China trade war and its escalation through COVID-19-induced supply chain nationalism has deepened into structural decoupling. Economic instruments have been used as tools of geopolitical coercion, such as tariffs, trade agreements, quotas, export bans, investment restrictions, and the exclusion of countries from the SWIFT international payments system. This practice has overturned the basic expectation that global economic governance would be neutral, predictable, and apply equally to all.

The erosion of the WTO's dispute settlement mechanism, the proliferation of regional trade agreements that sideline developing nations, and the strategic use of technology and finance as instruments of power further disadvantage countries with limited leverage in global negotiations. As of 2024, truly multilateral rules govern less than 3 percent of global trade flows, with most driven by preferential agreements or informal geopolitical alignments (WTO 2023).

For Africa and the Caribbean, often relegated to the periphery of global trade and capital flows, this moment of disruption offers an unlikely advantage. As advanced economies turn inward and traditional alliances fracture, there is space for new coalitions that transcend geographic boundaries and are based instead on shared vulnerabilities and complementary interests. The emergence of a multipolar world, with rising influence from the Global South, offers a rare window for Africa and the Caribbean to forge pragmatic, interest-based alliances that enhance their negotiating power, economic security, and political voice. In addition, both regions must shift from dependency to agency, developing joint platforms

for trade negotiation, coordinating positions in multilateral forums, and leveraging their combined market potential and demographic dynamism.

Climate, Debt, and Development Convergence

Few dynamics capture the profound and intertwined vulnerabilities of Africa and the Caribbean more vividly than the convergence of climate change, unsustainable debt burdens, and persistent exclusion from affordable development finance. Many African countries contend with the devastating effects of desertification, erratic rainfall, prolonged droughts, and climate-induced displacement, threatening food security for more than 300 million people across the continent (FAO 2023).

Despite the contribution of Africa and CARICOM of less than 5 percent of global carbon emissions combined, they receive disproportionately limited access to climate finance (Afreximbank 2024b). Interestingly, they are constrained by growing debt burdens, with over 60 percent of Sub-Saharan African and 50 percent of Caribbean countries at risk of debt distress (IMF 2024; Afreximbank 2025). In some states, debt servicing exceeds 40 percent of government revenue, crowding out investment in resilience, infrastructure, and social services, leading to the "debt-climate trap." Getting out of this trap requires bold and coordinated innovation in development finance. Thus, providing climate policy tools, such as climate-linked debt-for-nature swaps, vulnerability-adjusted reallocations of special drawing rights, and regional issuance of green, blue, and diaspora bonds could offer credible alternative solutions (Global Policy Forum Europe 2023). Institutions such as Afreximbank, through facilities such as the Climate Financing Facility and the AfriCaribbean Trade and Investment Programme, have begun implementing solutions. These include blended finance instruments, export credit guarantees, and the development of local currency trade settlement systems that reduce reliance on external capital. However, scale and replication across the Caribbean are essential to transform pilot efforts into systemic change.

Reconfiguring Value Chains and Strategic Sectors

Africa and the Caribbean possess distinct but highly complementary economic assets that, if aligned through deliberate policy and private sector collaboration, can form the basis for resilient South–South value chains. The increasing population growth in Africa and its natural resource endowment offer the opportunity to increase supply-side capacity, supply chain integration, and supply-side push, strengthen regional value addition, and enhance global competitiveness. The Caribbean, with its service-

oriented economies, highly educated labor force, and proximity to North American markets, presents demand-side pull, niche capabilities, and strategic access. Rather than competing for limited foreign direct investment from the Global North, these regions can co-create value chains in targeted sectors, including pharmaceuticals and health security, agro-processing and food security, renewable energy and green technology, digital services and innovation hubs, and the creative and cultural industries. Realising these opportunities will require the removal of nontariff barriers, coordinated industrial policy, financing mechanisms tailored to small and medium enterprises, and the establishment of Afro-Caribbean trade observatories to monitor performance and catalyze policy adjustments.

Building the Foundations of a Strategic Trade Architecture

To facilitate the seamless movement of goods, services, people, and capital within the Africa–Caribbean integration framework, it must be grounded in a robust, rules-based trade architecture. This requires high-level summits or political declarations, the establishment of hard and soft infrastructure, modernised ports and interoperable customs systems, legally binding trade agreements, and harmonised regulatory regimes. In addition, there is a need for a formal Preferential Trade Agreement between the African Union and CARICOM, modeled on the institutional logic and legal flexibility of the AfCFTA. Rather than aiming for blanket liberalisation, the agreement would focus on strategic sectors such as agribusiness, pharmaceuticals, creative industries, and renewable energy, where comparative advantages and development needs align.

While tariff elimination alone is insufficient, regulatory convergence is critical to ensure that market access commitments translate into actual trade flows. Mutual recognition of standards, health and safety certifications, and technical regulations would reduce the costs and delays associated with exporting between the two regions. The creation of a joint Sanitary and Phytosanitary Commission or a shared digital conformity assessment portal would go a long way in facilitating compliance and building trust between regulatory bodies.

Equally vital is the modernisation of customs and border management systems. Currently, both Africa and the Caribbean suffer from fragmented and analog customs procedures that are poorly integrated across borders. According to the WTO (2023), more than 80 percent of trade between Africa and the Caribbean is routed through third-party countries, primarily in Europe and North America, resulting

in longer transit times, inflated freight costs, and weakened price competitiveness. For landlocked and small island states, these inefficiencies translate into a significant trade deterrent.

To address these bottlenecks, investment must focus on transport and logistics corridors that shorten the physical and digital distance between the two regions. Afreximbank, in partnership with regional stakeholders, is supporting feasibility studies for dedicated maritime and air routes linking West African ports such as Dakar, Abidjan, and Lagos with Eastern Caribbean hubs such as Bridgetown, Kingston, and Castries. The implementation of this strategy could reduce shipping times by 40–60 percent and lower transportation costs by as much as 30 percent (Afreximbank 2024).

By embedding trade agreements, institutional arrangements, digital and technology platforms, and logistics investments into a coherent strategic trade architecture, the Atlantic, including the two regions, can cease to be a divide and instead become a conduit for South–South development, inter-regional trade, and financial ecosystem. Moreover, the development of Digital Freight Corridors enabled by blockchain-based shipping manifests, AI-enabled port logistics, and real-time cargo tracking can drastically improve the efficiency and transparency of trade flows. These should be complemented by automated customs clearance systems and regional single-window platforms, allowing traders to file documentation electronically, track shipments in real time, and receive instant feedback on compliance status.

Beyond physical infrastructure, institutional capacity building is essential. Additionally, a joint Africa–CARICOM Trade and Investment Observatory could monitor trade performance, identify emerging bottlenecks, and advise on investment needs. Similarly, training programs for customs officials, trade negotiators, and small business exporters will ensure that policy frameworks are not only designed well but also implemented effectively.

Finally, special economic zones and logistics parks co-developed across strategic ports in both regions can serve as trade facilitation anchors linking processing, warehousing, and export hubs in a streamlined, cost-efficient ecosystem. These zones could prioritize cross-regional manufacturing partnerships and offer preferential access to small and medium enterprises engaged in value-added trade between Africa and the Caribbean.

Financial Architecture and the Pursuit of Strategic Sovereignty

A defining constraint on Africa–Caribbean economic engagement remains the entrenched dependence

on external financial systems, hard currencies, and correspondent banking relationships. This financial asymmetry rooted in the legacy of colonial monetary regimes and reinforced by current global norms undermines trade facilitation, exposes both regions to exchange rate volatility, and imposes excessive transaction costs on cross-border payments.

Currently, more than 80 percent of Africa–Caribbean trade is intermediated through third-party currencies and banking systems, primarily the US dollar and the euro, and routed via financial institutions domiciled in Europe or North America (Afreximbank 2024). This not only delays transaction settlements, often by several days, but also subjects businesses to compliance hurdles, unpredictable FX spreads, and the increasing threat of de-risking by global banks. These structural frictions disproportionately affect small and medium enterprises and new market entrants, exacerbating trade inequality and capital flight.

To overcome these challenges, financial sovereignty must be elevated as a central pillar of Africa–Caribbean integration. This entails building indigenous financial infrastructure capable of supporting intra-regional trade and investment flows on more equitable and efficient terms.

At the forefront of this transformation is the Pan-African Payment and Settlement System (PAPSS), developed by Afreximbank in collaboration with the African Union and central banks across the continent. PAPSS enables real-time, cross-border payments in local currencies, eliminating the need for correspondent banking intermediaries and reducing the cost and duration of transactions. Piloted successfully in the West African Monetary Zone, PAPSS is now scaling continent-wide and holds enormous promise for Afro-Caribbean financial integration.

The logical next step is the extension of PAPSS to CARICOM, or the establishment of a parallel Caribbean–African Payment and Settlement System, which would enable bilateral trade settlement in local currencies between African and Caribbean central banks. According to Afreximbank estimates, this could reduce transaction costs by up to 30 percent, increase the velocity of trade settlements, and incentivize local currency invoicing, shielding both regions from the external shocks associated with US dollar liquidity cycles and dollar appreciation.

Complementing PAPSS is the Market Access and Information Repository (MANSA) platform, a centralised know-your-customer, anti-money laundering, and due diligence repository for African entities, including banks, corporates, and small and medium

enterprises. MANSA addresses a critical barrier to trade finance, information asymmetry, by offering a standardised, verified data platform that fosters trust and compliance between counterparties. The expansion of MANSA's framework to cover Caribbean financial institutions and exporters would significantly lower the costs of onboarding, improve cross-border credit risk assessments, and unlock new flows of trade finance and investment capital.

Beyond payments infrastructure, both regions must prioritise the mobilisation of domestic and diaspora capital. The combined African and Caribbean diasporas, estimated at more than 300 million people globally, control more than US$200 billion in annual remittances, savings, and investible funds (World Bank 2022). Yet formal investment channels remain underdeveloped, fragmented, and inaccessible to most. Innovative diaspora finance instruments, such as diaspora bonds, diaspora mutual funds, and pooled investment vehicles—can help convert sentiment into strategy by providing credible, well-governed pathways for diaspora capital to be channeled into productive sectors.

Regional sovereign wealth funds, investment guarantee agencies, and credit enhancement facilities can further catalyze investment flows by reducing risk premiums and encouraging co-investment in infrastructure, manufacturing, and innovation ecosystems. Trinidad and Tobago's Heritage and Stabilization Fund and Nigeria's Sovereign Investment Authority, for example, could collaborate to co-finance Afro-Caribbean strategic ventures with a long-term development focus.

Transforming the financial architecture is not merely a technical necessity. It is also a geopolitical imperative. A more autonomous, interoperable, and inclusive Afro-Caribbean financial system will reduce exposure to external volatility, unlock intra-regional capital, and position both regions to respond to global crises with agility and coherence. Thus, collaboration between central banks and development finance institutions across both regions can enable the establishment of local currency swap lines, joint liquidity facilities, and regional bond markets, deepening financial markets and enabling counter-cyclical responses to external shocks.

Cultural Industries and Soft Power as Economic Multipliers

Africa and the Caribbean possess extraordinary reservoirs of cultural capital shaped by centuries of shared history, struggle, and resilience. From Afrobeats and reggae to Nollywood and Caribbean carnival, the two regions command outsized global influence in music, film, fashion, dance, literature, and sport. However, despite this global cultural

resonance, they continue to capture a disproportionately small share of the global creative economy, largely due to systemic underinvestment, limited intellectual property enforcement, and fragmented market infrastructure.

Africa's creative industries generate an estimated US$20 billion annually and employ more than 5 million people, yet the continent accounts for less than 3 percent of global creative goods and services exports (UNESCO 2023). The Caribbean, while world-renowned for its cultural expressions—such as calypso, dancehall, steelpan, storytelling, and heritage festivals—faces parallel challenges: weak domestic markets, limited access to finance, inadequate copyright enforcement, and constrained distribution networks.

This structural underperformance reflects both market failures and policy neglect. Cultural production has long been viewed as soft power or identity politics rather than a serious economic growth driver. But the tide is turning. In a global economy increasingly shaped by ideas, experiences, and digital consumption, the cultural and creative industries are among the fastest-growing sectors—projected to contribute more than 10 percent of global GDP by 2030 (UNCTAD 2021). For Africa and the Caribbean, this represents an unparalleled opportunity not only to create jobs and diversify exports but also to assert global influence and shape narratives in a decolonised, authentic voice.

A reimagined Africa–Caribbean integration must therefore embed culture and creativity at its core, not as a symbolic gesture, but as a strategic economic and diplomatic asset. An Afro-Caribbean Cultural Economy Framework would therefore provide institutional scaffolding to scale this sector. For instance, regional development banks, African and Caribbean domestic financial institutions, and sovereign wealth funds should establish creative economy funds targeting audiovisual production, fashion design, gaming, and digital content startups. Public–private partnerships and diaspora investment schemes can provide patient capital and incubation support. A harmonised Afro-Caribbean copyright protocol, with region-wide digital rights management tools and collective licensing arrangements, is essential to formalize earnings and protect creative outputs. In addition, joint ventures in streaming services, online art marketplaces, and touring circuits can help African and Caribbean creatives reach global audiences. These platforms should be backed by investments in digital infrastructure and equitable revenue-sharing models. Moreover, coordinated cultural festivals, joint museum exhibitions, and Afro-Caribbean pavilions at global expos and film festivals can elevate the

joint cultural brand and foster people-to-people diplomacy. Cultural attachés at embassies and cross-regional artist residencies could enhance these soft power efforts.

Existing initiatives such as the Creative Africa Nexus, launched by Afreximbank to finance African creatives and connect them to global markets—offer a scalable model for expansion across the Caribbean. By replicating Creative Africa Nexus-type platforms and adapting them to local context, both regions can bridge investment gaps, expand creative entrepreneurship, and encourage cultural exports.

Diaspora communities across North America, Europe, and Latin America also represent a powerful multiplier. With more than 300 million people of African descent estimated living outside the continent (Otieno 2023), the potential for co-investment, content co-creation, and diaspora-led distribution is immense. Strategic engagement of the diaspora through policy, financing, and branding can accelerate the growth of global Afro-Caribbean creative ecosystems.

Ultimately, cultural industries are not ancillary to economic integration—they are its connective tissue. They carry the identity, legitimacy, and emotional resonance that no tariff schedule or infrastructure project can replicate. A deliberate, institutionally supported cultural integration strategy will create jobs, attract foreign and diaspora investment, and reinforce a common narrative of unity and resilience. In an era of narrative wars, culture is sovereignty, and Africa and the Caribbean hold the pen.

Strategic Sovereignty and the Future of Global Africa

The pursuit of strategic sovereignty by Africa and the Caribbean must be understood not merely as a reaction to global exclusion, but as a proactive, multidimensional agenda for self-determination in a rapidly transforming world. As the post-Cold War global consensus dissolves and a multipolar order emerges, regions historically relegated to the economic and political periphery are now presented with a narrow but critical window to redefine their position in the global hierarchy—not as dependent participants, but as co-architects of a new international system rooted in equity, resilience, and autonomy.

For Africa and the Caribbean, strategic sovereignty involves much more than macroeconomic stability or debt relief. It encompasses a holistic transformation across five critical domains, including policy voice, technological independence, financial self-reliance, narrative control, and endogenous development financing. These dimensions are interlinked and mutually reinforcing—each is a necessary building block in the construction of a Global Africa that is self-confident, globally relevant, and

structurally empowered.

Sovereignty for Africa and the Caribbean must go beyond political independence to encompass policy, technology, finance, narrative, and development. Policy sovereignty involves shaping economic strategies without external imposition and securing representation in global decision-making spaces such as the IMF, WTO, and United Nations climate forums. Joint platforms such as an Afro-Caribbean Task Force on Global Economic Governance could enhance coordination, enabling stronger collective bargaining power on debt relief, concessional finance, and climate funding.

Technological and financial sovereignty are equally crucial. Building indigenous digital infrastructure, regional data centers, and collaborative research and development hubs would reduce dependence on foreign platforms and strengthen cyber resilience. At the same time, advancing interoperable financial systems such as PAPSS, creating regional liquidity buffers, and reforming biased credit rating practices would help safeguard economies from external shocks. Partnerships with emerging actors such as the BRICS New Development Bank could diversify development finance sources, while investments in talent and innovation ecosystems would secure long-term competitiveness.

Equally important is narrative and developmental sovereignty. Africa and the Caribbean must reclaim their stories through joint media networks, cultural diplomacy, and curricula that highlight Afro-diasporic contributions and aspirations. Development should increasingly rely on domestic resource mobilisation, diaspora investment, green bonds, and regional capital markets rather than donor-driven models. Ultimately, sovereignty is not about isolation but about constructing interdependence on equal terms. For both regions, moving from ambition to architecture in this integrated sovereignty project is essential for resilience, legitimacy, and sustainable growth in a shifting global order.

Conclusion and Recommendations

The shocks of recent years, from pandemics and geopolitical realignments to debt crises and climate disasters—have starkly exposed the limitations of existing global systems and the structural weaknesses inherited from colonial and post-colonial architectures. But within these vulnerabilities lies opportunity: to pivot from reactive engagement with the world to proactive institution building, regional consolidation, and South–South cooperation.

This paper argued that true Africa–Caribbean integration must go beyond summitry, shared history, and cultural symbolism. It must move from symbolism to strategy. Both regions face shared

vulnerabilities, climate shocks, debt, and exclusion from global finance, but these challenges create an opening to build a new partnership anchored in sovereignty and resilience. By advancing trade agreements, financial cooperation, diaspora investment, and collective advocacy, Africa and the Caribbean can shift from historical solidarity to a forward-looking alliance. The priority now is to turn ambition into lasting institutions that deliver shared prosperity and a stronger voice in the global order. It must be anchored in strategic sovereignty, a comprehensive framework that empowers both regions to define their place in the global order on their own terms. This means building interconnected trade and financial systems, co-creating innovation and technology ecosystems, harmonizing policy platforms, and leveraging their cultural capital not only as soft power but also as real economic assets.

The vision of a Global Africa, inclusive of its Caribbean extension, is not only achievable but increasingly essential. In an age of economic coercion, digital colonisation, and climate precarity, unity becomes a survival strategy. Yet more than that, unity becomes a platform for ambition, a launchpad for prosperity grounded in equity, mutual respect, and self-determination.

To move from rhetoric to reality, both regions must accelerate implementation. Institutions must be endowed with resources, mandates must be translated into programs, and the private sector and diaspora must be integrated as full partners in development. Accountability mechanisms and performance metrics should guide progress, while intergenerational leadership and shared narratives sustain momentum. Africa and the Caribbean can thus transform their contrasting debt dynamics into a catalyst for strategic alignment—leveraging integration not only for trade or finance, but also for shared fiscal resilience. In addition, a unified platform for joint debt negotiation, risk-sharing mechanisms, and knowledge exchange could help both regions enhance financial sovereignty and strengthen resilience amid global turbulence.

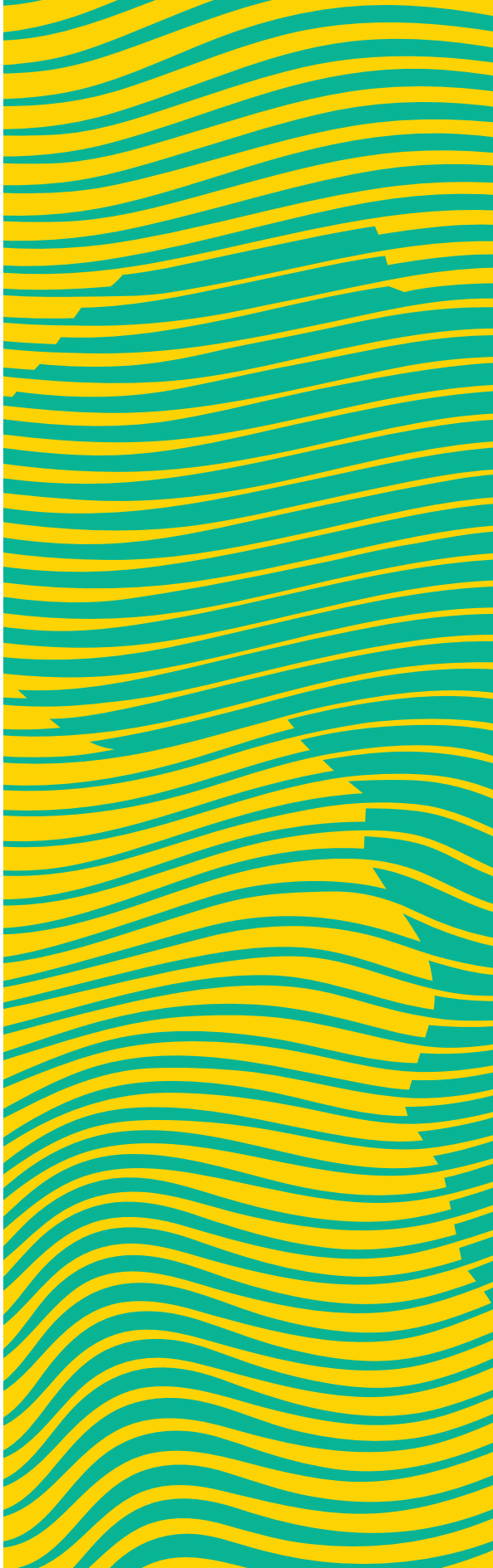
To ensure that Africa–Caribbean integration evolves from aspirational rhetoric into a concrete, sustainable, and mutually beneficial reality, bold institutional reforms, targeted policy action, and long-term commitment are imperative. The following roadmap presents a set of interdependent priorities that, if pursued systematically, can create a credible framework for Afro-Caribbean cooperation anchored in strategic sovereignty, economic transformation, and global relevance.

Deepening Africa–Caribbean integration requires a shift from symbolic gestures to institutionalised frameworks that foster trade,

investment, and policy coordination. A phased Africa–Caribbean Preferential Trade and Investment Agreement, modeled on AfCFTA's flexibility, could anchor this process by prioritizing high-potential sectors such as pharmaceuticals, agro-processing, tourism, and digital services. Complementing this, Afreximbank's Caribbean office should evolve into a strategic hub for project co-financing, investment facilitation, and financial infrastructure expansion, including PAPSS. Institutional permanence is equally vital; a proposed Africa–Caribbean Council for Integration and Development would serve as a permanent policy platform, tasked with monitoring progress, engaging multilateral bodies, and coordinating cross-regional initiatives.

Bridging the geographic and digital divide is another cornerstone of integration. Joint infrastructure initiatives, dedicated shipping and air cargo routes, digital freight corridors, and interoperable customs systems, would streamline connectivity, reduce trade frictions, and expand market access. At the same time, mobilizing diaspora capital through co-branded bonds, impact investment funds, and transparent co-investment platforms could unlock billions in underutilised savings and remittances. Alongside finance and logistics, cultural and creative economy integration offers a powerful channel for influence and identity-building. Shared intellectual property frameworks, regional streaming platforms, and targeted incentives for co-productions and festivals could project Afro-Caribbean culture globally while deepening intra-regional collaboration.

Human capital and global advocacy form the final pillars of this partnership. A joint university network, mutual recognition of professional qualifications, labour mobility corridors, and e-learning platforms would expand talent exchange and skills transfer. On the global stage, Africa and the Caribbean must institutionalize coalition-building at forums such as the IMF, WTO, and COP summits to amplify their negotiating voice on climate finance, reallocation of special drawing rights, and fairer tax regimes. Together, these eight priorities transform Africa–Caribbean cooperation from episodic dialogue into structural integration. They mark a decisive step from cultural solidarity toward shared prosperity and strategic sovereignty in a fragmented global order.



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Commodity-based Industrialisation in Africa: An Opportunity in the Transition to a Global Renewable Energy System

Raymond K. Boumbouya & Matthew Ocran

Abstract: Africa's abundant critical minerals and vast renewable energy potential position the continent as a strategic player in the global transition to clean energy. This paper explores how commodity-based industrialisation, driven by the renewable energy shift, can catalyse Africa's economic transformation. Additionally, it examines Africa's current industrial landscape, challenges such as infrastructure deficits and skills gaps, and the role of development finance institutions in supporting green industrialisation. Historically constrained by dependence on raw commodity exports and limited manufacturing capacity, Africa now has the opportunity to leverage its mineral wealth, such as cobalt, lithium, and manganese, and its renewable energy resources to build domestic processing industries, foster regional value chains, and drive sustainable growth. The continent can harness the synergy between critical minerals and renewable energy as a pathway to inclusive development, by emphasising the need for coherent policies, infrastructure investment, and regional cooperation under frameworks such as the African Continental Free Trade Area. By transitioning from raw material supplier to value-added producer, Africa can achieve industrial diversification, create jobs, and integrate into global value chains, unlocking sustainable prosperity.

Keywords: Industrialisation, renewable energy, critical minerals, value chains, development finance
JEL Classification: O13, O14, Q32, Q42, F63, L52

Introduction

Africa finds itself at a defining moment in its path toward development. As the global economy accelerates its transition to a renewable energy system, the continent's vast endowment of critical minerals, such as cobalt, lithium, manganese, and rare earth elements, has positioned Africa as a strategic player in the green industrial revolution. These minerals, essential for clean energy technologies such as solar panels, wind turbines, and electric vehicle batteries, offer Africa a unique

opportunity to pursue a new model of industrialisation, one that is commodity-based but value-added, inclusive, and sustainable.

New technologies that draw on critical minerals have considerable market value. For instance, clean technologies, which include renewable energy, energy storage, electric mobility, and so on, were estimated to be worth US$916 billion in 2024. The market value of these new technologies is projected to reach US$1.8 trillion in 2030 (Grand View Research 2025). The potential of critical minerals to drive the global economy is immense. It is, therefore, important that Africa participates in renewable energy products and other relevant value chains—not only upstream as a raw material supplier but also downstream as a manufacturer of some of the key components needed in the renewable energy product market.

Historically, Africa's industrialisation efforts have been constrained by a heavy dependence on the export of unprocessed commodities and low manufacturing capacity, which has limited the continent's integration into global value chains. Compared with other developing regions such as Southeast Asia, Africa's share of global manufacturing remains marginal, and its economies remain vulnerable to commodity price volatility. However, global demand for green technologies has created a window of opportunity to reverse this trend. By leveraging its mineral wealth and renewable energy potential, Africa can build domestic processing industries, foster regional value chains, and drive structural transformation.

This paper explores whether commodity-based industrialisation, anchored in the renewable energy transition, can serve as a catalyst for Africa's economic development. To answer this question, it examines the benefits of industrialization, reviews the continent's current industrial landscape, and identifies the challenges associated with the quest for industrialization. The paper then assesses how the global renewable energy transition offers an opportunity for industrialization and economic development.

This paper synthesises insights from a wide range of sources, including reports from international organizations (e.g., the United Nations Conference on Trade and Development and Afreximbank), academic literature, and policy documents to explore the intersection of commodity-based industrialisation and renewable energy transitions in Africa. The analysis focuses on identifying opportunities and constraints within African economies, particularly given their critical mineral endowments and industrial capabilities. Comparative references to industrialisation trajectories in Asia and Latin America are used to contextualise Africa's position and potential.

To support the analysis, the paper integrates cases from selected African countries—such as South Africa, Morocco, Egypt, and the Democratic Republic of Congo—highlighting their efforts to deploy renewable energy and implement industrial policy. These cases were selected for their relevance to the themes of green industrialisation and resource-based development. The paper also draws on economic indicators to illustrate the scale of opportunity and the gaps in infrastructure, finance, and governance. While not empirical in the traditional sense, the methodology emphasizes triangulation of credible sources to ensure robustness and the relevance of the findings.

The rest of the paper is organised as follows: Section 2 discusses the benefits of industrialisation, Section 3 reviews the continent's state of industrialization, Section 4 discusses challenges associated with Africa's quest for industrialization and transition to renewable energy, Section 5 explores the opportunities this quest offers for Africa's industrialization, and Section 6 assesses the role of development finance institutions in supporting Africa's renewable energy transition. Section 7 offers policy recommendations.

The Benefits of Industrialisation

Industrialisation has long been recognised as a cornerstone of sustainable growth, economic development, and modernisation. It marks the transition from agrarian economies to manufacturing- and services-dominated economies, catalysing profound structural, social, and technological transformations. This brief literature review explores the multifaceted benefits of industrialisation, drawing from empirical studies, economic theory, and historical analysis.

One of the most widely acknowledged benefits of industrialisation is its acceleration of economic growth. According to Azam, Guo, and Naseer (2025), industrialisation in newly industrialised countries significantly enhances gross domestic product (GDP) growth by fostering innovation, increasing productivity, and expanding employment opportunities. The shift from low-productivity agriculture to high-productivity manufacturing enables countries to climb the value chain and diversify their economies.

Porter and Schwab (2008) emphasise that industrialisation enhances national competitiveness by encouraging investments in infrastructure, education, and technology. These investments create a virtuous cycle of growth, innovation, and human capital development, which is essential for

long-term economic resilience.

Industrialisation is a major driver of job creation. As factories and industrial zones emerge, they absorb surplus labour from rural areas, reducing underemployment and poverty. This migration fuels urbanisation, which in turn stimulates demand for housing, services, and infrastructure. Lengyel (2004) highlights how industrial clusters and regional competitiveness strategies can amplify these effects by creating localised ecosystems of innovation and entrepreneurship. Moreover, the World Bank (2020) notes that industrialisation often leads to improvements in labor standards and wages, especially when supported by sound regulatory frameworks.

The industrial sector is a hub for technological innovation. As firms compete and scale, they invest in research and development, adopt new production techniques, and improve efficiency. This technological diffusion often spills over into other sectors, including agriculture and services.

Eaton and Kortum (2002) argue that industrialisation fosters global knowledge transfer through trade and foreign direct investment, enabling developing countries to leapfrog stages of technological development. This process is particularly evident in East Asia, where export-led industrialisation has driven rapid growth and modernisation.

Beyond economics, industrialisation contributes to broader social development. For instance, increased incomes and urbanisation often lead to better access to education, healthcare, and social services. Gujral and Singh (2022) note that while industrialisation can pose environmental and health risks, it also provides the resources and institutional capacity to address these challenges through improved public health systems and environmental regulation. Furthermore, industrialisation can empower marginalised groups by integrating them into formal labor markets. Gender disparities, for instance, often narrow as women gain access to factory jobs and vocational training.

Modern industrialisation is closely tied to global value chains (GVCs). By specialising in specific stages of production, countries can participate in international trade without needing to develop entire industries from scratch. This integration enhances export earnings, attracts investment, and exposes domestic firms to global standards and practices. Amador and Cabral (2017) show that countries engaged in GVCs experience faster productivity growth and greater economic resilience during global shocks. However, they also caution that sustained benefits require upgrading capabilities and avoiding dependency on low-value-added segments.

The literature overwhelmingly supports the view that industrialisation is a powerful engine of economic and social progress. It drives growth, creates jobs, fosters innovation, and improves living standards. However, the benefits are not automatic: they depend on complementary policies in education, infrastructure, governance, and environmental protection. Consequently, industrialisation remains a vital, though complex, pathway for sustainable development in the 21st century.

Africa's Current State of Industrialisation

Despite its vast natural resources and youthful population, Africa remains one of the least industrialised regions in the world. While some countries have made progress, the continent continues to lag other developing regions in terms of manufacturing output, export diversification, and structural transformation (El Habti 2022).

Over the past two decades, Africa has experienced a gradual decline in the share of manufacturing in its GDP, signalling a broader trend of deindustrialisation. In 2000, manufacturing contributed approximately 18% to Africa's GDP. However, by 2023, this figure had dropped to slightly more than 10%, according to the United Nations Industrial Development Organization (UNIDO 2023) and the World Bank (2023). This decline reflects structural challenges such as limited infrastructure, weak industrial policy implementation, and continued dependence on commodity exports. Only a handful of African countries, such as Algeria, Eswatini, Gabon, and Zimbabwe, have managed to maintain manufacturing shares above 20%, largely due to resource-based processing industries (UNCTAD 2024).

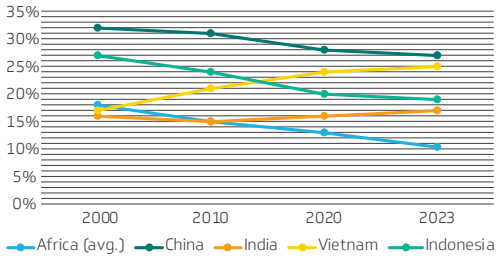
Over the same period, many Asian economies have sustained or even expanded their manufacturing sectors.[1] China, for instance, maintained a manufacturing share of more than 30% of GDP through the 2000s and above 27% of GDP in 2023. Vietnam has shown remarkable growth, driven by export-led industrialisation and integration into global value chains. It increased its manufacturing share from 17% in 2000 to more than 25% in 2023. Supported by domestic demand and targeted industrial policies, India's manufacturing sector has remained relatively stable, hovering between 15% and 17% of GDP (Figure 1).

This divergence highlights the success of Asia's industrial strategies compared with Africa's more fragmented and resource-dependent approach. While Asia has leveraged infrastructure investment, trade openness, and human capital

1. The comparison with Asia is informed by the region's emergence as a global manufacturing hub despite being as poor as Africa in the 1960s.

development to build competitive manufacturing hubs, Africa has struggled to move beyond primary commodity exports. The data underscore the urgent need for African economies to adopt coherent industrial policies, invest in value-added production, and integrate more deeply into regional and global manufacturing networks to reverse the trend of deindustrialisation and to foster inclusive economic growth.

Figure 1: Manufacturing Share of GDP, 2000–2023



Source: UNCTAD 2023.

Unlike Asia, where industrialisation has been central to economic transformation, Africa has experienced a services-led growth pattern, with the service sector, rather than the manufacturing sector, absorbing most of the labor shift from agriculture. This deviation from the traditional path of structural transformation has limited Africa's ability to generate productive employment and high-value exports.

Africa's economy remains heavily dependent on primary commodities, including oil, minerals, and agricultural products. According to the UN Conference on Trade and Development (UNCTAD), more than 90% of Africa's merchandise exports by value are commodities, making Africa the most commodity-dependent region globally. In contrast, other developing regions such as Asia have significantly diversified their export baskets over the past three decades, reducing their reliance on volatile commodity markets. Africa's commodity dependence exposes African economies to external shocks, such as commodity price fluctuations, and contributes to macroeconomic instability. It also limits the development of domestic value chains and industrial capabilities, reinforcing a cycle of underdevelopment and vulnerability.

The imbalance between commodity exports and manufactured exports is stark. In 2022, Africa imported US$240 billion worth of manufactured goods but exported only US$66 billion in manufactured products. While there has been some growth in manufacturing exports—particularly in light industries and resource-based manufacturing—the continent's share of global manufacturing exports remains below 2%. A recent report by Afreximbank (2023b) highlights that manufactured goods still account for a small fraction of Africa's total

exports, with most value-added production concentrated in a few countries. South Africa, Egypt, and Morocco alone account for nearly half of Africa's manufactured exports, underscoring the uneven distribution of industrial capacity across the continent.

In comparison, Southeast Asia has successfully transitioned from commodity-based to manufacturing-driven economies by investing in infrastructure, education, and export competitiveness.

Africa's limited industrial base and persistent reliance on commodity exports have far-reaching implications for the continent's economic resilience, employment generation, and sustainable development. The volatility of global commodity markets continues to expose African economies to external shocks, undermining fiscal stability and constraining long-term planning. Moreover, the underdevelopment of manufacturing sectors across much of the continent limits the creation of productive jobs, particularly for Africa's rapidly growing youth population. Without a deliberate shift to value-added production and industrial diversification, Africa risks remaining on the margins of global value chains, exporting raw materials while importing finished goods at a premium (UNIDO 2023; World Bank 2023).

To reverse this trajectory, African governments and regional institutions must adopt a coordinated and forward-looking industrial strategy. This effort includes investing in infrastructure and reliable energy systems to support industrial activity, promoting value addition in natural resource sectors, and strengthening regional value chains under the African Continental Free Trade Area. Equally important is the implementation of coherent industrial policies that prioritize manufacturing, innovation, and skills development. With strategic investment and policy alignment, Africa can transition from a supplier of raw materials to a competitive producer of high-value goods, unlocking pathways to inclusive and sustainable economic transformation (Africa Policy Research Institute 2024; Cilliers and Ngundu 2025).

Challenges to African Industrialisation

Industrialisation in Africa has long been viewed as a pathway to economic transformation, job creation, and sustainable development. Despite its potential, the continent continues to face a multitude of structural and systemic challenges that hinder its industrial progress.

One of the most pressing issues is the inadequacy of infrastructure, particularly in energy and transportation. Many African countries suffer from unreliable electricity supply and high energy prices, which significantly raise the

cost of manufacturing and deter investment. For instance, Africa's installed capacity of electricity was estimated at 250 gigawatts as of 2024. This figure hides the marked differences among countries African countries. Six of the continent's 54 countries (Morocco, Algeria, Tunisia, Libya, Egypt, and South Africa) account for more than half of the electricity produced in Africa. The other 48 countries, with more than 1 billion of the region's population, account for 100 gigawatts (40% of total installed capacity). African firms often highlight electricity access and reliability as one of their top challenges (AEC 2024).

Poor road networks, limited rail connectivity, and congested ports further constrain the efficient movement of goods and raw materials (Asche and Grimm 2017). Access to finance is another major constraint. Industrial ventures often require substantial capital, yet many African firms struggle to secure affordable credit due to underdeveloped financial systems, high interest rates, and limited collateral. This financing gap stifles entrepreneurship and prevents small and medium-sized enterprises from scaling up (Moyo 2020).

The skills gap also poses a significant barrier. The skills taught in educational institutions do not match those demanded by modern industries. Technical and vocational education remains underfunded, and many graduates lack the practical experience needed in industrial settings (UNIDO and UNCTAD 2011).

Despite the establishment of the African Continental Free Trade Area, trade barriers persist. Non-tariff barriers, inconsistent customs regulations, and weak enforcement mechanisms continue to fragment markets and limit intra-African trade. Without harmonised policies and efficient logistics, Africa cannot realize the benefits of regional integration (Mamba and Balaki 2023).

Another challenge is Africa's continued dependence on raw material exports. Many countries export unprocessed commodities while importing finished goods, a pattern that limits value-added production and exposes their economies to global price volatility. This structural imbalance has contributed to persistent trade deficits and underdevelopment (Moyo 2020).

Governance issues, including corruption, policy inconsistency, and political instability—further undermine industrialisation efforts. Investors often face unpredictable regulatory environments, which discourage long-term commitments and innovation. Effective industrial policy requires not only vision but also institutional capacity and accountability (Asche and Grimm 2017).

Finally, technological lag and the slow adoption of Industry 4.0 technologies—such as automation, artificial intelligence, and digital manufacturing—have left many African industries behind. While global competitors embrace smart manufacturing, African firms often rely on outdated equipment and processes, limiting productivity and competitiveness (Moyo 2020).

Despite these challenges, there are signs of progress. Special economic zones, industrial parks, regional value chains, and digital trade platforms are beginning to reshape the industrial landscape across the continent. However, sustained success will require coordinated policy, education, infrastructure, and governance efforts.

Transition to a Renewable Energy System: An Opportunity for Africa's Industrialisation and Economic Development

Africa's development trajectory is at an inflection point. The global shift to renewable energy presents not only a climate imperative but also a strategic opportunity for the continent to industrialise, diversify its economies, and achieve sustainable growth. Africa's abundant critical minerals and vast renewable energy potential position the continent as a future leader in the global energy transition.

Africa is home to a significant share of the world's critical minerals—resources essential for clean energy technologies such as solar panels, wind turbines, and electric vehicle batteries. The Democratic Republic of Congo alone accounts for more than 70% of global cobalt production, and South Africa holds the world's largest reserves of manganese (Table 1). Zimbabwe, Mozambique, and Madagascar are rich in lithium and graphite (UNCTAD 2024; SAIIA 2025).

These minerals are the backbone of the global energy transition. As demand for clean energy technologies surges, Africa's mineral wealth offers it a unique opportunity to become a key player in global supply chains. However, to fully benefit, the continent must move beyond raw material exports and invest in value addition—processing and refining minerals locally to create jobs, build industrial capacity, and retain economic value (Ncube 2025).

Table 1: Critical Minerals Abundant in Africa

Mineral	Key uses	Major African Producers	Global Share from Africa
Cobalt	Lithium-ion batteries, super-alloys	Democratic Republic of Congo (DRC)	~70% of global production
Manganese	Steel production, battery cathodes	South Africa, Gabon, Ghana	~60% of global production
Lithium	EV batteries, energy storage	Zimbabwe, DRC, Mali	Growing reserves, underex-plored
Graphite	Battery anodes, lubricants	Mozambique, Madagascar	~22% of global reserves
Copper	Electrical wiring, renewable energy systems (e.g. EV cars)	Zambia, DRC	~6% of global reserves
Nickel	EV batteries, stainless steel	South Africa, Madagascar	~6% of global reserves
Rare Earth Elements	Magnets, electronics, wind turbines	Burundi, South Africa	Emerging exploration zones
Bauxite (Aluminum)	Solar panel frames, transmis-sion lines	Guinea	Major global exporter and larg-est holder of reserves (26%)

Source: Chen et al. 2024; UNCTAD 2024.

Strategic initiatives such as South Africa's Critical Minerals and Metals Strategy aim to foster inclusive growth by linking mineral extraction to downstream industries such as battery manufacturing and green hydrogen production (Siyobi 2025). This approach not only boosts industrialisation but also strengthens Africa's bargaining power in global markets.

Africa's renewable energy potential is vast and largely untapped. The continent has an estimated 10 terawatts of solar capacity, 350 gigawatts (GW) of hydro, 110 GW of wind, and 15 GW of geothermal energy (SEforALL 2023). Harnessing even a fraction of this potential could revolutionise energy access, power industrial growth, and reduce dependence on fossil fuels.

According to the International Renewable Energy Agency and the African Development Bank (IRENA and AfDB 2022), a transition to a renewables-based energy system could generate substantial gains in GDP, employment, and human welfare across Africa. Investment in renewable energy technologies creates up to three times more jobs per dollar than investment in fossil fuels. It has the potential to create 8 million to 14 million jobs by 2030.

Moreover, where manufacturing is driven by clean electricity, renewable energy can power green industrial zones. Ethiopia, Morocco, and Egypt are already developing such zones, integrating solar and wind energy into the textile, agro-processing, and electric vehicle industries (Ebatamehi 2025). Their efforts align with the African Continental Free Trade Area,

which aims to create a unified market and boost intra-African trade in green technologies.

The convergence of Africa's mineral wealth and renewable energy potential offers a powerful synergy. By leveraging critical minerals to build infrastructure—and using renewable energy to power mineral processing—Africa can create a self-reinforcing cycle of industrialisation and sustainable development.

This integrated approach requires strategic policymaking, regional cooperation, and investment in infrastructure and skills. It also demands a shift from extractive models to inclusive, value-driven development that empowers local communities and protects ecosystems.

As global demand for clean energy accelerates, Africa has the resources, the momentum, and the strategic importance to lead. The challenge now is to turn potential into progress—and to ensure that the green transition becomes a foundation for a more industrialised, equitable, and prosperous Africa.

Role of Development Finance Institutions in Supporting Africa's Renewable Energy Transition

As Africa navigates the dual imperatives of industrialisation and climate resilience, development finance institutions (DFIs) have emerged as critical enablers of the continent's renewable energy transition. With more than 600 million people lacking access to reliable electricity and public budgets under strain, DFIs are uniquely positioned to bridge the financing gap, de-risk investments, and catalyse private sector participation in clean energy infrastructure.

Africa needs more than US$190 billion annually in clean energy investments to meet its climate and energy access goals by 2030, yet current investments hover around $25 billion (ALN Africa 2025). DFIs can mobilise both concessional and commercial capital through blended finance models, making high-impact projects bankable.

DFIs play a vital role in mitigating risks that deter private investors, such as currency volatility, political instability, and offtake uncertainty. Political risk insurance, currency hedging, liquidity buffers, and other instruments help stabilize returns and improve project viability (Zawya 2025). Unlike commercial banks, DFIs can offer longer-term loans and equity investments that align with energy infrastructure projects' long gestation periods. This patient capital is essential for early-stage development and innovation.

DFIs often work with governments to create enabling environments for investment. This collaboration includes technical assistance for regulatory frameworks, power purchase agreements, and regional energy integration. By

funding training programs, local manufacturing, and community engagement, DFIs ensure that the energy transition is inclusive and that it generates long-term socioeconomic benefits.

The African Export-Import Bank (Afreximbank) has taken a proactive role in aligning trade finance with Africa's green industrialisation agenda. In partnership with the Africa Petroleum Producers' Organization, Afreximbank launched the Africa Energy Bank (AEB) in 2024 with an initial capital of US$5 billion. The AEB is designed to finance both oil and gas as well as sustainable energy projects, ensuring a just and inclusive energy transition across the continent (Afreximbank 2024).

Afreximbank has signed a landmark agreement to finance its first private-sector renewable energy project in the Democratic Republic of Congo. This hydropower initiative aims to expand green infrastructure in Central Africa and demonstrates the Afreximbank's commitment to climate-aligned development (Afreximbank 2024). At COP28, Afreximbank championed a just energy transition for Africa, aligning with the African Union's Nairobi Declaration. It emphasised the need for climate finance that supports both emission reduction and economic development, particularly through the African Continental Free Trade Area framework (Afreximbank 2023a). Afreximbank has co-hosted seminars with the International Finance Corporation and legal partners to build capacity for energy transition financing. These forums help equip African stakeholders with the tools to navigate complex infrastructure deals (Afreximbank 2024).

Conclusion and Recommendations

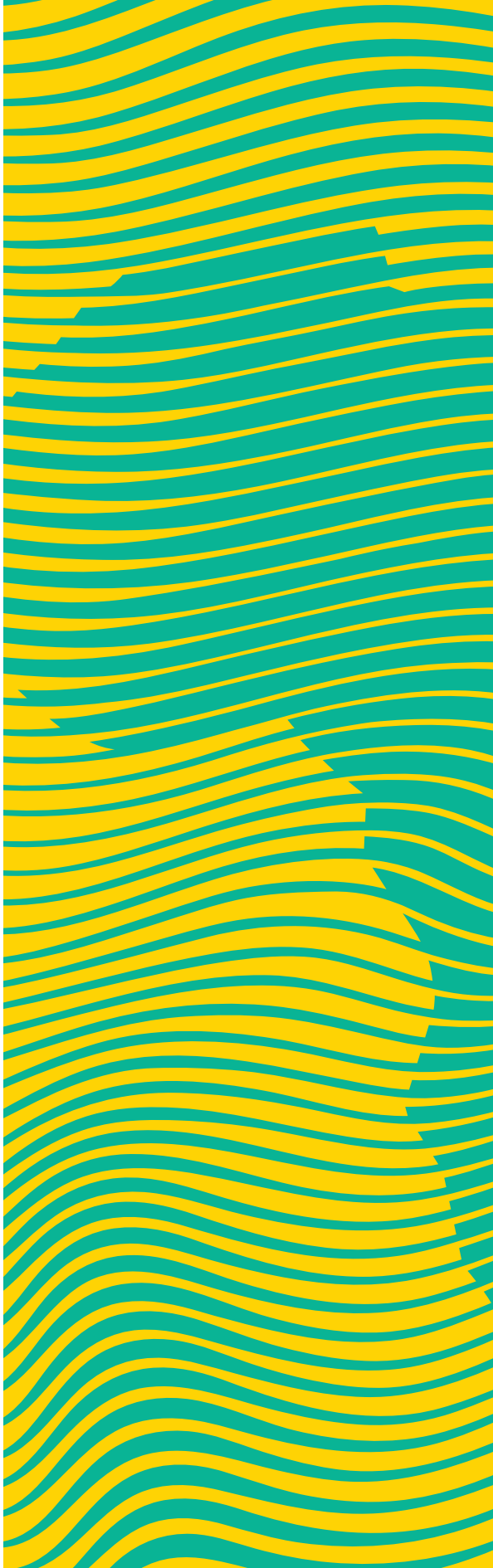
Africa's abundant reserves of critical minerals and vast renewable energy potential present a unique opportunity to catalyse a new era of commodity-based industrialisation. As the global economy pivots to clean energy technologies, the continent can transition from a supplier of raw materials to a hub of value-added manufacturing and green industrial development. This shift not only promises economic diversification and job creation but also would enhance Africa's integration into global value chains and its resilience to external shocks.

However, realising this potential requires overcoming persistent structural challenges. Infrastructure deficits, limited access to finance, skills mismatches, and fragmented markets continue to hinder industrial growth. Moreover, the continent's underutilised renewable energy resources must be harnessed strategically to power industrial zones and support sustainable production. Without targeted interventions, Africa risks remaining on the periphery of the global green economy, exporting raw

materials while importing finished technologies, missing yet again a unique opportunity to move to a path of sustainable growth and development.

To address their structural challenges, African governments must adopt integrated industrial and energy policies that prioritise value addition, regional cooperation, and green innovation. Investments in transport and energy infrastructure, vocational training, and digital technologies are essential. The African Continental Free Trade Area should be leveraged to build regional value chains that support economies of scale and intra-African trade in manufactured goods. Notably, political will is needed to drive policy implementation and reforms.

Development finance institutions have a critical role to play in de-risking investments and mobilising capital for green industrialisation. Initiatives such as the Africa Energy Bank and blended finance mechanisms should be scaled up to close the continent's clean energy investment gap. By aligning industrial policy with climate goals and inclusive development, Africa can transform its resource wealth into a foundation for long-term, sustainable prosperity.



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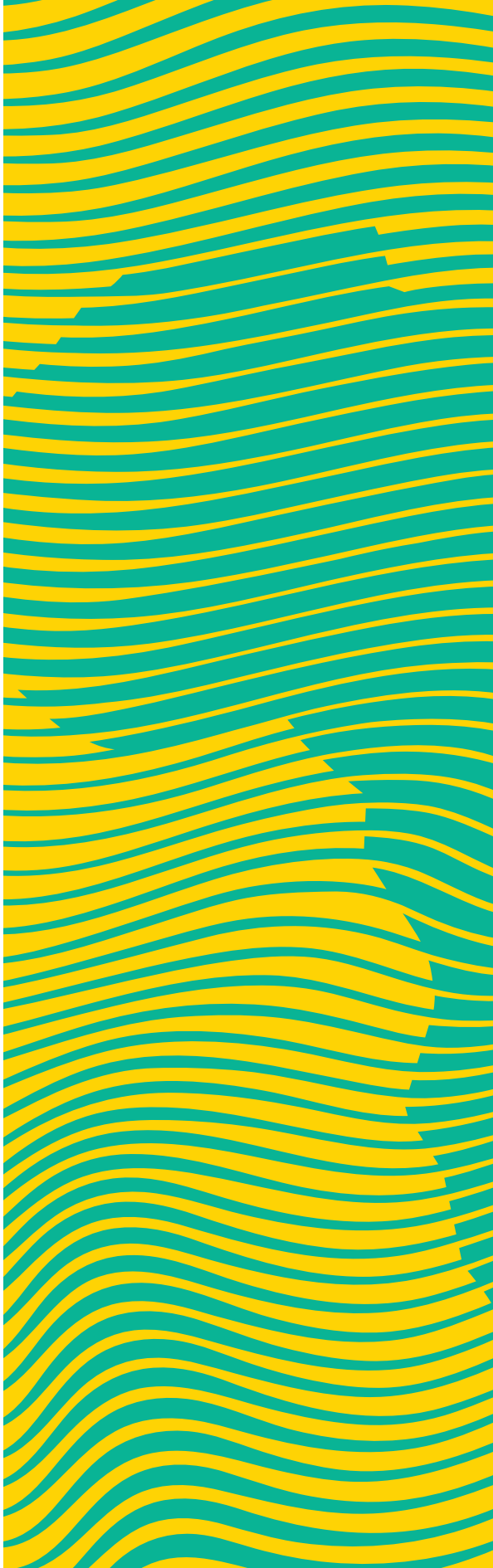


Are Chinese Foreign Direct Investment and Institutional Quality Important for Economic Development in Africa?

Khadijah Iddrisu

Abstract: Significant developmental challenges, including unemployment, poverty, inequality, and lack of access to basic social amenities, could hinder African countries' achievement of the United Nations Sustainable Development Goals and Africa's Agenda 2063. Chinese foreign direct investment (FDI) presents an opportunity to mitigate these challenges and promote economic development. This paper argues that Chinese FDI can create jobs, develop resources, reduce poverty and inequality, and enhance growth. Despite these benefits, concerns such as debt dependency and strategic interests remain. To address these concerns, the paper recommends improving the quality of local institutions to maximize the benefits of Chinese FDI on economic development.

Keywords: Chinese FDI; institutional quality; economic development; Africa
JEL Classification: F21; O43; O10; O55

Introduction

Despite global and continental initiatives such as the United Nations Sustainable Development Goals (SDGs) and Africa's Agenda 2063, economic development in Africa remains hindered by challenges such as inequality, unemployment, and poor infrastructure (Iddrisu 2024a, b; Iddrisu et al.2023c). While some African economies experienced rapid growth between 2001 and 2010 (AfDB 2011), poverty and income disparity persist: in 2023, 462 million people in Sub-Saharan Africa were living in extreme poverty, reflecting ongoing struggles in achieving sustainable development. In 2016, 420 million African youths faced unemployment and unstable jobs, with only one in six in stable employment (AfDB 2016). Without leadership intervention, 263 million young people may be excluded from the economy by 2025 (AfDB 2016), exacerbating conflicts in nations such as Burkina Faso, Mali, and Nigeria (Chancel et al. 2023; World Bank 2023; Robilliard 2022). To avoid this possibility, academics and development partners advocate leveraging foreign direct investment (FDI) and improving the quality and governance of the host country's local economic, legal, and social

institutions to boost economic development in Africa (Iddrisu et al. 2023a; Ofori et al. 2023; Zhang 2022; Crescenzi and Limodio 2021; Park and Tang 2021; Miao et al. 2021, 2020; Doku et al. 2017; Kaplinsky and Morris 2016).

FDI facilitates capital transfer across borders, driving economic growth and development. Recognising these benefits, the continent has adopted policies such as the New Partnership for Africa's Development (NEPAD), special economic zones (SEZs), and the African Continental Free Trade Area (AfCFTA) to attract FDI (Iddrisu et al. 2024; Alagidede et al. 2013). Africa has drawn investments from Asia, Europe, and the United States and from within the continent, with Chinese FDI notably increasing (Iddrisu et al. 2023a; Morgan et al. 2022). Between 2016 and 2020, China invested more than US$71 billion in greenfield FDI in Africa, surpassing the United States as a leading source of FDI in the region (Sylvaire et al. 2022). China's FDI can promote economic development through the creation of employment, provision of infrastructure, and forward and backward integration (Iddrisu et al. 2023b; Ofori et al. 2023).

Despite the benefits of Chinese FDI for economic development, concerns have been raised about this investment source. Critics argue that Chinese investors sometimes make reckless and unethical decisions, potentially leading to long-term drawbacks for Africa (Purwins 2023; Besada 2008). Additionally, Chinese investors are alleged to have engaged in corruption, bribery, and unethical business practices to secure business transactions in Africa (Knowledge at Wharton 2019). Moreover, concerns have been raised about the involvement of Chinese investors in illicit activities across Africa. Notably, some Chinese investors have been implicated in illegal mining operations (i.e., galamsey), leading to the pollution of water bodies and the degradation of land in mining regions in Ghana (Botchwey et al. 2018). Available data suggest that from 2008 to 2013 alone, more than 50,000 Chinese nationals entered Ghana to mine gold illegally (ADF 2025). Furthermore, certain African countries, including Djibouti, Kenya, and Zambia, have found themselves vulnerable to debt entrapment after securing loans from Chinese investors (Daly 2017; Knowledge at Wharton 2019). If these concerns remain unaddressed, the continent may attract significant Chinese investment, but the anticipated positive impact on its economic development could fail to materialize. According to dependency theory, strong institutions and governance can address these concerns and leverage FDI to further promote economic development.

Effective institutions and good governance are essential to prevent reckless decisions by investors and

to ensure that investments reduce income inequality. Institutional measures such as investment screening, due diligence, and enforcement of environmental, social, and governance standards help exclude predatory or noncompliant Chinese investors from entering the continent (Yuan and Ji 2025). Additionally, they enhance transparency and accountability, helping distribute the benefits of Chinese FDI more equitably and mitigate income inequality risks. Specifically, strengthening anti-corruption agencies, increasing public procurement transparency, and securing judicial independence can reduce rent-seeking behaviour and improve investor accountability (Yuan et al. 2022). Institutional and governance responses such as decentralized environmental enforcement can address harmful practices by Chinese investors in mining or agriculture sectors. For instance, strengthening of Ghana's National Anti-Illegal Mining Operation Secretariat Task Force led to the arrest of 11 Chinese nationals involved in illegal mining in August 2025 (ADF 2025), and it may minimise the flow of Chinese FDI into illegal mining activities. Furthermore, institutions that support innovation and knowledge sharing can enhance the spillover effects of Chinese FDI, leading to increased productivity and economic growth (Acemoglu and Robinson 2012).

This paper discusses the role of China's FDI and Africa's institutional quality in promoting economic development in Africa. Section 2 discusses Chinese FDI. Section 3 discusses how Chinese FDI promotes economic development in Africa. Section 4 shows how Africa can minimise the potential negative effects of Chinese FDI on economic development. Section 5 presents policy recommendations.

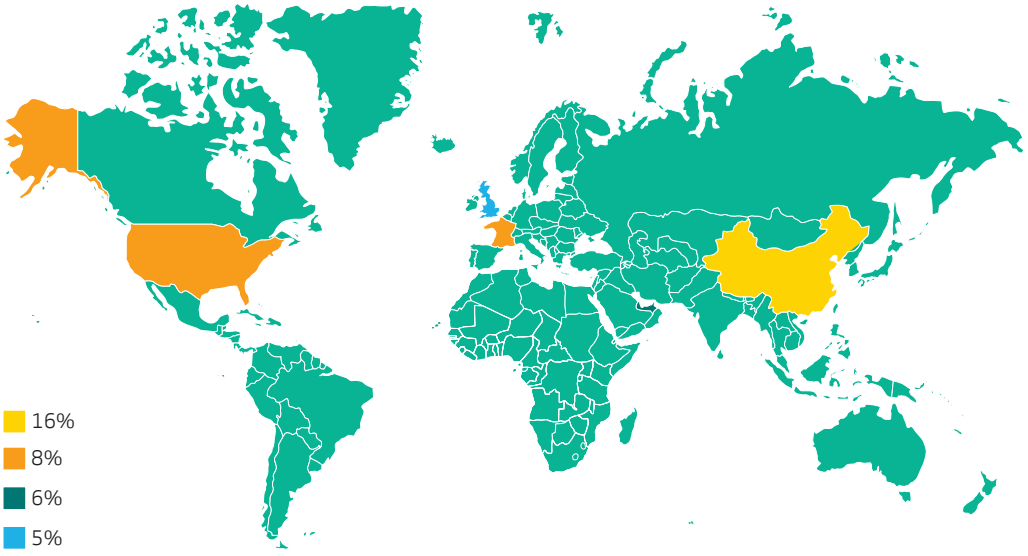
The Rise of Chinese FDI

China's trade relations with Africa date back to the Han Dynasty, with notable early interactions such as the voyages of Zheng He in the 15th century (Lei and Yaping 2018). After centuries of disengagement, China renewed its interest in Africa post-1949, especially following the Bandung Conference, which promoted Afro-Asian cooperation. In the post-colonial era, China sought to extend its influence, offering economic assistance and technical cooperation to newly independent African nations, such as Guinea, Ghana, and Mali (Lei and Yaping 2018). China's assistance was attractive due to its few conditions, low-interest loans, and capacity-building initiatives. Despite ideological shifts after China's economic opening under Deng Xiaoping, China's principles of mutual benefit and respect for sovereignty persisted (Lei and Yaping 2018). China's trade with Africa grew significantly post-1978, though

Africa remains a relatively small trading partner compared with other regions.

In the 21st century, China's investment in Africa has surged, positioning the continent as China's third-largest investment destination, offering a wealth of promising business opportunities (Sylvaire et al. 2022). Since 2000, China's influence in hydrocarbons, metals, education, communications, and manufacturing has significantly advanced Africa's development (Atitianti and Dai 2022; Renard 2011). While Africa receives substantial FDI from various countries, this paper primarily compares FDI from China and the United States, the largest and most consistent sources of investment in the region. However, some attention is also given to countries such as France, the United Arab Emirates, and the United Kingdom. Available data indicate that, from 2014 to 2018, China, the United States, France, UAE, and UK were the leading sources (Figure 1).

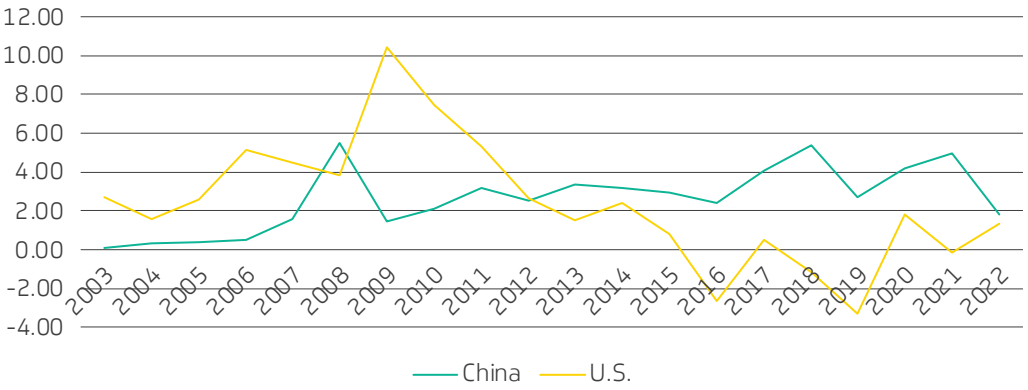
Figure 1: Leading Sources of FDI Flow to Africa, 2014–2018



Source: Author's Computation based on data from Lyttle (2022).

Available data also indicate that, starting in 2013, Chinese FDI began to surpass U.S. FDI in Africa (Figure 2).

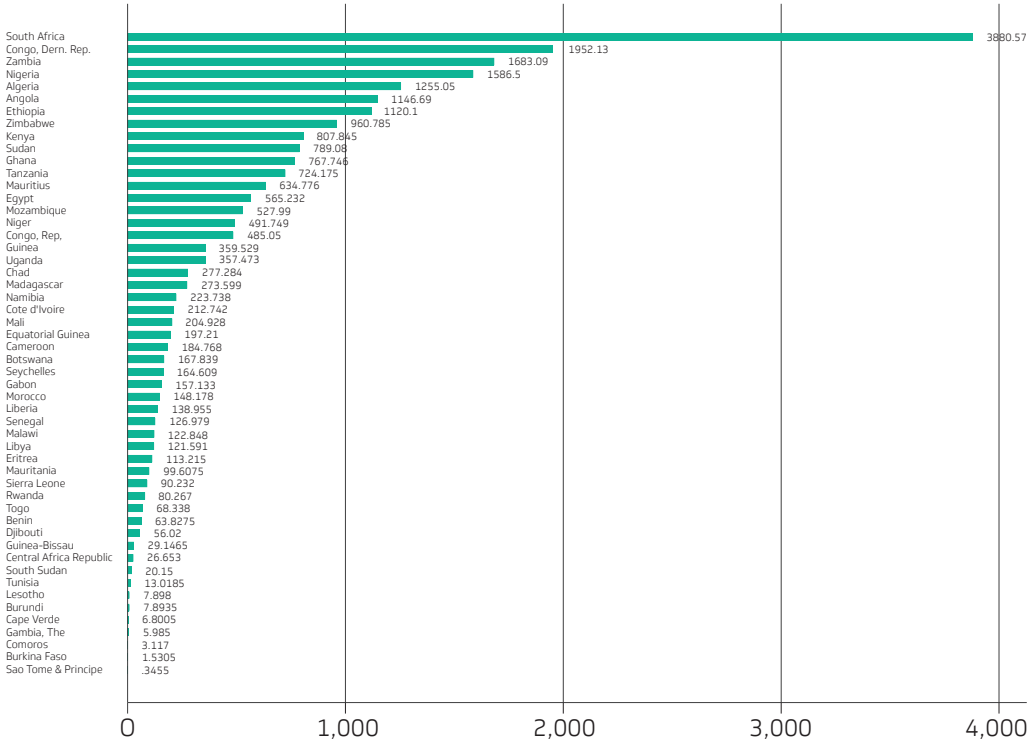
Figure 2: Chinese and U.S. FDI in Africa (US$, billion), 2003–2022



Source: Author's computation based on data from China-Africa Research Initiative (2024).

While U.S. investment in Africa fell from US$2.6 billion in 2012 to US$1.5 billion in 2013, China's investment rose from US$2.52 billion to US$3.37 billion. Since 2013, Chinese FDI has continued to surpass U.S. FDI in Africa (Figure 2). At the 2021 Forum on China-Africa Cooperation, China pledged US$10 billion in private FDI for the period from 2022 to 2025 (Galtier 2024). Notably, nearly every African country has received Chinese investment, with South Africa receiving the highest amount at US$3,880.57 million; São Tomé and Príncipe received the smallest amount at US$0.3445 million (Figure 3).

Figure 3: In-Country Chinese FDI to Africa (US$ Million), 2003–2022

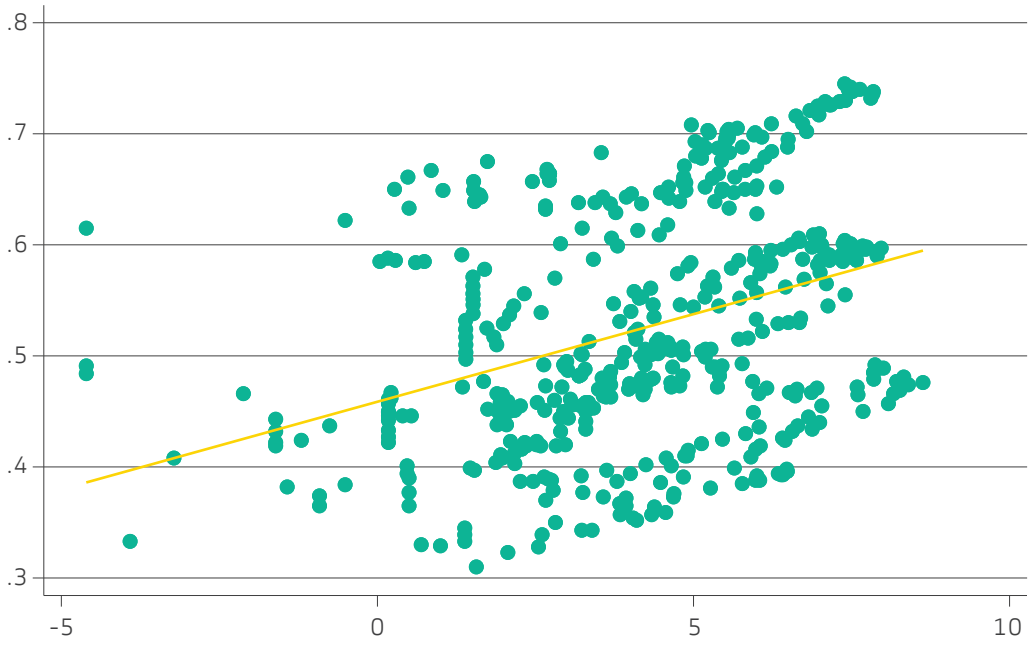


Source: Author's computation based on data from the China-Africa Research Initiative (2024).

The Rise of Chinese FDI and Economic Development in Africa

Chinese FDI has had several benefits, including reducing inequality (Ofori et al. 2023), alleviating poverty (Iddrisu et al. 2023b), enhancing income growth or economic growth (Miao et al. 2020; Doku et al. 2017), and increasing domestic investment (Miao et al. 2021). The impact of Chinese FDI on Africa's economic development becomes clear when that FDI is compared with values for 52 African countries in the Human Development Index, which serves as a proxy for economic development (Figure 4).

Figure 4: Human Development Index and Chinese FDI in 52 African Countries, 2024



Source: Author's computation based on data from the Human Development Report Office and the China-Africa Research Initiative (2024).

Chinese FDI can enhance economic development through employment (Pigato and Tang 2015). Between 2005 and 2016, China funded 293 projects in Africa, generating more than 130,000 jobs. In 2016 alone, Chinese FDI was responsible for creating 38,417 jobs in Africa, surpassing the job creation of the United States in Africa, which was 11,430 that year (Sylvaire et al. 2022). Specifically, in 2006, Yuemei Group invested US$1.2 million in a manufacturing subsidiary and US$50 million in a textile park, creating 1,000 local jobs in Nigeria and an operation in Senegal (Pigato and Tang 2015). Chinese firms also undertook major infrastructure projects in Tanzania, generating about 150,000 jobs and involving 350,000 Tanzanians in trade (Xinhua 2019). Additionally, China's FDI has led to the resource development of the richest resource countries in Africa. Angola, Ghana, Guinea, and Nigeria have benefited from resource development driven by China's FDI

(Iddrisu et al. 2024, 2025; Purwins 2023).

Chinese investment has greatly enhanced African infrastructure. In Kenya, the China Road and Bridge Corporation (CRBC) completed the Standard Gauge Railway between Nairobi and Mombasa (CRBC n.d.). In Ethiopia, China built the Addis Ababa-Djibouti Railway, boosting regional trade (Xinhua 2024). In Nigeria, Chinese funds modernized the Lagos-Kano Railway to improve transport (Chen 2018). Chinese investment in the Luanda International Airport terminal and road networks have enhanced travel and infrastructure in Angola (Campos 2023). In South Africa, China supported the Gautrain project, linking Johannesburg, Pretoria, and OR Tambo International Airport, improving public transport and economic integration (Centre for Public Impact 2016).

Pitfalls of Chinese FDI and the Role of High-Quality African Institutions

Chinese FDI in Africa is not without its critics. One major concern is debt trapping. When Chinese loans for infrastructure lead to unsustainable debt, they create financial dependency and give China leverage, potentially compromising the economic stability and sovereignty of recipient countries. Some development partners such as the International Monetary Fund have warned African countries about Chinese loans (Galtier 2024). Some believe that Chinese FDI is driven by strategic rather than purely economic interests. The strategic interests include securing access to natural resources or expanding China's geopolitical influence (Knowledge at Wharton 2019). Critics argue that heavy reliance on Chinese investment might create economic dependency, whereby African countries become overly reliant on China for financing and trade, reducing their economic sovereignty. Another key concern is that Chinese FDI to Africa tends to decline following global crises. For instance, after the 2008 financial crisis, Chinese FDI fell from US$5.49 billion in 2008 to US$1.44 billion in 2009 (Figure 2). Similarly, after the COVID-19 pandemic, FDI decreased from US$4.99 billion in 2021 to US$1.81 billion (Figure 2). Ongoing trade wars, particularly between the United States and China, can undermine Chinese FDI benefits in Africa. Reduced Chinese export access lowers firm revenues, limiting their capacity to fund African projects and causing delays or cancellations. Excess industrial goods may be diverted to Africa at low prices, harming local industries and deepening import dependence. Weakened economic conditions could also prompt Beijing to tighten lending or impose stricter repayment terms on FDI-linked loans, increasing Africa's vulnerability to external economic shocks.

Despite these concerns, some studies suggest that high-quality institutions can mitigate or eliminate such issues. For instance, Iddrisu et al. (2023b) found that improving institutions could further reduce poverty in Africa. Ofori et al. (2023) argued that strong institutions could help Chinese FDI reduce inequality in Sub-Saharan Africa. Miao et al. (2020) found that Chinese FDI can significantly boost economic growth in Africa when robust institutions in African countries shape contract negotiations, leading to favourable terms and easier repayment for those countries. Additionally, these institutions can create frameworks to guide Chinese firms and allocate spillover benefits efficiently. They can improve the working environment for these firms, aiding their operations and minimising their losses during global challenges.

Chinese FDI impacts are transmitted through and mediated by the host country's local economic institutions, legal, and social institutions.

Well-governed local economic institutions ensure the broad distribution of FDI benefits, contributing to sustainable development. For example, the Zambia-China Economic and Trade Cooperation Zone under the purview of the Zambia Development Agency has created 6,000-plus jobs, has enabled tech transfer, and has attracted about US$9 billion in investment (ZambiaMonitor Contributor 2025). Conversely, weak institutions may lead to inefficient resource use, corruption, and unequal benefit distribution, potentially worsening economic disparities (Iddrisu et al. 2023b; Ofori et al. 2023).

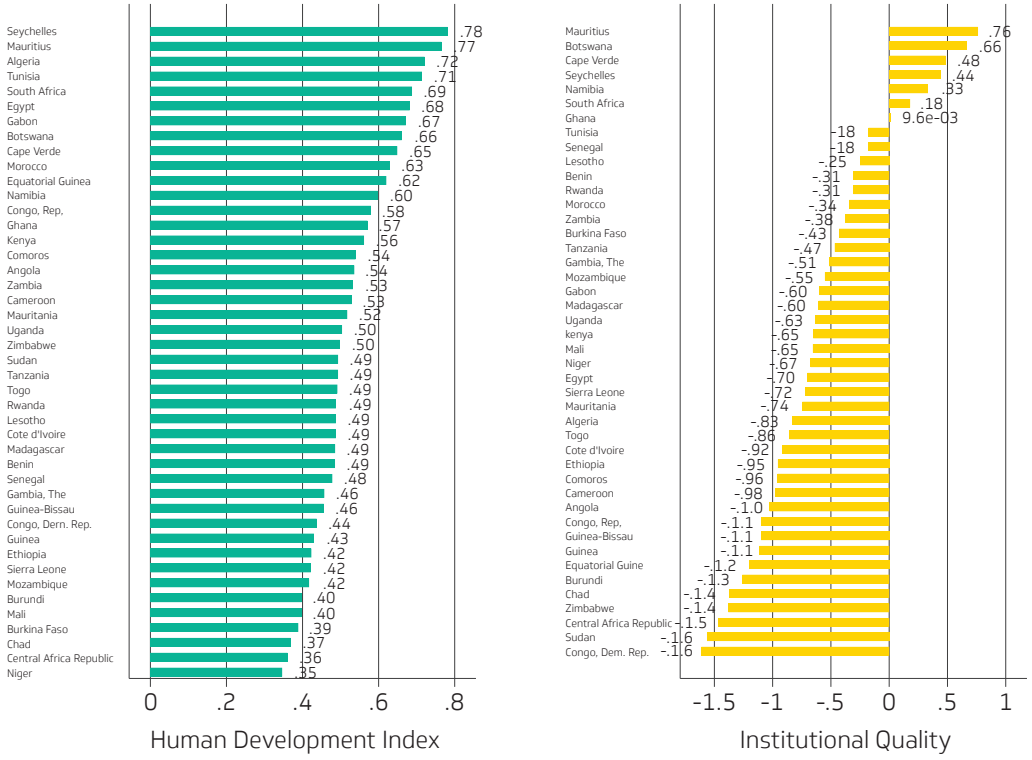
Robust legal institutions can provide mechanisms for dispute resolution, enforce contracts, and protect property rights, thereby fostering an environment conducive for investment. In countries where legal institutions are weak or prone to corruption, the risks associated with Chinese FDI, such as contract disputes, expropriation, or legal challenges, can increase, potentially deterring future investments and undermining economic stability (Iddrisu et al. 2023b; Miao et al. 2023; Ofori et al. 2023; Ross et al. 2019). Establishment of the China Africa Joint Arbitration Centre (CAJAC) has been instrumental in attracting Chinese FDI (Madalane 2022).

Social institutions—education systems, community organisations, and cultural norms—mediate the social impacts of Chinese FDI. For instance, Chinese investment in sectors such as infrastructure and mining can lead to displacement of local communities, changes in social dynamics, and shifts in labour markets. Strong social institutions can help manage these transitions by ensuring community engagement, protecting the rights of affected populations, and fostering

social cohesion (Ross et al. 2019). Additionally, social institutions play a role in shaping public perception and acceptance of Chinese FDI, which can influence the long-term sustainability of these investments (Shang et al. 2024) .

High-quality host country institutions not only minimise risks highlighted by critics of Chinese FDI critics but also can directly promote economic development and attract Chinese FDI. North (1990) shows that the presence of such institutions enhances the efficient allocation of resources within a country, in turn, helping reduce inequality—an essential factor in economic development. This assertion is supported by the data presented in Figure 5, which shows that countries with relatively stronger institutions tend to exhibit higher levels of economic development. Additionally, strong institutions protect domestic firms, thereby helping minimize poverty and attract foreign capital flows. Figure 5 suggests that, despite important energy and mineral resources in the Democratic Republic of Congo, Burkina Faso, Lesotho, Libya, and other African countries, the flow of Chinese FDI to these countries is minimal due to their political instability and institutional issues.

Figure 5: In-Country Human Development Index and Institutional Quality, 2003–2022



Source: Source: Author's computation based on data from the Human Development Report Office and World Development Indicators 2024.

Note: Institutional quality values represent the average of six variables: control of corruption, rule of law, government effectiveness, voice and accountability, regulatory quality, and political stability.

Conclusions and Recommendations

African countries face unemployment, poverty, inequality, and lack of access to basic social amenities, all of which can undermine their achievement of the SDGs and Agenda 2063. This paper considered how the inflow of Chinese FDI can minimize these challenges and promote economic development. Its findings suggest that Chinese FDI provides benefits such as job

creation, resource development, poverty alleviation, inequality reduction, and even growth level increases. But Chinese FDI can trap host countries in debt and make them over-dependent on inflows, which drop after global

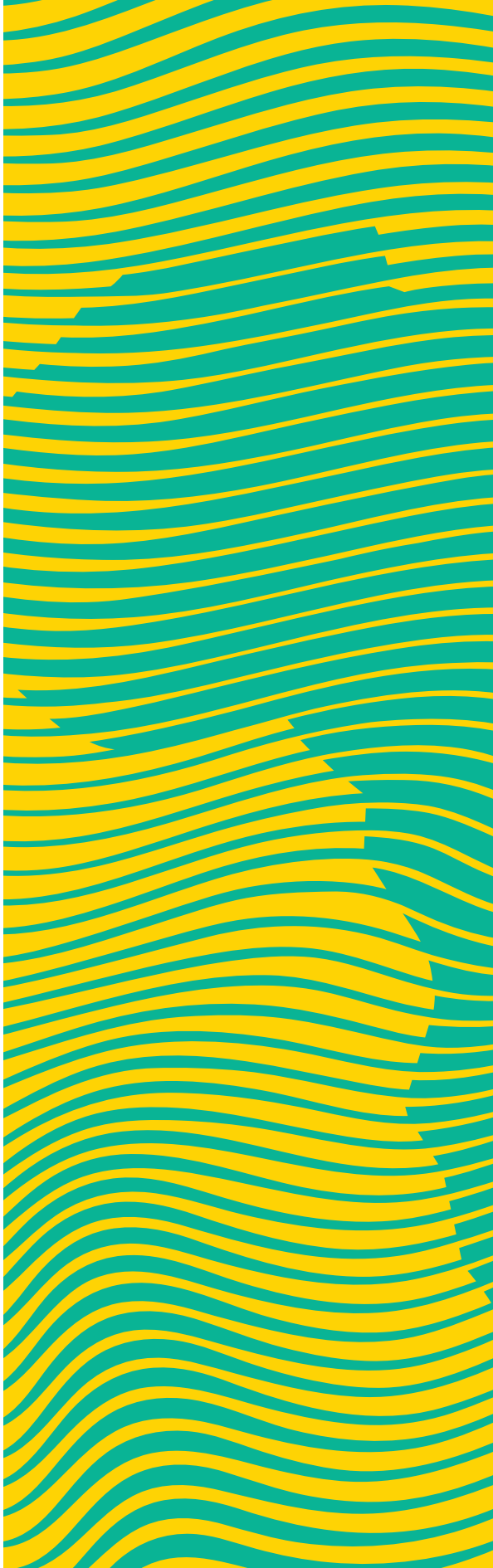
crises. Moreover, Chinese FDI can be aimed at strategic rather than purely economic interests and can lead to corruption. However, high-quality host country institutions can minimise these problems.

These findings suggest three recommendations. First, given that Chinese FDI promotes economic development, African policymakers should effectively implement existing trade policies, including NEPAD and AfCFTA, and various local trade regulations to increase Chinese investment. AfCFTA, which aims to reduce tariffs and harmonise trade rules, has some drawbacks. AfCFTA's slow domestication, weak infrastructure, and uneven capacity hinder trade gains. Policymakers should accelerate the policy's ratification; increase the policy's enabling of transport, logistics, and digital infrastructure; and establish AfCFTA support desks within trade ministries to maximise benefits to small and medium enterprises. In addition, policymakers should improve coordination of national and regional trade bodies to ensure consistency and alignment in trade policies. This coordination can involve regular meetings, joint initiatives, and information sharing between policymakers and trade authorities. Policymakers can also achieve these ends by actively engaging with Chinese businesses and government officials to promote the benefits of existing trade agreements. They can host trade missions, investment forums, and networking events to showcase business opportunities and foster partnerships between African countries and Chinese investors.

Second, because institutional quality influences economic development, policymakers and African leaders should ensure high-quality institutions and good governance by developing and enforcing a robust legal framework to ensure fair and transparent judicial processes. Though CAJAC provides a platform for dispute resolution of trade/investment matters, it is not widely known or integrated into national investment promotion strategies. Hence, the need to embed CAJAC in domestic trade and investment policies. Policymakers should also invest in judicial training and resources to increase the efficiency and impartiality of the legal system by establishing and supporting anti-corruption agencies with clear mandates and sufficient authority and by implementing stringent anti-corruption measures, including regular audits, transparency initiatives, and whistleblower protections. Additionally, African leaders and other policymakers should invest in capacity-building programs—training, professional development, and implementation of modern management tools and technologies—for government institutions and public officials.

Third, because institutional quality can minimise risks associated with

Chinese FDI, policies to attract that investment should be implemented alongside improvements in institutions and governance. These improvements include robust legal and regulatory reforms that protect property rights, enforce contracts, and ensure a fair and predictable business environment. These reforms will build investor confidence and attract higher-quality Chinese FDI. Strengthening governance structures and increasing transparency in both public and private sectors will create an environment more conducive to FDI. These aims can be achieved by enforcing anti-corruption measures, improving regulatory frameworks, and ensuring accountability in government operations. Finally, policymakers should establish mechanisms for monitoring and evaluating the impact of FDI on economic development, focusing on the role of institutional quality. Regular assessments will help policymakers fine-tune policies and ensure that FDI contributes positively to long-term development goals.



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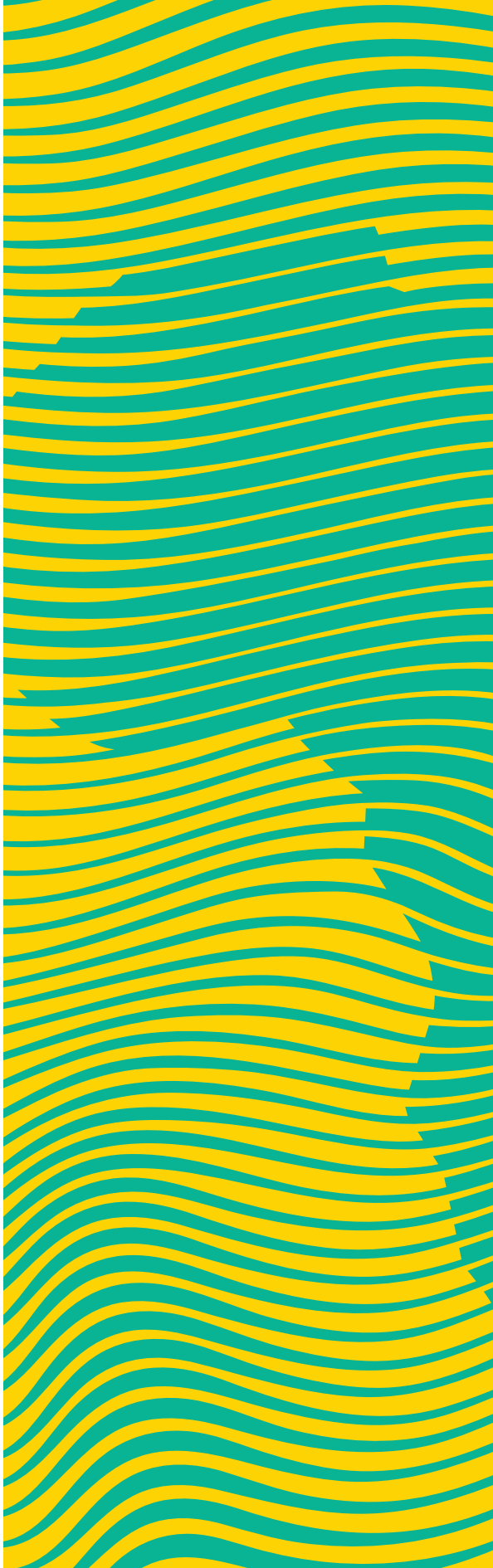

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