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Structures, politics, and emerging responses

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The Currency Risk Challenge in African Power Finance: Structures, Politics, and Emerging Responses

Wikus Kruger¹ and Danny Cassimon²

Abstract

Achieving Africa's energy and infrastructure goals requires unprecedented investment, but foreign currency reliance in project finance exposes governments and utilities to systemic currency risk. This working paper explores the structural, financial, and political economy dimensions of currency mismatch in African power projects, and those executed by so-called (private sector) Independent Power Producers (IPPs) in particular, where revenues are in local currency but debt obligations are in hard currency. It argues that traditional solutions - such as sovereign guarantees and hard currency Power Purchase Agreements (PPAs) - are increasingly unsustainable, exacerbating fiscal vulnerabilities and undermining long-term resilience.

The paper examines the state of local capital markets across Africa, the evolution of PPA structures, and the consequences of unmanaged foreign exchange risk on utilities, consumers, and governments. Through detailed case studies, it illustrates the limitations of prevailing models and highlights emerging alternatives - including local currency PPAs, partial indexation mechanisms, and innovative risk mitigation tools.

Focusing in particular on TCX (The Currency Exchange Fund), the study evaluates its potential to scale hedging solutions across frontier markets, and outlines how procurement reform and blended finance can integrate FX risk management into project design. The paper concludes with a set of actionable recommendations for governments, donors, DFIs, and domestic financial actors to enable a shift toward a new investment architecture - one that is locally anchored, fiscally responsible, and better aligned with the goals of universal access and a just energy transition.

Keywords: currency risk, de-risking, currency hedging, renewable energy finance, TCX, Africa

JEL Codes: G11, G32, H63, O22, O55, Q2.

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1. Introduction: The Investment Imperative and the Currency Risk Challenge

Achieving universal electricity access in Africa by 2030, while also expanding generation capacity to support economic development, will require unprecedented levels of investment. The International Energy Agency (IEA, 2023) estimates that annual energy investment on the continent needs to more than double to over USD 240 billion by the early 2030s, with over USD 120 billion needed in generation and grid infrastructure alone.

Most African countries lack sufficiently deep and liquid domestic capital markets to fund utility-scale energy infrastructure at the necessary scale (AFC, 2025; Horrocks et al., 2025). As a result, the vast majority of independent power projects (IPPs) - especially those outside South Africa - have relied heavily on international debt and equity, denominated in hard currencies such as US dollars or euros. However, the end-users of electricity pay in local currency, and public utilities, as the offtakers under long-term power purchase agreements (PPAs), typically do not have consistent or affordable access to foreign exchange reserves. This creates a systemic currency mismatch at the heart of African energy project finance: revenues are in local currency, but repayment obligations are in hard currency (Tesfaye, 2024).

Since the pioneering work of Eichengreen & Hausman (1999), this mismatch situation is framed within the context of the 'original sin' problem, referring conceptually to the inability of (both sovereign as well as non-sovereign entities in) emerging markets and other developing countries to borrow abroad in their own local currency (the so-called 'international' dimension of original sin) as well as the inability of these same entities to borrow *long-term* in their local currency in domestic capital markets ('domestic' original sin). Although some 'redemption' of this original sin has been achieved for emerging (middle-income) market countries, for lower income developing countries, and indeed most African countries, this original sin problem, and the resulting mismatch, is still very much a reality. (Eichengreen et al., 2023; Cassimon & Mavrotas, 2025).

This mismatch creates substantial risks for all parties. For investors and lenders, local currency depreciation can erode project returns or even threaten debt service capacity. For utilities and governments, it exposes them to unsustainable fiscal burdens if they assume the foreign exchange risk through guaranteed tariffs or sovereign guarantees. And for end-users, it often translates into sharp tariff hikes or unreliable service when utilities are financially distressed.

This working paper investigates how this core vulnerability - currency mismatch risk - can be more effectively mitigated in the design and financing of African power projects. While the issue has long been recognized, the preferred approach to date has been to shift the burden to governments via hard currency PPAs or currency-indexed tariffs. However, this strategy may no longer be sustainable as debt vulnerabilities mount, foreign exchange reserves dwindle, and governments become more reluctant - or unable - to absorb long-term contingent liabilities (Horrocks et al., 2025).

Recent evidence suggests that this shift is not only necessary but economically rational. Modelling by the Energy for Growth Hub (Balde & Tesfaye, 2025) demonstrates that replacing hard currency debt with local currency financing can significantly reduce the cost of capital for African energy projects. Across cases in Kenya, Ghana, and Nigeria, local currency debt - particularly when partially hedged - lowered the weighted average cost of capital by 17–31% and tariffs by as much as 29%. Partial coverage captured most of the benefits of full hedging but at a lower cost, making it a practical alternative in constrained settings. These findings reinforce the case for embedding local currency solutions more systematically across project structuring, procurement design, and blended finance strategies.

We begin by unpacking the structural causes and political economy of currency mismatch risk in African power markets - highlighting how macroeconomic conditions, institutional preferences, and legacy financing models have shaped the current landscape. In doing so, we focus largely on utility-scale power projects developed through (private sector) independent producers, as this has become the

dominant approach in the countries under consideration. The paper then assesses how project-level risk allocation practices interact with these dynamics, using illustrative case studies from across the continent. Next, we examine the current suite of hedging instruments, blended finance solutions, and currency-indexed approaches, with particular attention to underutilized tools like TCX. Building on this, the paper proposes implementation pathways and policy reforms, including the integration of currency risk mitigation into auction design and procurement frameworks. Finally, we outline recommendations for governments, DFIs, and domestic financial actors to enable more resilient, locally anchored investment models.

2. How utility-scale power projects are typically structured

Most new generation capacity across sub-Saharan Africa is being developed through Independent Power Producers (IPPs) - private companies that build, own, and operate power plants, selling electricity to state-owned utilities under long-term contracts. This model has emerged as the dominant approach for expanding generation capacity without overburdening fiscally constrained governments, while also leveraging private capital and expertise (Alao & Kruger, 2024)³.

IPPs are typically structured as project-financed special purpose vehicles (SPVs) (see Figure 1). These are standalone legal entities that isolate project risks and revenues from the sponsors' balance sheets. Project finance involves securing debt and equity specifically for a given infrastructure project, with repayment entirely dependent on the cash flows generated by the project itself (Gatti, 2019).

In most African IPPs, project finance structures rely heavily on debt, which can account for 60 - 80% of the total capital cost. Debt is generally preferred because it reduces the (weighted average) cost of capital (wacc) and leads to lower electricity tariffs - critical in a context where affordability is a major policy concern. However, access to affordable, long-tenor debt in local capital markets is extremely limited across the region (domestic original sin). As a result, most projects are financed from international lenders, including development finance institutions (DFIs), export credit agencies (ECAs), and international commercial banks, in hard currency (international original sin) (Kim & Tam, 2025; Moses, 2023; AfDB, 2025).

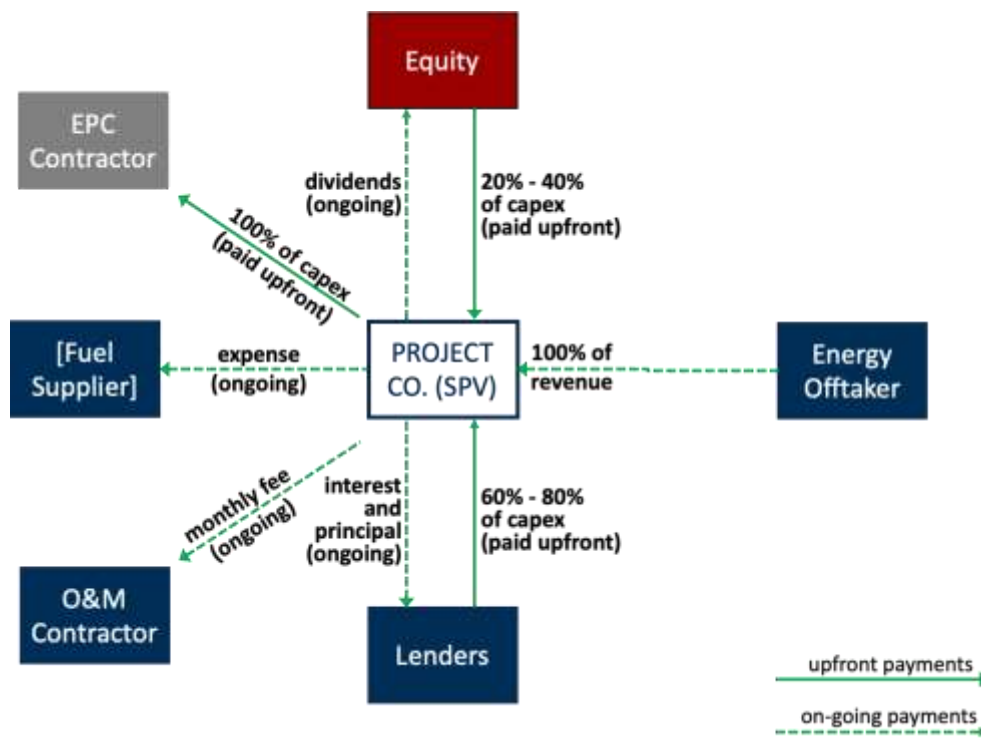
To secure repayment and ensure project bankability, IPPs enter into long-term Power Purchase Agreements (PPAs) - typically spanning 15 to 25 years - with state-owned utilities. These PPAs define the pricing, payment terms, delivery obligations, and dispute mechanisms for electricity supplied by the IPP. Because project lenders rely almost entirely on PPA revenue for repayment, the strength and credibility of the PPA - and the offtaker's ability to honour it - are critical to securing finance (Yescombe, 2014).

In this arrangement, the state-owned utility (offtaker) purchases electricity from the IPP and resells it to end-users - households, businesses, and industry - who pay their bills in local currency. This creates the fundamental currency misalignment: project revenues are in local currency, but repayment obligations (especially debt) are in hard currency (Tesfaye, 2025).

Understanding this basic structure is essential to appreciating why currency mismatch presents such a persistent and systemic challenge in African power project finance. The following section unpacks this vulnerability in greater detail.

³ Other common models for funding power projects in Africa include public financing - through national budgets, utilities, or DFI support - and Chinese-backed investments, typically structured as government-to-government loans, sometimes resource-backed and concessional. Increasingly, Chinese projects also involve private sector participation using project finance models.

Figure 1: Typical IPP project finance structure, indicating financial flows



Source: Gross (2025).

3. The state of domestic capital markets in Africa (domestic original sin)

A central structural constraint limiting the use of local currency financing for African power projects is the underdevelopment of domestic capital markets. In most countries across the region, financial markets remain shallow, illiquid, and fragmented - unable to provide the scale and terms of finance needed for large-scale infrastructure projects.

Low pension assets and shallow domestic credit markets mean that institutional investors and banks lack the resources or regulatory incentives to participate meaningfully in long-term infrastructure lending. With the notable exception of South Africa - where pension assets represent over 85% of GDP, and credit to the private sector exceeds 140% - most countries fall far below global benchmarks. In Ghana, Zambia, and Uganda e.g., pension assets account for less than 7% of GDP, and private credit is under 20% (AFC, 2025).

Local bond markets are similarly constrained. While South Africa and Namibia have relatively well-developed domestic bond markets (48% and 35% of GDP, respectively), most others - including Kenya, Nigeria, and Zambia - struggle with limited issuances, short maturities, and small secondary markets (AFC, 2025). This restricts the ability of governments and corporates to raise long-term local currency funding.

Tenor and cost are key obstacles. Even when local currency debt is available, it is often short-term and expensive. Average tenors for infrastructure loans in Nigeria, Ghana, and Zambia range from just 4 to 6 years - far too short for the 15 - 25 year timelines typical of independent power projects (IPPs). Lending interest rates are high and volatile: over 25% in Ghana and Zambia, and nearly 20% in Uganda (AFC, 2025; Mukoki, 2022). This makes local currency project finance prohibitively costly in many markets, especially when compared to concessional or semi-concessional hard currency loans from (foreign) development finance institutions (DFIs).

South Africa and Namibia stand apart as regional exceptions. Both have deeper financial sectors, longer available tenors, and relatively affordable local financing. In Namibia, a peg to the South African rand facilitates cross-border investment from South African banks, allowing IPPs to access rand-denominated finance underpinned by Namibian PPAs. Yet these cases are outliers: the vast majority of sub-Saharan African countries lack the conditions to replicate such models at scale (AFC, 2025; Mukoki, 2022; AfDB, 2025).

The implications are significant: without a robust pool of long-term local currency capital, and given the inability to source foreign in that local currency, energy developers are forced to seek foreign debt and equity, in foreign currency. This perpetuates the currency mismatch at the heart of African power sector finance and underscores the importance of mitigating the associated risks (through guarantees, hedging, or indexed PPAs) and investing in long-term market development to enable domestic solutions.

4. Currency Risk in Power Sector Investment

As discussed, foreign investors - primarily development finance institutions (DFIs), export credit agencies (ECAs), and climate-focused impact funds - have come to dominate African IPP financing. These investors almost always operate in hard currency, and therefore require that repayment obligations (whether debt service or dividends) be structured in the same currency. Yet the power purchasing entities - typically public utilities - generate revenue in local currency and may lack reliable access to foreign exchange reserves. This creates an embedded risk in the project structure: if the local currency depreciates or becomes difficult to convert, one or more parties will absorb a loss.

Between 2014 and 2024, many African currencies depreciated dramatically against the US dollar - by over 280% in Ghana, more than 800% in Nigeria, and over 300% in Zambia (Table 1). Such movements sharply increase local currency-denominated electricity tariffs (if indexed), or else impose large unforeseen losses on utilities and investors (if not). The fiscal implications are severe. Governments may face mounting pressure to provide tariff subsidies or direct financial support to distressed utilities, while also seeing their own foreign debt burdens grow.

Table 1: Currency depreciation in key African economies, 2014 – 2024

Country	Currency	Exchange Rate* (2014)	Exchange Rate* (2024)	% Depreciation vs USD
Ghana	GHS	2.9	11.02	280.0
Nigeria	NGN	158.55	1478.97	832.8
Zambia	ZMW	6.2	26.17	325.5
Kenya	KES	87.92	134.82	53.3
Ethiopia	ETB	19.59	54.6	178.7
South Africa	ZAR	10.85	18.33	68.9

* : refers to local currency units per USD.

Source: World Bank (2024).

Beyond depreciation, convertibility risk presents an additional, often underappreciated challenge. Even when project revenues are indexed to foreign exchange rates, developers may still be unable to convert local earnings into hard currency to service foreign debt. Such convertibility constraints - especially when paired with inflationary pressure and macroeconomic instability - can render even

well-structured projects financially unviable, or prompt investors to price in large risk premiums, making tariffs unaffordable.

This has played out starkly in Ethiopia, where forex shortages in recent years have made it difficult for IPPs and investors to access US dollars through official channels. As a result, no IPPs have been able to secure funding and start construction in the country, despite Ethiopia securing extremely competitive IPP tariffs through competitive tendering processes. The situation has undermined investor confidence in the Ethiopian market despite a relatively strong IPP pipeline (Alao & Kruger, 2024).

The persistence of these currency-related risks has three major implications for the clean energy transition in Africa:

1. **Project Viability:** Mismatch risks, if unaddressed, increase financing costs and make many renewable energy projects unbankable without sovereign guarantees or risk mitigation tools.
2. **Utility Financial Health:** Public utilities - often already fiscally constrained - struggle to absorb forex-driven cost increases, especially where tariffs are regulated and political economy constraints limit timely adjustment.
3. **Energy Affordability and Access:** The ultimate cost of currency risk often falls on end-users, through higher tariffs, load-shedding, or delayed infrastructure rollout – and/or taxpayers, who often ultimately have to pay the price for the long-term fiscal impacts.

Together, these dynamics highlight the urgent need for viable, scalable mechanisms to mitigate currency and convertibility risk, especially as countries scale up investment to meet universal access and climate goals.

5. How currency risk is currently managed in African IPP projects

At the heart of the currency risk dilemma in African power finance lies the structure of Power Purchase Agreements (PPAs), which determine how Independent Power Producers (IPPs) are paid over the life of the project. Since most IPPs rely on long-term debt in hard currency but receive revenues from public utilities in local currency, the PPA becomes the critical contract for negotiating and allocating foreign exchange risk. How this risk is structured can profoundly influence project bankability, fiscal exposure, and tariff affordability.

Across sub-Saharan Africa, three primary PPA models are used to manage currency risk: hard currency PPAs, local currency PPAs indexed to hard currency, and pure local currency PPAs. Each structure carries distinct trade-offs in terms of risk allocation between the public and private sectors, as well as implications for the financial sustainability of the energy sector.

5.1. Hard currency PPAs

In hard currency PPAs, the utility or government commits to paying the IPP in a hard currency such as US dollars or euros. This model provides the highest level of protection for investors and lenders, as the revenue stream is fully aligned with the project's debt service obligations. It is particularly attractive in fragile or inflation-prone economies where local currency volatility is high and access to hedging is limited. By removing exchange rate uncertainty from the investor's perspective, these structures enhance bankability and reduce the cost of capital.

However, the simplicity of this model belies its potential risk to the public sector. The obligation to source hard currency over a 15- to 25-year contract period places a sustained burden on national available foreign exchange (reserves). In economies with shallow reserves or limited fiscal space, this creates vulnerability to external shocks and requires sovereign guarantees or escrow accounts to reassure lenders. The macroeconomic consequences can be profound if these liabilities are not effectively managed.

Zambia provides a vivid illustration of how this model can create long-term structural risks. In response to electricity shortages in the mid-2000s and early 2010s, Zambia signed several long-term, hard currency PPAs with private producers. These included the 300 MW coal-fired Maamba Collieries Limited (MCL) project, which was financed with a mix of Indian and Chinese loans and equity, and denominated in US dollars; the Itzhi-Tezhi Power Corporation (ITPC), a 120 MW hydropower plant co-developed by Tata Power and ZESCO; and the 105 MW Ndola Energy Company plant, signed under emergency procurement in the 2015–16 crisis, with opaque and dollar-indexed payment terms. All three projects imposed substantial hard currency liabilities on ZESCO, Zambia's state-owned utility, which collected its revenues in Zambian kwacha (World Bank, 2017; Bayliss & Pollen, 2021; Kabinga et al., 2024).

As the kwacha depreciated - losing more than 76% of its value between 2014 and 2024 - the real cost of servicing these PPAs soared. Because tariffs for end-users remained far below cost-recovery levels, the utility was unable to pass these costs on to consumers. By 2021, ZESCO's outstanding liabilities to IPPs reached US\$1.8 billion, and the utility found itself paying as much as US\$0.11 per kilowatt-hour for IPP-generated power, while selling it domestically for less than half of that. The most expensive sources - Maamba and Ndola Energy - significantly skewed this average (World Bank, 2017; Bayliss & Pollen, 2021; Kabinga et al., 2024).

To manage this unsustainable imbalance, Zambia undertook emergency measures. These included a 40.7% increase in electricity tariffs in late 2024, the initiation of sovereign and utility-level debt restructuring by asking treatment under the G20 Common Framework (for Debt Treatments Beyond the DSSI), and partial payment suspensions to IPPs - some of which, like Maamba, escalated into legal disputes (Lusaka Times, 2020; World Bank, 2023). While the government ultimately reduced ZESCO's IPP debt to around \$337 million, the process came at great cost to public credibility, investment flows, and utility solvency. ZESCO's worsening financial condition led to load-shedding, deferred maintenance, and liquidity shortfalls that jeopardized new investment (Shalubala, 2024; Zambia Daily Mail, 2024; Bayliss & Pollen, 2021).

The Zambian experience clearly exposes the fragility of hard currency PPAs when macroeconomic fundamentals deteriorate. It highlights the risks of accumulating contingent liabilities through off-balance-sheet structures, the dangers of delayed tariff reform, and the need for strong procurement frameworks that can standardize terms and reduce long-term exposure. Later Zambian programs like Scaling Solar did offer improvements in transparency and value for money, but their limited size meant they did little to address the broader FX mismatch problem (Kabinga et al., 2024).

A comparable example comes from Kenya, long considered a leader in IPP development on the continent. Kenya Power, the national utility, has over 20 PPAs signed with private generators, many dating back to the late 1990s and early 2000s. Most of these contracts are fully dollar-denominated, even though consumer tariffs are paid in Kenyan shillings. Over time, this structure placed mounting pressure on the utility's finances. As the shilling depreciated - by more than 50% between 2014 and 2024 - the local currency cost of capacity and energy payments increased significantly, even when the dollar-denominated tariffs remained constant. By 2021, Kenya Power was spending more than half its annual revenues on IPP obligations (Ngumi, 2021; Tharani et al., 2024; Godinho & Eberhard, 2019).

Public dissatisfaction with rising tariffs and perceptions of excess profits led to a political backlash. In 2021, the government appointed a Presidential Taskforce to review all IPPs, with an explicit mandate to renegotiate unfavourable contracts and reduce the hard currency exposure of the sector. The Taskforce recommended shifting future PPAs to local currency, reducing overcapacity, and exploring options for indexed or hybrid structures. However, the renegotiation process faced resistance from investors and raised concerns over contract sanctity and arbitration (Ngumi, 2021; Tharani et al., 2024; Godinho & Eberhard, 2019).

Kenya's experience demonstrates the long-term costs of shifting all currency risk to the public sector. Even in a relatively diversified and robust IPP market, the fiscal strain and political fallout of hard

currency PPAs can become unsustainable if not accompanied by robust FX management, tariff adjustment mechanisms, and procurement design. It also illustrates the difficulty of retroactive reform: once hard currency contracts are signed, reversing course is institutionally and legally challenging.

5.2. Local currency PPAs indexed to hard currencies

Local currency PPAs indexed to hard currency have emerged as a more balanced, albeit still imperfect, alternative. In these structures, the utility pays the IPP in local currency, but the tariff is linked to a benchmark hard currency rate, often the US dollar, on the invoice date or through a predefined adjustment mechanism. This structure protects the IPP from depreciation, as payments increase in local currency terms when the domestic currency weakens. However, convertibility risk - the risk that the IPP cannot actually obtain hard currency - remains with the developer and their financiers.

Uganda's GET FiT program is a prominent example. Designed to accelerate small hydropower development through a structured procurement framework, the program used local currency PPAs indexed to the USD. While all payments were made in Ugandan shillings, the underlying tariff was adjusted in line with the exchange rate. Donors provided support through top-up payments, viability gap funding, and partial guarantees. This structure allowed investors to hedge their FX risk while enabling the government to retain nominal local currency control (Kruger & Swartz, 2020).

The arrangement offered multiple benefits: enhanced transparency, improved bankability, and manageable fiscal exposure. However, the depreciation risk was ultimately absorbed by Uganda Electricity Transmission Company Limited (UETCL), the state utility, whose financial capacity remains constrained. Over time, as the shilling weakened, the real cost of payments to IPPs increased, reviving questions about long-term affordability and cost pass-through (Duve & Witte, 2016; Van der Ven, 2020).

Malawi presents a similar but more precarious case. In its 2016 PPA template and subsequent solar transactions, the government adopted a hybrid model: tariffs were paid in Malawian kwacha, but capital cost recovery was indexed to the USD. With limited access to hard currency and high inflation, this model attempted to strike a balance between affordability and investor bankability. In practice, however, depreciation outpaced adjustment mechanisms, and ESCOM, the national utility, found itself struggling to meet growing local currency obligations (Jacobs & Couture, 2021; Escom, 2016; Borgstein et al., 2019).

Some developers in Malawi resorted to creative off-PPA solutions, such as holding USD accounts or using chili export earnings to access hard currency. These informal strategies highlight the limitations of partial indexation in contexts of acute FX scarcity. Despite its pragmatic intent, the model did not eliminate risk - it simply reallocated it. Where utilities cannot pass through exchange losses to consumers or access hard currency, sustainability is eventually compromised.

5.3. Local currency PPAs with (no/limited) FX indexation

A third, less common approach is the use of fully local currency PPAs without any indexation. In this model, all payments are made in local currency, and no adjustments are made for FX fluctuations. This approach can only be used where both equity and debt are raised in local currency, or where external investors are willing to accept currency risk. It is a rare model, but where feasible, it minimizes sovereign FX liabilities and aligns incentives for domestic financial market development.

South Africa is the most scaled and instructive example of this approach. Under the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), all PPAs are denominated

in South African rand, with no indexation to hard currency. This was made possible by the strength of South Africa's capital markets, which include large pension funds, active commercial banks, and development finance institutions willing to lend in rand. More than 100 projects, totalling over 6,000 MW of power generation, have been developed under this model (Alao & Kruger, 2024).

The REIPPPP also includes a provision that allows for foreign exchange adjustments between bid submission and financial close. Since many capital inputs - such as solar panels and turbines - are priced in USD or euros, this feature enables developers to reflect currency movements in their financial models during the procurement window (up to a cap, in line with local content requirements). However, once the project reaches financial close, all payments are made in rand. This structure eliminates operational FX risk and has produced consistently affordable tariffs (Eberhard & Naude, 2017).

Namibia has followed a similar path, though enabled through its 1:1 currency peg to the South African rand. While PPAs are formally denominated in Namibian dollars, the peg allows for the use of rand-based funding and financing structures. IPPs in Namibia, such as the Omburu solar plant, have accessed long-term rand financing from South African banks. Because the peg has held firm, both domestic and cross-border investors treat NAD and ZAR interchangeably for financing and payment purposes (Kruger, 2022).

Mauritius offers a hybrid example. Its PPAs are denominated in Mauritian rupees, but the capital cost component of the tariff is indexed to the USD or euro. Operating costs are paid in local currency. This split structure protects investors from FX shocks during the capital repayment period while shielding the utility from operational volatility. While the model has avoided major fiscal disruptions, its success depends on moderate inflation and stable macroeconomic conditions (Alao & Kruger, 2024).

Botswana's recent shift to local currency PPAs reflects its strong macroeconomic fundamentals. Under its recent solar PV tenders, the government has pula-denominated PPAs that are only partially indexed to USD. Despite limited domestic financial depth, the combination of a stable currency, low inflation, and strong sovereign support has attracted investment from both local and regional players. The early stage of implementation means the model is still being tested, but it presents an encouraging precedent for middle-income countries with disciplined fiscal management (Alao & Kruger, 2024).

5.4. The overall emerging pattern

Across these examples, a pattern emerges. Hard currency PPAs are simplest to finance but create long-term risks for governments and utilities. Indexed local currency PPAs offer a middle path but still require mechanisms for exchange rate pass-through or mitigation. Fully local currency PPAs - while ideal from a sovereign risk perspective - are only feasible in countries with deep financial markets or very stable macroeconomic conditions, or where development partners do the hard work of developing and pushing for hedging solutions. For most countries, indexed local currency PPAs remain the default option, not because they are optimal, but because they represent the most viable and least difficult compromise.

These trade-offs make clear that more robust, structured mechanisms for managing currency risk are essential. The following section explores the range of instruments - hedging products, credit enhancements, and procurement innovations - that can help governments and investors navigate the complex terrain of currency risk in African power markets.

6. Hedging instruments and currency risk mitigation solutions

As outlined in the preceding sections, the mismatch between hard currency financing and local currency-denominated revenues remains one of the most persistent structural risks for IPPs across the African continent. With increased exchange rate volatility, tightening global liquidity, and constrained foreign exchange reserves in many countries, this risk has become more salient - and more disruptive - for both governments and investors. While many African countries continue to rely on hard currency PPAs to achieve financial close, a growing cohort of actors is exploring ways to mitigate currency risk through market-based hedging instruments. Yet uptake remains sparse, and most African IPPs today continue to bear the consequences of a fundamental market failure: the absence of long-tenor, affordable, and scalable currency risk mitigation tools.

This section explores existing hedging instruments, the institutional landscape, and the constraints that limit their deployment. It also considers opportunities for integrating such tools more systematically into renewable energy procurement frameworks in Africa.

6.1. TCX: The Currency Exchange Fund

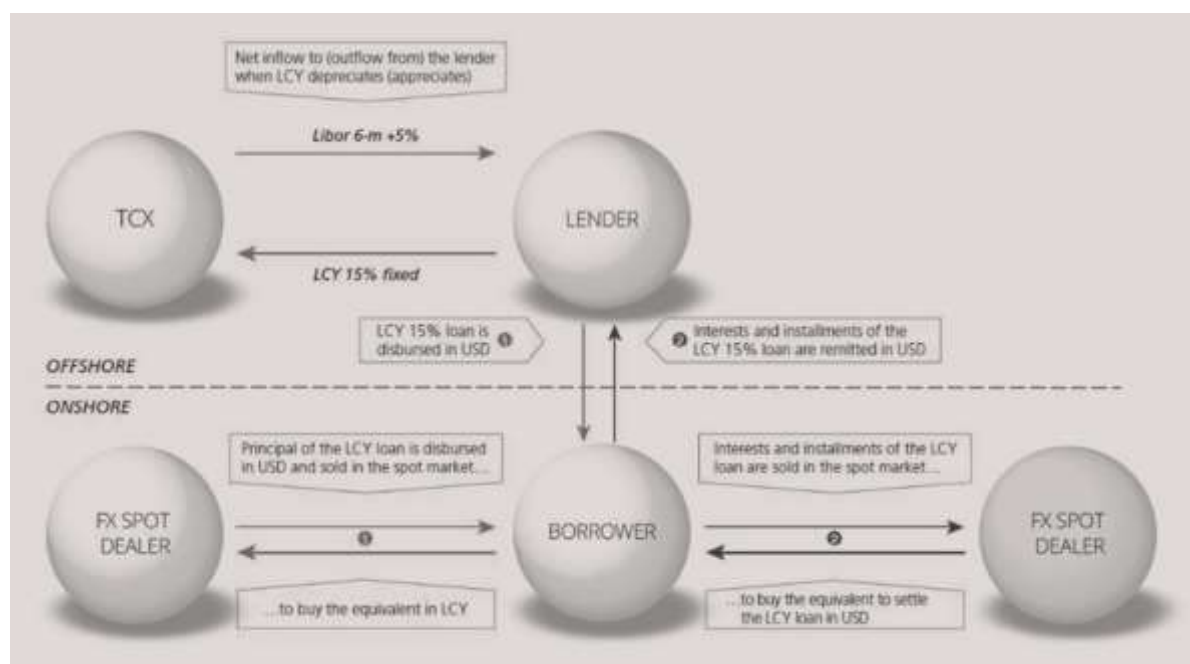
The Currency Exchange Fund (TCX) represents the most advanced and mission-aligned instrument currently available to address the “original sin” of infrastructure finance in emerging markets: the systemic mismatch between local currency revenues and hard currency financing. Established in 2007 by the Dutch development finance institution FMO - with the support of European governments, DFIs, and multilateral partners (including some apex microfinance investment vehicles) - TCX was conceived as a public-good infrastructure for risk management. Since becoming operational in 2008, it has built a globally unique capability to price and absorb currency risk in illiquid markets, where commercial providers have neither the incentive nor the tools to offer long-dated hedging products (Cassimon et al., 2017).

TCX offers bespoke over-the-counter derivatives, primarily cross-currency swaps and non-deliverable forwards, in more than 70 emerging and frontier market currencies. Its hedging solutions are not intermediated through commercial banks but held directly on TCX’s own balance sheet. This enables it to serve markets that lack basic preconditions for conventional hedging - such as active interbank swap markets or forward yield curves. Unlike traditional hedging providers, TCX does in principle not rely on offsetting trades to lay off its risk (although more recently, it more actively seeks offsetting opportunities); instead, it diversifies risk exposure across a wide portfolio of currency positions and geographies, thereby smoothing country-specific volatility (Cassimon et al, 2017).

As stated before, TCX creates a synthetic LC loan for the borrower while absorbing the FX risk, typically through a cross-currency swap contract (with the creditor). A typical transaction would be structured as presented in figure 2.

While the loan disbursement and the interest payments and repayment of principal are done in foreign currency (USD), the USD disbursed is exchanged spot in local currency (LCY), and also the interest payments and repayments are the USD equivalent of the fixed amounts of local currency at the spot rate of that moment, making the loan so-called ‘synthetically’ a local currency loan from the perspective of the client/borrower. The local currency interest rate is set at 15% in this example, and its USD equivalent is paid to the lender; the lender engages in a cross-currency USD/LCY swap with TCX, swapping the USD equivalent payment of 15% of the local currency loan amount to TCX, in exchange for a fixed USD payment at an interest rate of the 6-month USD Libor + 5%. As such, the lender receives a set of known interest and principal repayments in USD at market return, bearing no currency risk.

Figure 2: Typical cross-currency swap creating a synthetic LCY loan for the borrower



Source: TCX website, <https://www.tcxfund.com/cross-currency-swaps/>

The risk is borne by TCX: in principle, the positive difference between the 15% received in USD - equivalent local currency and the 6month Libor +5% should compensate TCX for the currency risk, i.e. the anticipated LCY depreciation during the loan period; this is the well-known ‘uncovered interest rate parity’ (UIRP) theorem. This projected rate of currency depreciation, that gives rise to the proposed interest rate structure (and differential) is estimated calculated by TCX based on an internal model. Of course, ex-post, the observed depreciation will most likely deviate from the ex-ante one, like deviations from UIRP. As such, in some operations TCX will lose, in others it will gain (as the realised depreciation will be smaller than the one implied in the interest differential). By performing sufficiently adequate UIRP estimates, in combination with a sufficient number of operations in a lot of different currencies, and as long as divergences among currencies are not highly correlated, the diversification effect is supposed to balance out the deviations from UIRP in both ways, providing the basis for a sustainable business model (Cassimon & Mavrotas, 2025).

Over the close to 20 years of operation, TCX has executed about 3500 operations, with a swap portfolio totalling about 9.4 billion USD in about 70 different currencies. More importantly, it has established a strong track record, proving that the business model can work (Cassimon & Mavrotas, 2025).

Its early focus was on sectors such as microfinance, housing finance, and SME development - areas where DFIs had traditionally been most active. While TCX has played an indispensable role in building resilience in these markets, uptake in infrastructure - and especially the power sector - has lagged (Fedder, 2024). To date, there are no recorded examples of African IPPs using TCX for long-term currency risk hedging. This is not due to technical limitations. TCX offers tenors of up to 20 years in some currencies and can accommodate bespoke project timelines. Rather, the lack of uptake reflects systemic barriers: the high upfront cost of long-dated swaps (particularly in highly volatile currencies), limited awareness among procurement officials and financiers, and a historical tendency - among both host governments and DFIs - to default to hard currency financing models backed by sovereign guarantees (Cassimon et al, 2017).

Currency risk management is inherently political. Tariff increases resulting from hedging premiums, even if modest, are often difficult to justify publicly - especially when juxtaposed with ostensibly “cheaper” hard currency bids. This creates a short-term bias in procurement decision-making, privileging upfront cost over long-term fiscal resilience. Moreover, government officials, often under pressure to deliver quick results, may lack the technical capacity or political mandate to champion hedging-based solutions, which require careful calibration and advance planning.

Compounding the challenge, some development finance institutions have implicitly undermined TCX’s role by continuing to finance infrastructure through hard currency instruments - even in cases where local currency alternatives were technically and institutionally feasible. This inertia reflects a deeper tension: while DFIs are increasingly tasked with crowding in local capital and supporting sustainable development finance, their own lending models and incentives may not yet be fully aligned with these goals.

Despite these constraints, TCX’s unique institutional design makes it an indispensable part of any serious effort to scale local currency procurement. The next challenge is to be able to upscale its operations; although its current capital of 1.1 billion USD is sufficient to cover its current scale of operations, obviously it is by far insufficient to match the scale needed. Its capital base, largely composed of public and quasi-public shareholders, gives it the flexibility to serve developmental objectives rather than profit maximization. It is governed by a board that includes leading DFIs and multilateral development banks, and it is independently risk-rated and transparently audited. These features make TCX an ideal anchor institution for any future regional or global strategy to de-risk local currency infrastructure investments (Cassimon et al, 2017; Fedder, 2024).

For TCX’s potential to be realized in the infrastructure space, the key will be its integration into auction design and donor mandates. Auctions provide a transparent, rule-bound mechanism for comparing hedged and unhedged tariffs on an “apples-to-apples” basis. By offering optionality - e.g., bidding in local currency with a TCX hedge, or in hard currency with no hedge - procurement agencies can ensure that the cost of currency risk is priced explicitly, and that governments are not inadvertently subsidizing hard currency finance through opaque risk transfers.

Furthermore, donors and climate finance institutions must do more than endorse TCX in principle. They must provide the concessional capital needed to extend tenors, lower hedge premiums, and support hybrid solutions that combine TCX with results-based financing, partial guarantees, and liquidity support. In doing so, they can help shift the system away from short-term fixes and toward a more resilient and locally anchored investment architecture.

6.2. GuarantCo and Indirect Approaches to FX Risk Management

GuarantCo, part of the Private Infrastructure Development Group (PIDG), offers a different route to mitigating FX risk - one that operates upstream, by supporting the supply of local currency financing itself. Rather than offering direct hedges, GuarantCo provides partial credit guarantees to local banks and institutional investors, enabling them to lend to IPPs in local currency at longer tenors and lower perceived risk. It also offers liquidity extension guarantees and, in certain cases, direct payment guarantees to backstop utility offtake risk (GuarantCo, 2025).

Although GuarantCo does not bear FX risk directly through derivatives, its guarantees help create the conditions in which local currency borrowing can take place - particularly in frontier markets with nascent capital bases. In doing so, GuarantCo addresses both the currency and maturity mismatch, allowing projects to sidestep the FX risk issue entirely by staying within the domestic financing ecosystem. This approach has been used effectively in Kenya and Nigeria, where GuarantCo-supported interventions helped reduce project weighted average cost of capital (WACC) by up to 5 - 6 percentage points by enabling domestic lending and hedging solutions (Balde & Tesfaye, 2025).

In Nigeria, a partnership between the Nigerian Sovereign Investment Authority and GuarantCo enabled the mobilisation of USD 206 million from 19 local pension funds to date through an initiative called InfraCredit. InfraCredit does this through issuing guarantees for infrastructure bonds in local currency (Naira), which reduces currency risk and attracts local investors (Balde & Tesfaye, 2025).

Another illustrative case from the power sector is the 2023 GreenYellow II solar project in Madagascar, where GuarantCo and the African Guarantee Fund (AGF) jointly provided a MGA 33 billion (approximately EUR 7 million) partial credit guarantee to a syndicate of local banks. This enabled domestic lenders - led by Société Générale - to finance a 20 MW solar plant extension and a 5 MW battery storage system in Ambatolampy. By fully mobilizing local currency debt, the project avoided hard currency exposure entirely. The transaction marked a significant milestone: the first time local commercial banks financed a utility-scale solar project in Madagascar. GuarantCo's and AGF's support not only helped mitigate payment risk but also demonstrated the viability of local currency solutions in fragile markets, with potential for replication across the region (GuarantCo, 2022).

GuarantCo is also developing new hybrid products that explicitly target FX risk. One such product, still under design, would guarantee repayment obligations to hedge providers - potentially allowing institutions like TCX to offer hedges with lower pricing or higher tenors than would otherwise be feasible. This kind of blended approach - combining guarantees, hedging, and procurement reform - may be key to unlocking scalable FX solutions in African power markets.

6.3. Other Providers and Emerging Innovations

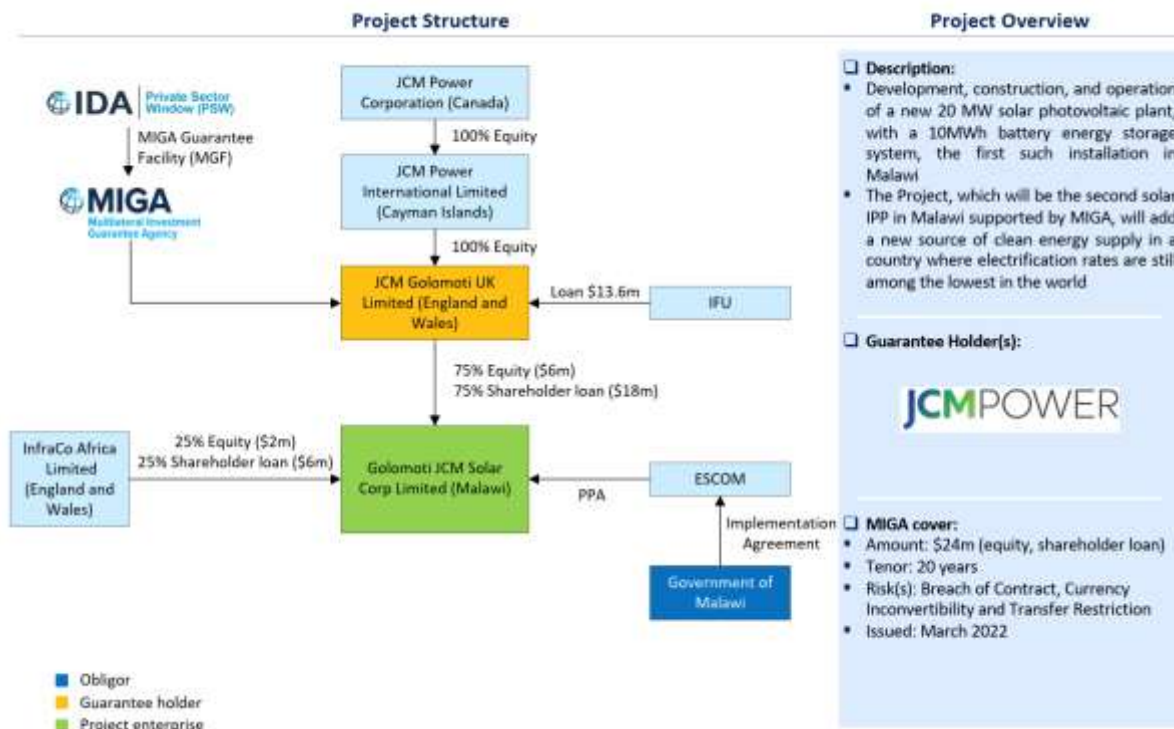
Beyond TCX and GuarantCo, a handful of other institutions have begun exploring ways to mitigate currency risk in emerging market infrastructure. The Multilateral Investment Guarantee Agency (MIGA), for example, offers political risk insurance that covers inconvertibility and transfer restrictions, among other risks. While MIGA does not offer direct currency hedging, its products can be combined with financial instruments to create layered de-risking packages.

In Malawi, for instance, MIGA provided inconvertibility insurance to equity investors in the Golomoti solar IPP, which enabled the sponsors to repatriate dividends and reduced their exposure to local currency volatility (Figure 3). Though not a hedge in the strictest sense, the insurance product played a significant role in enabling capital mobilisation for a project in a high-risk macroeconomic environment (MIGA, 2023).

The African Development Bank is developing the African Currency Exchange Mechanism (ACM), a conceptual initiative aimed at creating a pooled facility to support commodity-linked currency hedging. The idea is that countries with strong commodity export bases - such as copper in Zambia or oil in Nigeria - could anchor their hedging premiums to these revenue streams, thus stabilizing currency exposure over time. Though still in early stages, the ACM reflects a growing recognition that currency risk cannot be addressed solely through financial engineering; it must also be linked to the real economy (AfDB, 2025; Tesfaye, 2025).

Some private banks and structured finance vehicles have offered bespoke FX hedging solutions for large African transactions, often in mining or extractives. However, these instruments tend to be expensive, opaque, and of short duration - making them ill-suited for clean energy infrastructure with 15–20 year PPA horizons.

Figure 3: Golomoti solar IPP project structure and MIGA risk cover



Source: MIGA (2023)

6.4. From Fragmentation to Programmatic Solutions

Despite the array of emerging tools and providers, Africa’s FX risk mitigation landscape remains fragmented, underutilized, and largely peripheral to mainstream IPP financing. Bridging this gap will require more than financial innovation - it will demand institutional reforms, procurement redesign, and deliberate public-private coordination.

One promising pathway lies in embedding FX risk solutions directly into renewable energy auctions. Governments and donors could work with institutions like TCX and GuarantCo to pre-package hedging instruments for use by winning bidders. Rather than leaving risk management to developers post-award, tender frameworks could stipulate local currency PPAs bundled with optional - but available - hedging support. In such models, developers would submit dual bids: one in hard currency, and one in local currency with hedging. This would allow procurement authorities to transparently assess the trade-offs, while reducing information asymmetry and perceived risk.

Equally important is the role of concessional finance. Many hedging instruments carry upfront costs - especially when premiums are priced into tariffs. Donor-supported facilities could help buy down these costs, allowing projects to remain affordable while building a track record for future replication. Concessional funding could also support technical assistance for governments and regulators, many of whom remain unfamiliar with hedging mechanics.

Finally, blended risk coverage - combining currency hedging, political risk insurance, partial credit guarantees, and liquidity support - should become the norm, not the exception. No single instrument can solve Africa’s FX risk challenge alone. But a well-structured, programmatic approach that stacks

available tools and integrates them into project preparation and procurement could mark a step-change in the region's ability to finance infrastructure sustainably.

This integrated approach not only reduces fiscal exposure and enhances creditworthiness; it also sets the stage for the next frontier in Africa's clean energy transition: scaling domestic capital market participation and embedding local financing into the continent's investment architecture.

7. The Political Economy of Currency Risk

Currency mismatch in African power project finance is not just a technical or financial problem - it is deeply shaped by political economy dynamics. The way currency risk is allocated, absorbed, and managed reflects power asymmetries, institutional capacity gaps, and conflicting incentives between governments, utilities, investors, and development finance institutions (DFIs). These factors interact to entrench reliance on hard currency project structures and obstruct the emergence of more sustainable local currency solutions.

For governments and utilities, accepting hard currency liabilities in PPAs can appear expedient. It signals investor-friendliness, lowers the cost of capital in the short term, and enables projects to reach financial close faster - particularly when backed by sovereign guarantees. Political leaders, when under pressure to expand electricity access quickly, may prioritize short-term deliverables over long-term fiscal sustainability. Energy ministries and utilities, often disconnected from central debt management offices, may not fully account for the contingent liabilities or macroeconomic vulnerabilities that hard currency PPAs entail.

From the investor side, hard currency PPAs offer clarity, predictability, and protection against depreciation. DFIs, while public- or quasi-public institutions, often behave as commercial lenders with limited flexibility to assume local currency risk unless hedging instruments or guarantees are in place, or local (currency) sourcing is available. In practice, this means that many DFIs stick to the default option of hard currency lending, even when their developmental mandates suggest they should facilitate local capital market development. As a result, FX risk is either absorbed by sovereigns or deferred to end-users through tariffs - neither of which is politically nor economically sustainable.

The institutional architecture of energy sector planning and procurement often marginalizes Ministries of Finance, who are responsible for managing sovereign debt, foreign exchange reserves, and macroeconomic stability (Grantham Research Institute & Finance Ministers for Climate, 2023). Yet FX exposure from hard currency PPAs directly impacts fiscal space and debt sustainability. When Ministries of Energy and utilities sign contracts with embedded FX liabilities without full coordination with the Treasury, contingent liabilities accumulate off balance sheet, undermining transparency and long-term planning.

This disjuncture was evident in Zambia, where ZESCO's hard currency PPAs became a major contributor to the country's debt distress but were not fully accounted for in sovereign debt metrics until the crisis unfolded. Similar patterns have emerged in Kenya and Ghana. Greater fiscal oversight and integration of FX risk considerations into procurement and planning processes is therefore essential.

Even when governments recognize the risks of hard currency PPAs, shifting toward local currency solutions is politically challenging. Local currency bids can appear more expensive upfront, particularly when hedging costs are capitalized into the tariff. In competitive tenders, this creates a perception that hard currency bids are "cheaper," even if they impose greater long-term fiscal risk. Without mechanisms to internalize and transparently price this risk, procurement authorities and regulators may default to superficially cheaper - but riskier - options.

Moreover, investor resistance to currency reform can be strong. Attempts to renegotiate existing hard currency PPAs - as in Kenya or Ghana - have raised concerns about contract sanctity and investment climate deterioration (Tharani et al., 2024). These tensions complicate efforts to shift toward local currency procurement.

Many procurement authorities and regulators lack the technical expertise to evaluate hedging instruments, model long-term FX exposure, or integrate risk mitigation options into project design. This institutional capacity gap reinforces status quo bias. In some cases, information asymmetry between governments and private developers has led to disadvantageous contract terms, or underestimated currency exposure (Duve & Witte, 2016).

To address this, structured capacity-building and the development of standardized tools - such as pre-packaged hedging solutions or embedded FX risk frameworks - can empower governments to make more informed decisions. Donors and DFIs must take responsibility for supporting this process, not just offering finance but also enabling informed risk management.

Ultimately, reducing FX exposure in African infrastructure finance requires confronting entrenched interests, renegotiating institutional roles, and building new coalitions of support. Ministries of Finance, energy regulators, central banks, and utilities must coordinate more closely, and procurement reforms must be insulated from political interference while still responsive to developmental goals.

Regional platforms - such as the African Single Electricity Market (AfSEM), ECOWAS, or SADC - could help generate political consensus and build momentum for currency risk reform. Shared experiences and peer learning can create a sense of regional norms and demonstrate that local currency solutions are not only technically feasible but also become more politically viable.

8. Unlocking local currency investment: policy, procurement and the role of development finance

Africa is approaching a pivotal moment in the evolution of its power sector financing. The investment required to meet universal energy access and decarbonisation goals - over US\$110 billion by 2030 - is unlikely to be achieved sustainably through continued reliance on hard currency borrowing, sovereign guarantees, and off-balance-sheet liabilities. Currency mismatches are already driving up the cost of capital and contributing to external debt fragility across the continent, while FX risk continues to distort procurement incentives and inflate long-term power system costs.

The time has come for a decisive pivot. There is growing momentum among governments, developers, donors, and development finance institutions (DFIs) to address currency risk more directly and to unlock the potential of local capital markets to finance infrastructure at scale (Horrocks et al., 2025). However, this will require more than generic expressions of interest. It demands structural changes to procurement design, sector planning, and the global architecture of energy finance. In the following, we provide a set of policy recommendations aimed at different stakeholders.

8.1 Recommendations for Policymakers and Governments

Governments must take deliberate steps to embed local currency procurement into national strategies, create enabling environments for hedging instruments, and engage DFIs and Ministries of Finance early in the process.

First, local currency PPAs should be explicitly prioritised - not treated as exceptional workarounds, but recognised as the baseline from which deviations must be justified. This objective should be embedded in integrated resource plans, investment strategies, and sector policies.

Second, procurement frameworks - especially auctions - must be structured to accommodate and incentivise hedging solutions. Public tenders should allow or require bidders to access pre-approved hedging instruments (such as those provided by TCX or GuarantCo), and enable bidders to quote in both local and hard currency. Where possible, tender documents should include tariff adjustment formulas for hedged bids, with clear transparency around costs, indexation assumptions, and potential subsidies. These structures offer three major advantages: they protect utilities and states from contingent liabilities, reduce the need for post-award renegotiations, and foster comparability between hedged and unhedged offers. This transparency, built into a competitive process, is politically valuable - it shifts decision-making from opaque bilateral deals to open, rules-based platforms.

Third, Ministries of Finance must be engaged early in procurement planning. FX risk has direct fiscal implications, whether borne explicitly or implicitly. Ministries should evaluate hedging options alongside traditional sovereign guarantee mechanisms, and explore how embedding FX mitigation into broader sovereign debt management strategies can improve long-term debt sustainability.

Finally, countries should coordinate with regional initiatives and monetary unions to maximise scale and lower cost. In countries participating in the CFA franc zone (WAEMU, CEMAC) or the Common Monetary Area (e.g. Namibia), monetary stability and regional frameworks can be leveraged to reduce hedging premiums. Governments should also align with efforts such as the African Currency Exchange Mechanism (ACM) proposed by the AfDB, which could bring down hedging costs by pooling liquidity and anchoring expectations (AfDB, 2025).

8.2 Recommendations for Donors and DFIs

The development finance community has historically been content to pass FX risk onto host countries - through hard currency PPAs, sovereign guarantees, or offshore lending denominated in dollars or euros. This practice is no longer sustainable. If DFIs are serious about supporting energy transitions, they must be willing to do the hard work of creating and pushing local currency solutions, not just defaulting to the path of least resistance.

This includes substantial long-term investments in hedging platforms like TCX and GuarantCo, paired with concessional capital to extend tenors and reduce hedge premiums. Results-based climate finance and blended structures can be used to buy down hedging costs and offer turnkey de-risking packages to IPPs, combining currency protection with political and credit guarantees.

Moreover, DFIs should take a more active role in developing local financial ecosystems. Anchor investments, liquidity guarantees, and capacity-building for local banks and institutional investors can crowd in domestic capital. New products such as liquidity extension guarantees (e.g. GuarantCo) and rating enhancement tools offer viable pathways to shift the capital stack toward local sources.

Transparency also matters. Donors should support independent analysis and public disclosure of hedging structures, tariffs, and outcomes. This benchmarking enables regulators and governments to make informed trade-offs between cost, risk, and sustainability - and can help defend hedging solutions in the face of political scrutiny.

8.3 The Role of Domestic Stakeholders

While much of the focus in advancing local currency procurement has rightly centered on donors, (foreign) development finance institutions (DFIs), and external hedging providers, domestic financial actors must play a far more prominent role in enabling sustainable investment. Central banks, pension regulators, public development banks, and insurance funds are central to unlocking long-term domestic capital and anchoring local currency power purchase agreements (PPAs) within national financial ecosystems.

Central banks influence the macro-prudential and regulatory environment in which local capital markets develop. Their policies on interest rate management, liquidity provision, and foreign exchange intervention can either facilitate or constrain the development of a viable hedging ecosystem. Pension regulators and insurance supervisors similarly shape the risk appetite and portfolio allocation flexibility of institutional investors. Reforms that enable longer-term investment horizons and permit partial infrastructure exposure - backed by sovereign or donor guarantees - could unleash significant pools of patient capital.

Domestic public development banks and national investment vehicles are also uniquely positioned to pioneer or co-invest in early transactions, de-risking local markets and building track records. In parallel, well-structured PPAs can be designed to explicitly incentivize domestic participation: by offering indexed returns aligned with inflation or government bond benchmarks, embedding minimum local-currency debt thresholds, or incorporating credit enhancements (e.g., from GuarantCo or ATI) that reduce counterparty and payment risk.

Ultimately, domestic actors bring more than capital - they bring local credibility, currency matching, and the institutional continuity needed for long-term infrastructure finance. Strengthening their role is not just an efficiency issue; it is a strategic imperative for ownership, resilience, and scale.

8.4 Final Takeaway: the Need for a New Investment Architecture

The way Africa finances its power sector must change. Continued reliance on hard currency borrowing is not only unaffordable - it is fiscally destabilising, and often unnecessary. Local currency investment, if properly supported with smart hedging and structured procurement, offers a credible and scalable alternative.

This shift will not happen on its own. It requires leadership from African governments, but also deep reform from the development finance community - whose risk appetite, incentives, and procurement models must evolve, and a new, more equitable, public-private partnership model must be forged (Mazzucato, 2025). Only then can we build an investment architecture that is bankable, sovereign-aligned, and resilient.

The time to act is now. The next generation of IPPs, auctions, and finance facilities must be designed with FX risk at the centre - not as an afterthought. It is the only way to ensure that Africa's clean energy transition is not just built - but built to last.

Use of Artificial Intelligence in this Working Paper

This working paper was developed with the assistance of artificial intelligence (AI) tools, specifically OpenAI's ChatGPT, which was used under the direct guidance and authorship of the lead researcher. AI was employed primarily to assist with drafting, refining, and editing sections of the text, synthesizing background material, and enhancing clarity and structure. All content was reviewed, fact-checked, and substantively shaped by the author(s), and full responsibility for the analysis, interpretations, and conclusions presented herein rests with the human contributors. No generative AI tools were used to produce original data, conduct analysis, or substitute for expert judgment.

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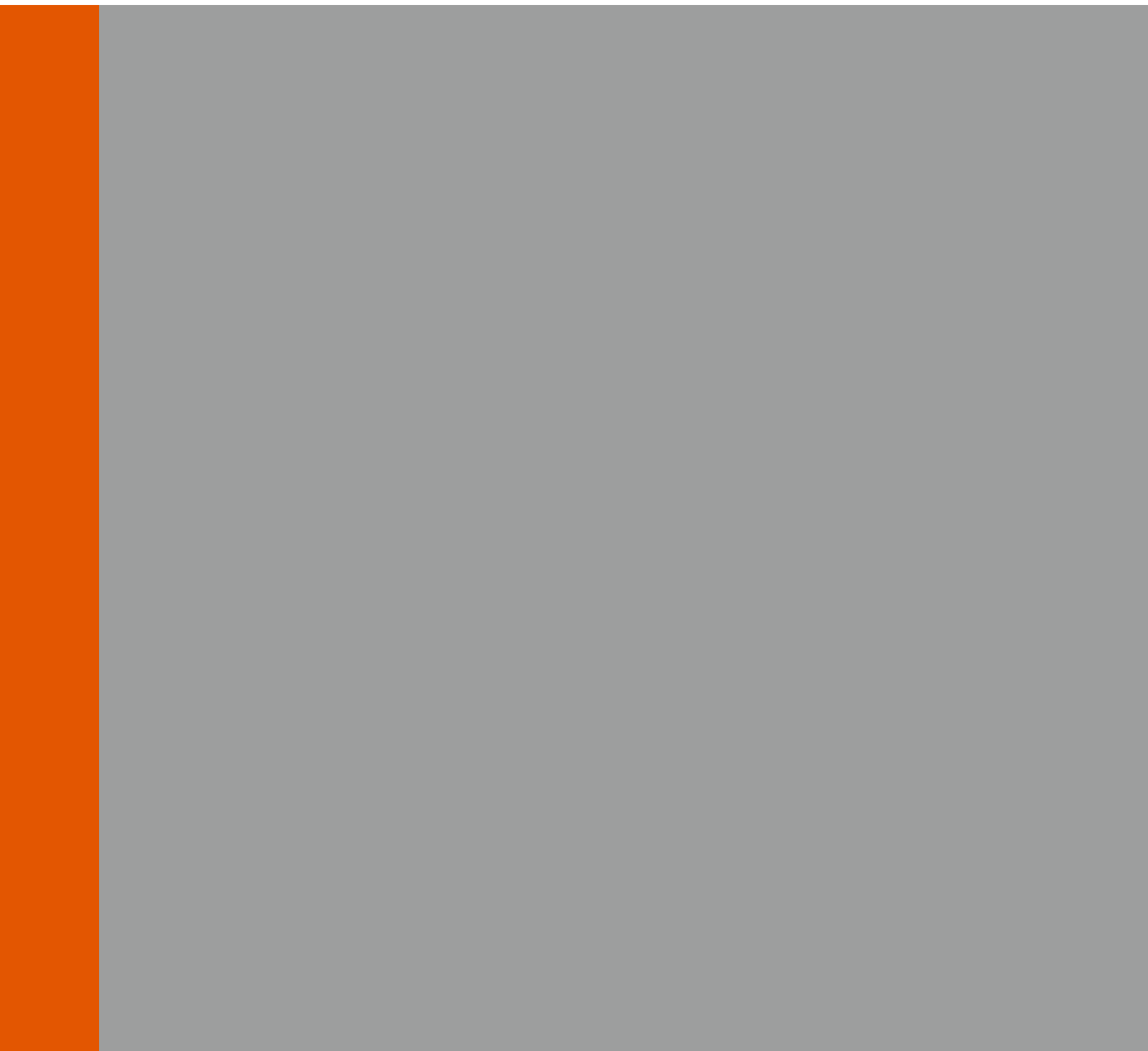
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