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Beyond the G7

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East Africa Solar Reform: From Donor Capital to Energy Monetization

Analyst – Ashley Chidavaenzi
Head Researcher - Rumbidzai Siyawamwaya

1. Executive Summary

East Africa is entering a new phase in its power sector evolution. Rising electricity demand, climate volatility, and fiscal constraints are forcing governments to transition away from donor-funded utility expansion toward commercially structured power markets that can absorb private capital at scale.This is not primarily a climate story.It is another African energy monetization cycle.

Across Kenya, Tanzania, Uganda, and Ethiopia, solar deployment is no longer constrained by resource availability, but by market structure, contract enforceability, and capital formation mechanisms. Each market sits at a different stage of this transition, creating a clear sequencing opportunity for investors.

2. A Four-Stage Energy Monetization Framework

We classify East Africa's solar markets into four stages:

1. State-Led / Non-Bankable – High resource potential, limited private participation (Ethiopia)
2. Subsidized Private Entry – Donor-backed de-risking unlocks early IPPs (Uganda)
3. Fragmented Private Scaling – Private operators active, but regulatory uncertainty persists (Tanzania)
4. Commercial Maturity – Bankable frameworks enable scalable private investment (Kenya)

This framework reflects not just policy differences, but who captures value and how capital is repaid.

3. Project Investment Landscape (2026)

Country	Market Stage	Capital Structure	Investment Profile	Primary Offtaker
Kenya	Commercial Maturity	PPPs, IPPs, net metering	Scalable, yield-oriented	Kenya Power / Private
Tanzania	Fragmented Scaling	Grants + mini-grid equity	High yield, high execution risk	TANESCO / Direct
Uganda	Subsidized Private Entry	REFiT + top-ups + guarantees	De-risked growth	ERA / Direct
Ethiopia	State-Led / Non-Bankable	State-led PPPs, stalled IPPs	High optionality, low visibility	Ethiopian Electric Power

4. Country-Level Analysis

Kenya: The Only Scalable IPP Market

Kenya is the most commercially advanced power market in East Africa and currently the only jurisdiction capable of absorbing solar capital at scale.

- Energy Mix: ~85% renewable (geothermal dominant), yet solar contributes only ~3–4%
- Installed Solar: ~340MW (2024), growing ~20% YoY
- Demand Growth: Peak load reached ~2,177MW, with structural upside from urbanization and electrification

This creates a clear structural mis-pricing:

A largely decarbonized grid with minimal solar penetration

The investment case is driven by:

- Under-utilized solar capacity (~15GW potential)
- Increasing demand from commercial and industrial users
- Gradual liberalization of transmission and distribution

The private sector already dominates, with companies like M-KOPA and d.light scaling distributed solar, while state-backed KenGen is expanding into utility-scale PV.

The case for Kenya:

Kenya's solar market is an arbitrage on grid tariffs.

Commercial and industrial (C&I) users pay $0.18–0.22/kWh for grid electricity, among the highest rates in Sub-Saharan Africa. Rooftop and captive solar systems can deliver power at $0.08–0.12/kWh, creating immediate savings that drive rapid adoption independent of policy incentives.

This tariff spread underpins the core investment case:

- C&I rooftop systems typically achieve payback periods of 3–5 years, assuming standard load profiles and commercial financing
- Utility-scale IPPs have transacted at project-level WACCs of 8.5–9%, reflecting a combination of concessional DFI participation and improving country risk perception

- Distributed solar platforms (M-KOPA, d.light, SunCulture) continue scaling, with proven unit economics in pay-as-you-go residential and productive-use segments.

The opportunity is demand-driven, not subsidy-dependent.

Addressing the Geothermal dominance:

Kenya's grid is already ~85% renewable, dominated by geothermal baseload. Why does solar have a growth case?

Three factors resolve this:

1. Peak demand exceeds baseload capacity. Kenya's peak load (~2,200MW) increasingly outstrips geothermal generation (~900MW installed). Solar addresses daytime peaks directly, reducing reliance on expensive thermal peakers.

2. Geothermal expansion is slowing. New geothermal development faces longer lead times and higher capital intensity than solar. The marginal megawatt is increasingly PV.

3. C&I demand is grid-price sensitive, not grid-source sensitive. Commercial users are adopting captive solar to reduce costs, regardless of the grid's renewable share. This market exists parallel to utility procurement.

Solar is not replacing geothermal—it is filling the gap between baseload supply and growing demand.

Policy Environment

Kenya's regulatory framework is among the most solar-friendly in Africa, combining tax incentives with structural market opening.

Incentive	Mechanism
Import duty exemption	Solar cells, modules, and specialized equipment exempt under VAT Act
VAT exemption	Applies to qualifying solar components

SEZ benefits	Investors in designated zones (e.g., Olkaria-Kedong) eligible for 10% corporate tax rate for first 10 years, 100% investment deduction on machinery

Market liberalization:

Recent regulatory changes have opened transmission and distribution infrastructure to private investment, ending Kenya Power's monopoly on grid access. This enables:

- Third-party wheeling arrangements for large C&I off-takers
- Private investment in transmission upgrades
- Gradual unbundling of generation, transmission, and distribution

Policy risk caveat:

The proposed Finance Bill 2025 includes provisions that may reclassify certain solar equipment categories, potentially removing VAT exemptions on selected components. The bill remains under legislative review. Impact, if passed, would increase upfront system costs by an estimated 10–16% for affected equipment categories.

Demand Convergence: E-Mobility and Manufacturing:

Solar investment in Kenya is increasingly linked to adjacent high-growth sectors, expanding the addressable market beyond traditional electrification.

E-Mobility:

Kenya has announced targets to electrify public transit fleets by 2027. Operators like BasiGo are deploying electric buses with integrated charging infrastructure, creating demand for dedicated solar generation to serve transport loads. This represents a new C&I off-taker category with predictable demand profiles.

Manufacturing:

Industrial users are installing captive solar to hedge against:

- Grid tariff escalation
- Currency-driven cost volatility (for importers paying USD-denominated energy costs)
- Reliability concerns in grid-constrained areas

This is driving growth in solar EPC services and creating opportunities for project developers with C&I origination capabilities.

Risks

Risk	Description	Mitigation / Monitoring
Currency volatility	KES depreciation increases servicing costs for USD-denominated debt; affects repatriation of returns	Monitor KES/USD trajectory; prioritize local-currency financing where available; assess natural hedges (USD-linked offtake)
Policy reversal	Finance Bill 2025 or successor legislation could reduce tax incentives	Track legislative calendar; model impact of VAT reinstatement on project IRRs
Offtaker credit	Kenya Power faces persistent financial stress; payment delays have occurred historically	Prioritize C&I direct offtake over utility PPAs; assess sovereign guarantee structures for utility-scale projects
Grid integration	Rapid solar deployment without storage or grid upgrades could create curtailment risk	Monitor grid stability metrics; favor projects with storage components or firm offtake commitments

Investment View

Kenya offers the most actionable solar deployment opportunity in East Africa:

- Return profile: Moderate yield (8–12% project IRR range for well-structured C&I and utility projects), with lower execution risk than regional peers
- Capital absorption: Market can absorb meaningful ticket sizes across utility-scale IPPs, C&I portfolios, and distributed solar platforms
- Entry points: Direct project development, EPC partnerships, platform equity, or debt participation in existing pipelines

The constraint is not demand or policy—it is origination capacity and execution bandwidth .Kenya represents a core infrastructure allocation: lower risk, lower return, but highly scalable with increasing private participation.

Uganda: A Model for Donor-Led Market Creation

Uganda's renewable sector has been transformed by the GET FiT program, developed with support from the World Bank and European partners.

The mechanism directly addresses investment barriers through:

- REFiT top-ups (per kWh subsidies)
- Partial Risk Guarantees
- Standardized project documentation

This has enabled:

- ~170MW of new renewable capacity
- ~$500M in private capital mobilized from ~€90M in grants (≈1:5 leverage)

More importantly, it demonstrates a scalable model:

Public capital absorbs early risk, private capital captures long-term yield

Uganda has also diversified away from hydropower concentration risk, improving system resilience.

Risks :

1. Policy Concentration Risk: The GET FiT model is highly dependent on continued government and donor support (including structures supported by the World Bank). Any reduction in subsidy support or guarantees would materially affect project bankability.
2. Tariff Adjustment Risk: Feed-in tariff structures and top-up payments are policy-driven and subject to revision, which could impact long-term return stability.
3. Hydrological Exposure: Despite diversification efforts, Uganda's energy system remains partially exposed to hydrological variability affecting baseline supply stability.
4. FX and Repatriation Risk: Currency convertibility and profit repatriation constraints remain relevant for foreign investors in long-duration projects.

Investment View:
Uganda represents de-risked growth—an attractive entry point for investors seeking yield with policy protection.

Tanzania: The Mini-Grid Frontier with Structural Friction

Tanzania's solar market is defined by its early leadership in mini-grid deployment, supported by large-scale donor capital.

- Installed Mini-Grids: 200+ systems (~15% of national capacity historically)
- Capital Base: $400M+ in donor-backed programs
- Framework: Small Power Producer (SPP) regime with USD-denominated contracts

Despite this, growth has slowed due to a core structural issue:

Uncertainty between national grid expansion and mini-grid deployment creates stranded asset risk. If the central grid expands into mini-grid territories, private operators risk losing their customer base without compensation.

Developers such as PowerGen Renewable Energy and Jumeme remain active, supported by blended finance structures.

Risks :

1. Grid Expansion / Stranded Asset Risk: Mini-grid operators face uncertainty from potential extension of the national grid into existing service territories, which could erode customer bases without guaranteed compensation mechanisms.
2. Regulatory Friction: Licensing timelines under the Small Power Producer (SPP) framework remain long and administratively complex, increasing development risk and soft costs.
3. Revenue Volatility: While tariffs are often USD-denominated, demand uncertainty in rural electrification zones introduces variability in utilisation rates and cash flow stability.
4. Execution Risk: Heavy reliance on donor-backed capital introduces dependency on concessional funding cycles and slows private-sector scaling dynamics.

Investment View:
Tanzania offers high-yield, grant-supported opportunities, but with significant regulatory and execution risk. Capital deployment must be selective and platform-driven.

Ethiopia: High Potential, Structurally Un-bankable (For Now)

Ethiopia has one of the largest solar resource bases in Africa:

- ~28GW technical potential
- 5.5–6.5 kWh/m²/day solar irradiation

Yet over 90% of electricity generation remains hydro-based.

Multiple large-scale IPP efforts have failed or stalled:

- Enel Green Power (Metehara project)
- ACWA Power (Scaling Solar projects)
- Masdar (500MW agreement, inactive)

These failures are not random. They reflect structural constraints:

- Weak contract enforceability
- FX convertibility risk
- Limited sovereign guarantee credibility

This is not a capital shortage problem—it is a bankability problem.

Risk

1. Contract Enforcement Risk: Weak historical enforcement of power purchase agreements has contributed to repeated project delays and cancellations involving developers such as Enel Green Power, ACWA Power, and Masdar.

2. FX Convertibility Risk: Foreign investors face constraints in accessing hard currency for debt service and profit repatriation, materially limiting bankability of long-term IPPs.
3. Sovereign Guarantee Limitations: Limited credibility and enforceability of sovereign guarantees increases perceived counterparty risk for international lenders.
4. Project Execution Risk: Even when agreements are signed, lack of financial close and delays in achieving construction start have been recurrent, creating pipeline uncertainty.

Investment View:
Ethiopia remains a high-upside optionality play, contingent on regulatory reform and credible IPP frameworks.

5. Regional Layer: The Emerging Power Pool

East Africa's solar opportunity cannot be viewed purely at the national level.

Increasing interconnection across countries is enabling:

- Cross-border electricity trade
- Load balancing across hydropower and solar
- Export of surplus generation (e.g., Ethiopia → Kenya)

This regionalization will:

- Improve system efficiency
- Reduce volatility
- Enhance project bankability over time

Risks :

1. Infrastructure Bottlenecks: Transmission infrastructure constraints limit the speed at which new generation capacity can be integrated into national and regional grids.
2. Climate Variability: While solar is less exposed than hydro, broader climate variability can still affect demand patterns, grid stability, and hydropower balancing capacity.
3. Capital Flow Sensitivity: Investment flows remain highly dependent on concessional finance and development finance institution participation, particularly in early-stage markets.

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6. Capital Allocation Strategy

A phased investment approach emerges:

Phase 1 (Immediate Deployment)

- Kenya → Scale utility solar and C&I solutions
- Focus: IPPs, distributed solar platforms

Phase 2 (Policy-Leveraged Expansion)

- Uganda → Deploy capital into de-risked renewable portfolios
- Focus: GET FiT-style structures

Phase 3 (Selective Frontier Exposure)

- Tanzania → Target leading mini-grid platforms
- Focus: blended finance, platform consolidation

Phase 4 (Optionality / Watchlist)

- Ethiopia → Monitor for bankable IPP reform
- Focus: early positioning, not deployment

7. Conclusion

East Africa's solar sector is no longer constrained by technology or resource availability. The defining variable is now market structure.

As the region transitions from donor-led electrification to commercially viable power systems, capital will increasingly flow toward markets that offer:

- Contract certainty
- Currency stability
- Scalable demand

The opportunity is not uniform—but it is sequenced.For investors willing to align capital with this sequence, East Africa represents a compelling frontier infrastructure growth story globally.

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Methodology

Tanzania Mini-Grid Sector

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