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Why and How Kenya Subsidizes Renewable Energy Projects

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Executive Summary

Private investment is a key source, possibly the principal source, of financing for a clean energy transition. Currently, private investment accounts for roughly half of mitigation spending globally.[1] Public support for private investment in clean energy is critical. Although the cost of renewables has been falling in recent years, investment in clean energy still carries considerable risks, and can be unprofitable due to a variety of factors, such as the high cost of capital, volatility in electricity prices, and uncertainty about policy. This paper looks at the challenges facing renewables investment in Kenya, with a focus on the tools that the government and other lenders can and do use to subsidize private investment. While our primary focus is descriptive, we also argue that public subsidies are both necessary to encourage further green investment and require scrutiny to avoid misuse and abuse.

This paper attempts a comprehensive mapping of Kenya's renewable energy subsidy ecosystem, analysing distinct financial instruments tailored to specific challenges. We explore how targeted interventions like the Regional Liquidity Support Facility (RLSF), which shields Independent Power Producers (IPPs) from delayed payments from Kenya Power and other utilities can reduce financing costs for green projects, while geothermal risk-sharing models like upstream exploration coverage and risk underwriting by public institutions have cut private investor costs. The study tracks both on-budget (e.g., tax incentives) and off-budget (e.g., donor-funded guarantees) mechanisms, providing policymakers with a complete toolkit for accelerating clean energy investment.

While Kenya is a regional leader on renewable energy, it has ambitious plans to increase green investment. In 2018, KSh 243.3 billion (~USD 2.4 billion) flowed into climate-related investments in Kenya, 41% from the private sector.[2] However, implementing its National Climate Change Action Plan (NCCAP) requires KSh 1,848 billion (~USD 18 billion) from 2018–2022, or KSh 465 billion per year, with total needs from 2020–2030 reaching KSh 6,775 billion (~USD 65 billion).[3] Achieving these goals requires the mobilization of significant private capital.

To be sure, Kenya has been making progress in private sector led renewables. In the power sector, Independent Power Producers (IPPs) have attracted at least USD 2.5 billion into geothermal, wind, and solar projects, resulting in over 90% of the national electricity mix being renewable.[4] High-profile independent investments such as the Lake Turkana wind farm (KSh 70 billion) and the upcoming Menengai geothermal plants (two 35 MW units at ~USD 117 million total) illustrate successful public–private collaboration.[5]

Still, Kenya seeks to shift to 100 percent renewable energy, even as energy demand grows and energy access expands. To achieve these goals, the country needs to confront some of the common obstacles to private investment in renewables. Key obstacles include high upfront capital costs, currency risks (with the Kenyan shilling depreciating 28% against the US dollar between 2018 and 2024), and the financial instability of Kenya Power, the sole off-taker.

Land acquisition disputes, such as those that halted the Kinangop Wind Park after a USD 66 million investment, and grid integration challenges for renewable power, further hinder progress.

To overcome these barriers in the near-term, Kenya must double down on some of the tools that it and international partners operating in Kenya have deployed in the past. This includes expansion of de-risking tools like feed-in tariffs, concessional loans, and guarantees, such as those provided by the Regional Liquidity Support Facility. Ensuring transparency in subsidy allocation and prioritizing community inclusion through benefit-sharing models, like Kipeto Wind Farm's 5% revenue pledge, are equally vital.

With sustained collaboration between the public and private sectors, Kenya can achieve its ambitious target of 100% renewable energy by 2030. Success will not only advance the country's green growth agenda but also serve as a model for Africa's broader energy transition, which requires an estimated USD 200 billion in investment by 2030. By addressing financing risks, regulatory inefficiencies, and community engagement, Kenya can unlock the full potential of its renewable energy sector and pave the way for a sustainable future.

Introduction: The renewables revolution will be subsidized

Power consumption across Africa is rising rapidly, and renewable energy is expected to play a key role in meeting this growing demand. It is currently projected that 80% of new generation capacity in Africa by 2030 will come from renewable sources such as solar photovoltaic (PV), hydropower, and geothermal. However, achieving the climate, energy development, and universal energy access goals set by African governments will require an estimated doubling of energy investment from USD 110 billion (about KSh 14 trillion) today to over USD 200 billion (about KSh 25.88 trillion) by 2030.[6]

Kenya has emerged as a leader in renewable energy adoption within Sub-Saharan Africa, boasting significant investments in geothermal, wind, and solar power. The country currently generates over 92% of its electricity from renewable sources, positioning it as a regional leader in clean energy.

Kenya aims to achieve 100 percent renewable energy by 2030 and expand its energy grid capacity to 100 gigawatts (GW) by 2040.[7] Investment in clean energy in Kenya grew rapidly in 2023: from about USD $68 million (about KSh 8.80 billion) in 2022 to over $3 billion (approximately KSh 387.78 billion) in 2023, more than a fortyfold increase.[8]

Despite this progress in clean energy development, the high cost of financing remains a significant barrier to scaling up renewable projects in Africa, including Kenya, slowing the energy transition. In the private sector, investors face a high cost of capital, with the weighted average cost of capital (WACC) for utility-scale solar projects in Kenya estimated between 8.5% and 9%. This is significantly higher than the 4.7% to 6.4% observed in North America and Europe.[9] Several factors contribute to this elevated cost, such as political and macroeconomic uncertainties, regulatory inconsistencies, off-taker reliability concerns, and currency risks.

Understanding how Kenya address constraints on private sector investment is key to developing policies that can accelerate green energy investment. This brief looks at the mechanisms at work in Kenya that support private sector renewable energy investments. While some are led by the Government of Kenya (GOK), others are driven by third parties such as donors, and development finance institutions. We look at why subsidies and support mechanisms are needed, then outline how different actors deploy them, linking each challenge to the solutions employed. Among the mechanisms that we cover are: viability gap financing, concessional loans, grid integration support, public drilling initiatives, and loan guarantees and risk mitigation instruments.

Public subsidies for private actors are a core feature of many development strategies. They are often justified in terms of market failures: for various reasons, such as learning or coordination failures, private investment may fail to flow into areas that could be profitable and stimulate economic growth.[10] For example, it may be that in a relatively new industry, profitability is possible but requires simultaneous investments by multiple private actors in both upstream and downstream activities, and there is no way to coordinate those investments privately. Thus, the public sector can step in to coordinate, reducing the risk for first movers.

In the case of clean energy, governments may have additional concerns, such as increasing the speed of energy transition, in light of the climate crisis, or compensating renewable producers that must compete with heavily subsidized fossil fuel producers. We take it as a given that governments need to accelerate the transition to clean energy and that they should use various tools to achieve that. However, we are aware that such tools also pose risks of abuse, waste and corruption. One goal of this paper is to describe and raise the profile of a variety of on and off-budget mechanisms that use public resources to subsidize private activity in order to ensure that these are properly monitored and assessed.

Our analysis draws on relevant literature and a small sample of key renewable energy projects, which are described in the Annex. While this is a limited sample, we believe these examples are reflective of broader trends and strategies in Kenya's renewable energy landscape.

Why does Kenya subsidize renewable energy?

Energy expansion and climate change goals (such as reducing emissions or making energy systems more adaptive to climate change) require greater private sector investment in green energy. Governments around the world have subsidized renewables to encourage investment in clean energy, and Kenya is no different. But why are these public subsidies necessary? Why won't the private sector just invest in clean energy expansion without them?

The government and other actors subsidize renewable energy to compensate for the high cost of capital and other impediments to clean energy profitability. As Brett Christophers has demonstrated, although the cost of renewable energy production has fallen in recent years, renewable energy projects around the globe are not always viewed as profitable. This stems from various economic factors, including the high upfront capital costs of such projects, the volatility of energy prices, and the relatively lower returns on investment compared to fossil fuel investments. Renewables projects are also usually financed with debt, whereas oil and gas projects are often financed from fossil fuel companies' own revenues, so interest rates and the cost of capital affect clean energy investment more than oil and gas projects.[11] Political uncertainty and policy stability can also affect the cost of capital, though we focus mainly on economic considerations here. Even where private investors are willing to finance renewables, there may still be a need to accelerate investment timetables with public support. We detail further the challenges facing investment in clean energy on the next page.

1. High Upfront Capital Costs and Limited Project Bankability

Kenya faces significant challenges related to the high cost of capital, which impedes further development in the renewable energy sector. As in other countries, the elevated WACC is attributed to factors such as political and macroeconomic risks, regulatory uncertainties and off-taker reliability (meaning, the certainty that generated energy will be purchased by a utility). Despite reforms, permitting for electricity generation remains a slow and opaque process. These complexities especially discourage newer or smaller investors. Limited domestic capital and high interest rates also impede the development of renewable projects.

a) Off-Taker Risk

A primary concern is the financial instability of Kenya Power and Lighting Company (KPLC), the sole off-taker for electricity in the country. KPLC's liquidity ratio (assets over liabilities) stands at just 0.82, below the 1.0 threshold considered healthy by commercial lenders, indicating potential difficulties in meeting short-term obligations. Contributing factors include substantial debts owed to KPLC by government entities and other customers, aging infrastructure leading to high operational costs, and exposure to foreign exchange losses due to a depreciating Kenyan shilling .[12,13]

These financial constraints undermine KPLC's reliability as an off-taker. Typically, renewable energy producers seek upfront Power Purchase Agreements (PPAs), long-term contracts with a utility like KPLC that pay a fixed price for energy, as part of their application for a bank loan.

The bank wants to know that the producer has a reliable cash flow, and a signed PPA is one way to demonstrate that. But if the utility is not considered reliable, the PPA is less valuable, since lenders will be hesitant to finance renewable energy projects without additional guarantees or risk mitigation measures, leading to higher financing costs or project delays.

Without some form of guarantee, access to affordable financing remains a barrier, especially for small-scale and community-based renewable energy initiatives. While sovereign risk guarantee schemes are typically reserved for large-scale infrastructure projects, smaller renewable energy projects often lack such government-backed assurances. Therefore, the absence of sovereign guarantees or equivalent government support measures can deter investors, leading to delays in project implementation.

b) Currency Risks and Financing Costs

Additionally, currency risks play a significant role, as most renewable energy projects in Kenya are financed in foreign currencies, such as US dollars, while revenues are earned in Kenyan shillings. The depreciation of the shilling, approximately 28% against the US dollar between 2018 and 2024, has increased the cost of servicing foreign-denominated loans. This currency mismatch adds another layer of financial risk, further elevating the cost of capital for renewable energy projects.

2. The Politics of Land Acquisition and Community Engagement Challenges

Renewable energy (RE) projects in Kenya often face significant hurdles in securing financing due to land acquisition and community engagement issues, which are sometimes manipulated for political ends. The Kinangop Wind Park project, a 60.8 MW wind farm in Nyandarua County, was halted after investors cited community opposition and land disputes as primary reasons for the project's cessation. Protests disrupted compensation negotiations, and ongoing civil unrest derailed project implementation. Investors withdrew, and the project was abandoned despite an initial investment of approximately $66 million (roughly KSh 8.53 billion).[14]

Even when financing is accessible, land and community-related challenges can increase the cost of capital for RE projects. Due to their decentralized nature and land-intensive requirements, RE projects can face more opposition than comparable fossil fuel projects, which often rely on more geographically limited extraction sites. For instance, wind turbines in pastoralist or agricultural zones (like Marsabit or Kajiado) can disrupt grazing patterns, cultural sites, and communal land use, creating daily, visible reminders of the trade-offs involved.

Investors perceive projects with unresolved land disputes or community opposition as higher risk, leading to higher interest rates and stricter financing terms. The Kinangop Wind Park serves as a cautionary tale, where initial investments were lost due to protests and vandalism, and the project was eventually abandoned.

Construction collapsed under pressure from local landowners who claimed inadequate consultation, unfair compensation, and unclear leasing terms. Protests escalated in June 2014, leading to vandalism of a turbine mast and withdrawal of contractors over safety fears. This community resistance, which tribal leaders later admitted was stoked for political gain, stalled the project for over 21 months as investors burned through nearly $66 million (about KSh 8.52 billion), exhausting funds by early 2016.

In April 2016, Standard Bank placed the project under receivership and PwC (PricewaterhouseCoopers) began marketing the turbines to recover the debt. KWP initiated arbitration in London, citing a “Letter of Support” from the government aimed at shielding against “political events.” But in July 2018, an ICC (International Court of Arbitration of the International Chamber of Commerce) tribunal dismissed the claim, finding no political interference, granting Kenya a victory and negating over KSh 31 billion (~$312 million) worth of compensation that KWP (Kinangop Wind Park) sought.

The Lake Turkana Wind Power (LTWP) project, located in Marsabit County, is Africa's largest wind farm, with a capacity of 310 MW. Despite its scale and potential to contribute significantly to Kenya's energy needs, the project has faced legal challenges from indigenous communities. In 2021, the Kenyan Environment and Land Court ruled that the land acquisition process for LTWP was "irregular, unlawful and unconstitutional,” citing inadequate consultation and failure to obtain free, prior, and informed consent from affected communities.[15]

The Baharini Wind Power project in Lamu County also faced significant setbacks due to community opposition. In 2020, the Lamu County Assembly passed a motion to invalidate the project, citing the investor's failure to meet agreed-upon conditions, including the use of land that was already demarcated and titled, which was against the agreement to use unencumbered land.[16]

When communities perceive that they bear the environmental and social burdens without receiving equitable benefits, it can lead to resistance and opposition, potentially delaying or halting projects. Such outcomes can deter potential investors from engaging in similar projects, thereby elevating the overall cost of capital for renewable energy initiatives in the region. From an investor's perspective, political conflict over land use and project development, whether organic or manipulated opportunistically by elites, reduces the attractiveness of investment.

3. Grid Infrastructure and Integration Constraints

Renewable energy is more variable than conventional energy, because it relies on natural processes such as sun and wind. These resources are also located in different areas from fossil fuels, and therefore not always easily connected to the existing grid. Additionally, Kenya's existing grid infrastructure was designed primarily for conventional power sources and lacks the flexibility and smart technologies needed to handle the variable and intermittent nature of renewable energy sources like wind and solar. Kenya's aging transmission and distribution infrastructure presents significant challenges to the effective delivery and integration of electricity, particularly from renewable sources. Constructing and upgrading transmission infrastructure can be prohibitively expensive.

These challenges also make it difficult to deliver electricity to rural and underserved regions.[17]

The Kenya Electricity Transmission Company (KETRACO) has outlined plans to construct 6,510 kilometers of new transmission lines and expand transformation capacity to meet the projected increase in electricity demand from roughly 13,000 GWh in 2022 to over 36,000 GWh by 2042.[18] However, delays in infrastructure projects have led to situations where generated power cannot be evacuated efficiently, resulting in curtailment (where the grid cannot accept renewable power and it is therefore wasted).

For instance, the Lake Turkana Wind Power project faced significant setbacks due to the postponement in completing the Loiyangalani–Suswa transmission line, resulting in financial penalties and underutilization of generated power. These challenges underscore the critical need for timely investments in grid expansion and modernization to ensure that renewable energy sources can be effectively integrated and distributed across the country.[19]

While standalone solar home systems can function independently, mini-grid developers are still constrained by Kenya Power's (KPLC) distribution monopoly and EPRA's uniform tariff regime. The latter hampers private sector participation in off-grid solutions, affecting the reach of renewable energy to underserved populations, particularly in rural areas.[20]

Under the Energy Act, KPLC holds exclusive rights over national distribution infrastructure, meaning mini-grid operators must secure distribution licenses, pay fees, or use wayleaves managed by KPLC.[21]

EPRA enforces a uniform national electricity tariff, requiring mini-grids in areas that will eventually be grid-connected to submit tariffs for regulatory approval, limiting their ability to reflect the higher operational costs typical of remote regions. Moreover, EPRA regulations mandate that when the national grid arrives, mini-grids must integrate with KPLC's network, be sold off, or cease operations, creating serious asset-stranding risk and deterring long-term investment. Although the 2024 Electricity Market, Bulk Supply & Open Access Regulations allow new distributors and non-discriminatory access (wheeling) onto KPLC's lines, over 9 million existing customers are "locked in," and the high costs of rural infrastructure mean alternative distribution remains constrained.[22] Together, these legal and regulatory barriers hamper private sector off-grid participation and limit renewable energy access for underserved rural communities.

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4. Early-Stage Project Risks and Resource Uncertainty

Developing renewable energy projects in Kenya, particularly geothermal energy, involves significant early-stage risks. One of the primary challenges is the high cost associated with drilling geothermal wells. For instance, early government drilling efforts in the 1950s resulted in unsuccessful wells due to poor permeability. Additionally, a 2010 report indicated that only two out of eight wells drilled by the Ministry of Energy yielded viable steam.[23] Drilling a geothermal well typically costs around KSh 400 million (approximately US$3.2 million), and the process involves extensive site mapping, mobilization of drilling rigs, and several years of flow testing to confirm the viability of a well.

Drilling costs have been reported to range from $3.5 million to $6.5 million per well (about KSh452.6million to KSh840.5million). [24] But the success rate of drilling productive geothermal wells varies, particularly in greenfield projects, and can be as low as 33% to 50%. This uncertainty is due to factors such as:

i) Inadequate geological data, which is crucial for identifying viable drilling sites, estimating resource potential, and minimizing risks. In Kenya, much of the existing geological data is outdated or incomplete, leading to increased uncertainty in drilling projects.

ii) High technical risks, that significantly raise costs, such as drilling into hard igneous and metamorphic rock, which demands frequent equipment maintenance, and high downhole temperatures, which further degrade tools and electronics. At Menengai, drilling efficiency is low: 62% of time is non-productive due to breakdowns, planning or geological issues, which has caused costs per well to balloon.[25] With drilling accounting for 40–50% of total project CAPEX and each well costing on average US $3.1 million (ranging up to $5.7 million),[26] the total upfront outlay for a multi-well plant with 20 to 30 wells can reaches hundreds of millions of dollars.[27]

These heavy upfront costs and the high risk of unproductive wells deter private financiers. Investors demand risk-sharing arrangements, government guarantees, or donor-backed instruments before committing. Technical drilling risks translate into high capital requirements, elevate project risk, and suppress private investment interest in geothermal.

Which Tools Are Used in Kenya to Subsidize Renewable Energy Projects?

To overcome the multifaceted challenges hindering renewable energy investments, such as high upfront capital costs, limited local financing, land acquisition complexities, infrastructure constraints, resource uncertainties, and regulatory risks, the Kenyan government implements a broad suite of targeted subsidy mechanisms and strategic interventions:

Table 1. Subsidy Tools Used by Kenya to Enhance Profitability of Private Renewable Energy Projects

Challenge	Description	Subsidy Mechanism
1. High Upfront Capital Costs & Limited Project Bankability	• Lack of financing options from banks • High cost of capital; even where financing is available, interest rates are prohibitive • Borrowing externally is subject to exchange rate risk	Tax Incentives: tax incentives and exemptions reduce upfront costs by eliminating import duties and VAT on renewable energy equipment, making projects more financially viable for developers. Concessional Loans: Reduces the high cost of capital directly. Regional Liquidity Support Facility (RLSF): Offers guarantees to Independent Power Producers (IPPs) against the risk of delayed payments by state-owned utilities. By mitigating off-taker payment risks, RLSF enhances the bankability of projects, reassuring lenders and facilitating access to financing.
2.Land Acquisition & Community Engagement Issues	• Unclear ownership rights • Disputed land boundaries • Community opposition to projects	Community Involvement Strategies: Encouraging stakeholder engagement including county participation, and fair compensation practices to address land acquisition challenges. Community Benefit Sharing Mechanisms: ensure that communities receive equitable benefits from investments on their land by allocating a portion of revenues for local development projects.

Challenge	Description	Subsidy Mechanism
3. Grid Infrastructure & Integration Challenges	• Limited grid and transmission capacity in remote areas to evacuate power from renewable energy sources. • Managing the variability inherent in renewable energy generation, leading to grid instability and outages.	Grid Integration Support: Investments in strengthening grid infrastructure, transmission lines and implementing advanced grid management technologies to accommodate variable renewable energy sources.
4. Early-Stage Project Risks and Resource Uncertainty	• Lack of geologic data on renewable resources. • High exploration costs.	Public Drilling Initiatives: Government entities undertake initial exploration and drilling to reduce risks for private investors in geothermal projects.

1**. High Upfront Capital Costs & Limited Project Bankability**

A). Profitability and Capital Cost Challenges

As discussed above, renewable energy projects in Kenya often face significant barriers due to high upfront capital costs and extended payback periods, which can deter private investment. To enhance the financial viability of these projects, several mechanisms have been implemented:

i. Tax Incentives and Exemptions

To alleviate the financial burden associated with renewable energy projects, the Kenyan government has implemented various tax incentives. The VAT and import duty exemptions for specialized solar and wind equipment were introduced under the 2013 VAT Act, temporarily revoked in 2020, and officially reinstated on 1st July 2021 via the Finance Act 2021. As of mid 2025, these exemptions remain in effect.

This policy significantly reduces the initial capital required for renewable energy installations, making such projects more financially viable for private investors.[28] However, their future is uncertain: the Finance Bill 2025 suggests reclassifying solar goods from zero rated to VAT exempt, which would block input credit recovery, raising concerns among industry players that this could effectively increase costs by about 16%. GOGLA, the global association for the off-grid solar industry, and KEREA (Kenya Renewable Energy Association) have warned that this could shrink the off grid market by around 20%.[29]

Table 2: Estimated Cost Savings from Kenya's Renewable Energy Equipment Tax Exemptions.

Item	Standard VAT Rate	Standard Import Duty Rate	Applicable Exemption	Estimated Unit Cost Without Exemption (KSh)	Estimated Unit Cost with Exemption (KSh)	Estimated Savings (KSh)
Solar Panel (PV Module)	16%	25%	Exempt from VAT and import duty under the VAT Act 2013 and EAC CMA 2004, upon recommendation by the Cabinet Secretary responsible for energy.	50,000 + 8,000 (VAT) + 12,500 (Duty) = 70,500	50,000	20,500
Solar Inverter	16%	25%	Exempt from VAT and import duty under the VAT Act 2013 and EAC CMA 2004, upon recommendation by the Cabinet Secretary responsible for energy.	30,000 + 4,800 (VAT) + 7,500 (Duty) = 42,300	30,000	12,300
Solar Battery	16%	25%	Exempt from VAT and import duty under the VAT Act 2013 and EAC CMA 2004, upon recommendation by the Cabinet Secretary responsible for energy.	20,000 + 3,200 (VAT) + 5,000 (Duty) = 28,200	20,000	8,200

SOURCE;https://solarpower.co.ke/taxation-policies-exemptions-and-relevant-legislation-for-solar-power-equipment-in-kenya/

One example of a beneficiary of such incentives is The Radiant Solar Power Station, a 40MW photovoltaic plant located in Uasin Gishu County. The firm benefited from exemptions from Value Added Tax (VAT) and import duties on specialized solar equipment, as stipulated in the VAT Act of 2013 and the East African Community Customs Management Act (EACCMA). By leveraging the VAT and import duty exemptions, the project reduced its capital expenditure, enhancing its attractiveness to private investors.[30]

While the unit costs of VAT and import duty exemptions may appear small individually, their aggregate value for a 40MW project like The Radiant Solar Power Station is significant.

For a project with approximately KSh 8billion (~€70million) in total capex, 70% of which is equipment, these incentives can reduce the project's effective upfront cost by nearly KSh4.256billion (~€37.24million), or about 53% of total capex, demonstrating far greater impact than nominal unit rate tax relief would suggest. The details are described in Table 3 below, but the VAT saving alone is roughly KSh896million, while the typical import-duty waiver (around 15%) adds another KSh840million.

Additionally, the Income Tax Act allows a 100% investment deduction on machinery, with up to 150% available for qualifying investments that are either under SEZ/EPZ structures or that are outside Nairobi/Mombasa (and exceed KSh200million),[31] yielding a first year tax shield of about KSh2.52billion (at a 30% corporate rate).

Table 3: Estimated subsidies on a Ksh 8 billion investment where 70% (Ksh 5.6 billion) is capital expenditure

Category	Subsidy Calculation	Subsidy Amount (KSh)
VAT exemption (16%)	0.16 × 5.6 bn	896 million
Import-duty waiver (~15%)	0.15 × 5.6 bn	840 million
Tax shield (150% deduction × 30% corporate rate)	150% × 5.6 bn × 30%	2,520 million
Total upfront savings	VAT + import duty + tax shield	4,256 million

Overall, these incentives reduce upfront costs by nearly KSh4.256billion, over half the total capex, underscoring the transformative impact of tax relief on project viability.

ii. Concessional Loans

Concessional loans offer low-interest financing through partnerships with development finance institutions (DFIs), directly reducing the cost of capital for renewable energy projects and thus reducing the financial burden on investors.

These loans often come with favourable terms, such as extended repayment periods and grace periods, making them particularly attractive for large-scale renewable energy projects. For example, Kenya Electricity Generating Company (KenGen) plans to raise $4.3 billion through concessional loans to finance 23 projects across geothermal, wind, hydro, and solar power generation.[32] In the development of the Kopere Wind Project (50MW), a project owned by the European company Voltalia, the Climate Investment Funds' Scaling up Renewable Energy Program (SREP) contributed US $11.6 million (approx. KSh 1.50 billion) in concessional finance out of a total of ~US $47.9 million (~KSh 6.19 billion) in debt, to bridge the funding gap caused by Kenya's low feed-in tariff. This project currently generates ~106 GWh/year, powering ~600,000 homes and eliminating emissions of ~1.08 Mt CO_2e annually.[33] The concessional loans enhanced the project's bankability by lowering financing costs.

When the Government of Kenya was developing the Menengai Geothermal Project (105MW), with support from the AfDB, the country received funding from the Climate Investment Funds (CIF), which approved a concessional loan of approximately US $29.65 million (roughly KSh 3.83 billion).[34]

Typical CTF concessional loans, designed to enhance financial viability, tend to carry interest rates between 1% and 2%,[35] while non-concessional commercial financing in Kenya generally carries interest rates of 8.5–9% for renewables, or even 13–18.5% from local banks, making concessional funding significantly cheaper and more attractive.[36] This concessional lending program was specifically designed to enhance the financial viability and commercial bankability of these projects by providing below-market financing.

B). Revenue and Financing Risks

Beyond profitability challenges, renewable energy projects in Kenya also contend with revenue and financing risks, particularly those associated with off-taker creditworthiness and currency fluctuations. These risks can hinder the ability to secure financing close clean energy deals.

a. Off-Taker Risk Mitigation

i. Regional Liquidity Support Facility (RLSF)

To mitigate the risks associated with off-taker default, tools like partial risk guarantees (e.g., Lake Turkana Wind) and the Regional Liquidity Support Facility (RLSF) have been essential in reducing exposure to potential payment delays.

The Regional Liquidity Support Facility (RLSF) is a continental mechanism available across Africa, but only in countries that are both ATIDI (African Trade & Investment Development Insurance) members and have signed a dedicated RLSF Memorandum of Understanding (MoU). ATIDI member nations span Sub-Saharan Africa. Kenya became the tenth country to formalize this in February 2024. Launched in 2017 as a joint initiative between ATIDI (African Trade & Investment Development Insurance) and the KfW Development Bank, with additional funding from the Norwegian Agency for Development Cooperation (Norad), RLSF aims to enhance the bankability of renewable energy projects by reducing the risk of off-takers failing to make payments under PPAs.

ATIDI now issues Standby Letters of Credit (SBLCs), backed by KfW and Norad collateral, that cover up to 12 months of projected revenue per project per year, for up to 15 years. Sustainable energy projects up to 100 MW (or larger under special review), and privately financed transmission initiatives in eligible countries, can access these liquidity guarantees to reduce off taker payment risks and improve bankability.[37]

This mechanism enhances the bankability of renewable energy projects by providing assurance to lenders. In Kenya, the RLSF has been instrumental in supporting projects like the 35MW Menengai Geothermal Project, where it provides liquidity cover against potential payment defaults by both Kenya Power and the Geothermal Development Company (GDC), thereby bolstering investor confidence and promoting the development of renewable energy infrastructure.[38]

b). Currency Risk

The mismatch between revenue and debt currencies (e.g., borrowing in USD for an energy project generating revenue in KSH) can deter investment and complicate financial planning. To mitigate these risks, several strategies and instruments are employed:

• Currency Hedging Instruments: Financial instruments such as currency swaps, forwards, and options can lock in exchange rates, providing certainty over future cash flows. For instance, the Currency Exchange Fund (TCX) offers long-term hedging solutions tailored for renewable energy projects in developing countries, including Kenya.[39]

The Currency Exchange Fund (TCX) is managed as a Netherlands-based special-purpose fund and operates under a legally licensed structure as an Alternative Investment Fund Manager (AIFM). It was founded in 2007 by a coalition of development finance institutions (DFIs), specialized microfinance investment vehicles (MIVs), sovereign donors, and international development banks.[40] Among its largest shareholders are KfW (Germany), the European Bank for Reconstruction and Development (EBRD), FMO (Netherlands), and the European Investment Bank (EIB), all AAA-rated institutions, alongside the International Finance Corporation (IFC) and Agence Française de Développement.[41]

Although TCX functions as an independent fund, it's often referred to as a development-finance initiative due to its public-interest mandate. It aims to help local banks and investors in emerging and frontier markets hedge long-term currency exposure. The German and Dutch governments provided initial "first-loss" capital, supporting TCX's market development role.[42] Today, TCX remains closely aligned with its founding mission, offering cross-currency and forward contracts in over 70 currencies, particularly those underserved by traditional banking, while maintaining oversight and support from its institutional shareholders.[43]

• **Indexation Mechanisms:** Some Power Purchase Agreements (PPAs) incorporate indexation clauses, adjusting tariffs based on exchange rate movements or linking them to stable foreign currencies. This approach helps maintain the real value of revenues in the face of currency fluctuations.[44] Kenya's energy sector has begun incorporating currency indexation in Power Purchase Agreements (PPAs). Choices about whether to denominate PPAs in local or foreign currency have different distributional implications, as recognized in a 2021 taskforce report commissioned by the President. If PPAs are denominated in foreign currency, this can protect developers (but create risks for consumers).[45] Corporate and bilateral clean energy PPAs in Kenya are often indexed to U.S. dollars or euros, helping maintain revenue value against shilling depreciation.[46] For example, recent wind and solar projects procured under Kenya's Auctions and FiT policies typically quote tariffs in U.S. dollars per kWh, with payments adjusted to reflect actual exchange rates at the time.[47] These structures effectively preserve the real value of revenues when servicing foreign-denominated debt.

• **Development Finance Institution (DFI) Support**: DFIs can play a pivotal role by offering guarantees or absorbing part of the currency risk, making projects more attractive to private investors. For example, the Mission 300 Local Currency Guarantee Facility is designed to de-risk lending to African SMEs in the Distributed Renewable Energy sector by providing partial credit guarantees to local financial institutions.[48] In January 2025, the African Guarantee Fund (AGF), in collaboration with the African

Development Bank (AfDB) and the World Bank, officially launched the Mission 300 Local Currency Guarantee Facility, a $5 billion (about KSh 646.9 billion) initiative aimed at boosting local-currency financing for distributed renewable energy across Africa, including Kenya.[49] This facility enables local banks in Kenya to access partial credit guarantees, reducing risk exposure and encouraging them to lend in Kenyan shillings to energy projects and SMEs. The Kenyan government and financial institutions are expected to tap into this mechanism to scale up rural electrification and off-grid deployments under Mission 300's goal of reaching 300 million people by 2030.

By implementing these strategies, Kenya aims to create a more conducive environment for renewable energy investments, ensuring that currency risk does not hinder the development of sustainable energy infrastructure.

2. Land Acquisition & Community Engagement Issues

In some cases, Kenya has prioritized meaningful community engagement and benefit-sharing in energy infrastructure through early consultations, grievance mechanisms & revenue-sharing frameworks. These approaches aim to ensure fair compensation, and mitigate disruptions to local livelihoods, helping reduce conflict and promote project success.

To foster positive relations with local communities, the government also encourages benefit-sharing arrangements where a portion of the revenue from renewable energy projects is allocated to community development initiatives. This approach ensures that communities directly benefit from projects, enhancing local support and reducing opposition.

The government has collaborated with international partners to produce a "Guide to Community Engagement for Power Projects in Kenya." The guide emphasizes the need for early consultations, fair compensation, and the establishment of grievance redress mechanisms to build trust and ensure that community interests are adequately addressed.[50]

These principles were applied in the Kipeto Wind Farm, a 100MW project in Kajiado County. The project established a Community Development Trust, allocating 5% of its annual profits to fund local initiatives such as education, healthcare, and clean water supply. Additionally, over 900 jobs were created during construction, with more than 400 being local hires.[51] The company also constructed 84 new homes for landowners and provided vocational training to over 200 youth, many of whom secured employment with the project.[52] Similarly, the Geothermal Development Company (GDC) has implemented Corporate Social Investment programs focusing on youth and women empowerment, education, health, and water provision in areas like Menengai and Baringo-Silali.[53]

3. **Grid Infrastructure & Integration Challenges**

a. Grid Integration Support

Grid integration support includes investments in transmission lines, substations, and smart grid technologies to accommodate variable renewable energy sources. EPRA promotes grid integration of electricity from renewables by optimizing grid-related services and providing forecasting support. Digital solar and wind output forecasting helps the network operator improve the integration of renewable energy plants into power station usage planning. However, this forecasting and grid optimization support is currently limited to select large-scale projects and is not universally available to all renewable energy developments.[54]
Beyond building transmission lines and substations, EPRA has mandated that variable renewable energy plants comply with grid-code requirements that include advanced forecasting and provision of ancillary services.[55]

This means that large-scale solar and wind farms must supply data, such as day-ahead or hour-ahead generation estimates and participate in real-time grid balancing by offering services like frequency regulation or voltage support. By standardizing and scaling such requirements, EPRA is creating a framework through which future projects can enhance grid reliability and reduce renewable energy curtailment, even during peak variability.

EPRA's Mini Grid Regulations (2021) serve as a de-risking mechanism to attract private investment in rural electrification.

First, the regulations introduce a clear licensing and tariff approval framework, requiring standardized, cost-reflective tariffs and technical guidelines that give lenders confidence in mini grid financial viability. They also include asset-transition provisions, allowing operators to sell assets to Kenya Power, become licensed retailers, or receive compensation when the national grid arrives, thus protecting against stranded investments. Moreover, the regulations underpin the World Bank backed Kenya Off Grid Solar Access Project (KOSAP), which provides grants and PPAs to compliant private mini grid developers. Almost 62 mini grids are operational, with 28 more under construction, supported by the Kenya Off Grid Solar Access Project (KOSAP) in 12 counties, bringing electricity to over 1.5 million people across ~277,000 households.[56]

By combining regulatory clarity, revenue security, exit options, and public financing, EPRA's framework acts as a strategic subsidy, encouraging IPPs to invest in rural mini grids and expand renewable energy access across Kenya.

The Energy and Petroleum Regulatory Authority (EPRA) in Kenya has also adopted policies to encourage distributed energy production, such as net-metering regulations that allow consumers with renewable energy systems to supply excess electricity back to the national grid, thereby reducing their energy costs and promoting the adoption of renewable energy technologies. Under these rules, households and small businesses, with solar installations capped at 4 kW (single-phase) or 10 kW (three-phase), and commercial or

industrial prosumers up to 1 MW, can export surplus electricity, earning a 50% credit per kWh supplied.[57] This effectively turns the utility's grid into a virtual storage system: producers who cannot install batteries avoid energy losses by feeding surplus into the grid and receiving credits, which utilities absorb at retail rates without compensation for storage. As a result, net metering provides a form of indirect subsidy, lowering the effective cost of renewables for small scale producers, supporting broader renewable uptake, and alleviating pressure on grid infrastructure by smoothing demand peaks.

4. Early-Stage Project Risks & Resource Uncertainty

a. Public Drilling Initiatives

In geothermal projects, the government undertakes drilling activities to reduce exploration risks for private investors. The support provided through the Geothermal Risk Mitigation Facility (GRMF), including the grant to GDC for drilling, is a donor-funded, off budget mechanism, not reflected in Kenya's national government budget. The GRMF is financed by multilateral and bilateral partners (African Union, EU, Germany via KfW, etc.) and channelled directly to GDC rather than routed through the national budget.[58] This distinction is important: it shows that while GDC is a state corporation, the funding for early-stage geothermal risk mitigation bypasses the standard budgetary process and does not burden Kenya's fiscal envelope. This also means that there is a need for enhanced scrutiny, as off-budget resources are not as transparent as on-budget funding.

Established in 2012 the Geothermal Risk Mitigation Facility (GRMF) by the African Union Commission, the German government, and the EU-Africa Infrastructure Trust Fund, the GRMF provides grants to cover up to 40% of the costs associated with drilling and testing geothermal wells. For example, the Geothermal Development Company (GDC) has been a key beneficiary of these strategies. GDC undertakes the initial exploration and drilling phases, which are the riskiest and most costly parts of geothermal development, thereby reducing the financial burden on private investors. Geothermal Development Company (GDC) received a $5 million grant from the GRMF to drill two wells in Baringo County.[59]

Geothermal Exploration Risk Underwriting Facility: Launched in collaboration with the Insurance Regulatory Authority and several insurance companies, this facility offers insurance coverage for early-stage geothermal exploration activities. It aims to mitigate financial risks associated with drilling unviable wells, thereby attracting greater private sector investment in geothermal energy projects.[60]

By assuming the initial exploration risk, the government encourages private sector investment in geothermal energy development. At the Menengai geothermal field, the Geothermal Development Company (GDC) conducted production drilling, proving steam equivalent to about 170 MW. Three Independent Power Producers (IPPs) then entered into steam sales agreements with GDC for power generation, each developing 35 MW plants .

Conclusion

Kenya's renewable energy sector has benefited from a diverse mix of support mechanisms, including government subsidies, concessional finance, donor-backed guarantees, and regional infrastructure initiatives. Together, these tools have played a critical role in de-risking investments, lowering capital costs, and enhancing project bankability. Because many structural challenges remain, such as high upfront costs, land acquisition hurdles, currency risks, and grid instability, there is a continuing need for government intervention to encourage private investment. Addressing these barriers will require sustained collaboration among government agencies, development partners, private investors, and local communities to build a more inclusive and resilient clean energy ecosystem.

Annex: Sample of Renewable Energy Projects Supported by Kenyan Subsidies

Project Name	Technology	Capacity	Location	Key Subsidy Mechanism(s)	Subsidy Provider	Outcome/Achievement
Lake Turkana Wind Power	Wind	310 MW	Marsabit County	Partial Risk Guarantee	AfDB, GoK	17% of national supply; overcame transmission delays
				Grid integration support		
Menengai Geothermal	Geothermal	105 MW	Nakuru County	Public drilling (GDC)	AfDB, CTF, GDC	De-risked for 3 IPPs; model for public-private partnership
				Concessional loans		
				GRMF grants		
Kipeto Wind Farm	Wind	100 MW	Kajiado County	Community benefit sharing (5% revenue)	Project developers, County Gov.	Resolved land disputes; created 400+ local jobs
				Local employment clauses		
Radiant Solar	Solar PV	40 MW	Uasin Gishu	VAT/import duty exemptions	EPRA, National Treasury	20% cost reduction on equipment
Kopere Solar PV	Solar PV	50 MW	Nandi County	Senior loan + concessional loan	AfDB + CIF/SREP	Reached financial close, under construction since 2019, expected to generate ~106 GWh/year under 20-year PPA, supplying ~600,000 homes

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