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Article

The renewable energy dilemma: Who benefits from Africa's green transition?

Simon Suwanzy Dzreke [1], **Semefa Elikplim Dzreke** [2]

[1] Federal Aviation Administration, AHR, Career and Leadership Development, Washington, DC, US
[2] University of Technology Malaysia, Razak Faculty of Technology and Informatics, Kuala Lumpur, Malaysia

Abstract

Africa's renewable energy transition promises to be a game-changer—not just for the continent but for the global fight against climate change. With vast solar, wind, and hydropower potential, Africa could drive its own development while supplying clean energy worldwide. Yet beneath this green vision lies a troubling paradox: while foreign investors and multinational corporations reap massive profits, local communities often see little benefit beyond temporary labor and land leases. This paper examines who truly profits from Africa's renewable energy boom, revealing a landscape where neocolonial economic patterns persist under the moral guise of sustainability. Through an analysis of financial flows, ownership structures, and policy frameworks across key projects—from Egypt's Benban Solar Park to South Africa's Cookhouse Wind Farm—we expose how the current model systematically disadvantages African stakeholders. Foreign entities capture up to 80% of economic value, while local job creation remains minimal and technology transfer disappointingly rare. Yet there is hope. Case studies from Namibia and Bangladesh show that enforceable local content policies, community ownership models, and South-South partnerships can shift this dynamic, ensuring renewable energy becomes a tool for empowerment rather than extraction. This paper not only diagnoses the problem but offers a bold roadmap for reform—prioritizing energy sovereignty, equitable value distribution, and industrial transformation. For policymakers, investors, and activists alike, the stakes could not be higher: will Africa's green transition repeat old injustices, or will it finally break the cycle of resource exploitation? The answer will shape not just the continent's energy future but the very meaning of climate justice in the 21st century.

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Renewable energy; Africa; green transition; energy justice; neocolonialism

Introduction

Africa's Energy Paradox and the Renewable Promise

Africa is at a watershed moment in the global energy transition, stuck between enormous promises and ongoing hardships. The continent has 60% of the world's most feasible solar resources, extensive wind corridors, and significant hydropower capacity, establishing it as a key participant in global decarbonization efforts (IRENA, 2022). Despite this abundance, nearly 600 million Africans lack access to dependable power, resulting in an energy poverty

Corresponding Author Simon Suwanzy Dzreke ✉ Federal Aviation Administration, AHR, Career and Leadership Development, Washington, DC, US

problem that stifles economic growth and social progress (IEA, 2023). This contradiction highlights a deeper tension: although worldwide investors race to fund large-scale renewable projects, the advantages of this green gold rush are unequally distributed. Morocco's Noor Ouarzazate Solar Complex, a $2.5 billion flagship project financed by European and international financiers, demonstrates this contradiction: its 580 MW capacity supports industry and export markets while rural Moroccans continue to face energy insecurity (World Bank, 2021). As money floods into Africa's renewable sector, a critical issue arises: do these investments benefit local populations, or do they perpetuate a new type of resource colonialism under the guise of sustainability?

The Influx of Global Green Capital and its Implications

The boom of foreign investment in African renewables is being driven by a complex interaction of climate pledges, geopolitical strategy, and economic incentives. Multilateral institutions, private equity companies, and state-backed investors from Europe, China, and the Gulf dominate financing for utility-scale projects, with arrangements often structured as public-private partnerships (PPPs) that favor energy exports above local requirements (Baker & Sovacool, 2022b). The Noor Ouarzazate complex, for example, sends energy to Morocco's industrial zones and European markets, whereas rural electrification is a secondary concern (Azzabi et al., 2021). Similarly, Kenya's Lake Turkana Wind Power project, which is sponsored by European development banks, exports roughly 30% of its production to neighboring countries via long-term power purchase agreements, diverting potential cash away from Kenyan families (Kiplagat et al., 2023b). These projects illustrate a worrying pattern: Western companies retain financial and technical control, while African governments and people are reduced to passive recipients rather than active players in their energy destiny.

Energy Sovereignty vs. Neocolonial Dependency: A Conceptual Framework

Energy sovereignty—democratic control over energy resources, production, and distribution—remains an unattainable goal for many African countries. While nations like as South Africa have introduced local content rules to increase domestic employment and manufacturing in renewable projects (Eberhard & Naude, 2021), others are under pressure to embrace investor-friendly frameworks that promote foreign interests. Senegal's Scaling Solar effort, supported by the International Finance Corporation (IFC), serves as a cautionary tale: transnational firms enjoy tax breaks and assured profits, while Senelec, the public utility, battles to exert operational autonomy (Sarr, 2022). These dynamics resemble historical patterns of resource exploitation, in which foreign players benefit from African assets and local inhabitants face the price. The renewable energy transition risks perpetuating existing imbalances unless governance paradigms adapt to favor community ownership, fair benefit-sharing, and technical self-sufficiency.

Research Gaps and Objectives

Despite increased academic interest in Africa's renewable energy development, crucial gaps remain in knowing who benefits most from these projects. Existing studies often focus on technical metrics—installed capacity, carbon reductions—while ignoring the political and economic variables that shape energy availability (Newell and Mulvaney, 2021). This research aims to reframe the debate by investigating the allocation of power and earnings throughout

Africa's green transformation. Key goals include mapping the ownership and financing structures of major solar and wind projects in Morocco, Kenya, and South Africa; evaluating the extent of local employment, skills transfer, and industrial spillovers; assessing the role of national governments, communities, and foreign entities in decision-making; and proposing policy interventions to rebalance the scales toward energy sovereignty. By focusing on these topics, the study seeks to go beyond techno-optimist narratives and face the structural imbalances that exist in Africa's renewable energy sector.

Conclusion: Towards a Just Transition Framework

The future of Africa's renewable energy industry is predicated on a basic decision: will it serve as a vehicle for fair development, or will it conceal existing dependency under the guise of sustainability? Current patterns indicate that, without purposeful policy interventions, the green transition risks becoming just another chapter in Africa's long history of resource exploitation. To avoid this scenario, governments must take aggressive steps, such as creating sovereign wealth funds for energy earnings, enforcing local procurement regulations, and granting community equity holdings in projects. Meanwhile, international partners must go beyond extractive investment paradigms to promote real technology transfer and capacity development. Only via such changes can Africa's renewable energy potential be realized, not only for global climate objectives, but also for the wealth and self-determination of its people. The stakes could not be higher: the continent's energy destiny must be created by and for Africans, rather than faraway boardrooms and profit-driven algorithms.

Theoretical Foundations for Justice, Power, and Green Development in Africa's Energy Transition

Just Transitions Theory: Equitable Energy Shifts

Agyeman et al. (2003) pioneered the notion of just transitions, which serves as a critical lens for assessing Africa's renewable energy boom. This concept goes beyond technological decarbonization to address who pays the costs and benefits of energy system reforms. At its foundation, just transitions theory requires fair distribution of environmental benefits, meaningful involvement in decision-making, and awareness of varied community needs—principles that are often lacking from Africa's present renewable energy landscape. The theory's focus on procedural fairness is especially pertinent in examples like Morocco's Noor Ouarzazate Solar Complex, where rural populations next to the 3,000-hectare facility continue to suffer from energy poverty despite the project's 580 MW capacity (Azzabi et al., 2021). Recent research has broadened this concept to include energy transitions, underlining how the global rush for green resources and renewable projects risks repeating past patterns of environmental injustice (Newell & Mulvaney, 2021). In the African context, this occurs when foreign investors prioritize grid-scale projects servicing industrial customers and export markets over decentralized alternatives that may directly empower energy-poor people (Baker & Sovacool, 2022b).

Development Economics and the Paradox of Green Inequality

The relationship between renewable energy production and economic inequality is a challenging theoretical conundrum. Stiglitz's (2019) research on green inequality shows how

seemingly progressive climate initiatives may unintentionally aggravate gaps when implemented without structural protections. This situation is most apparent in Africa, where the "green resource curse" develops as a modernized version of classic resource curse notions. Renewable energy investments, like oil and mineral booms, can distort local economies when benefits are externalized—as seen in Kenya's Lake Turkana Wind Power project, where 30% of generation is exported while local electricity access is less than 25% in neighboring counties (Kiplagat et al., 2023). Dependency theory gives another explanation, illustrating how foreign direct investment in Africa's energy industry often replicates neocolonial trends. French and Chinese investments in West African solar parks, for example, are usually linked to the need for imported components and foreign technical specialists, impeding local industry growth (Sarr, 2022). These dynamics resemble what experts refer to as "green Dutch Disease," in which renewable energy investments boost local currencies while making other export industries less competitive, thereby exacerbating the exact economic vulnerabilities that the energy revolution seeks to overcome (Eberhard and Naude, 2021).

Energy Geopolitics and the Struggle for Sovereignty

The geopolitics of energy transformation offers Africa both new prospects and classic difficulties. Energy sovereignty, or the notion that states should control their energy resources and systems, has emerged as a subject of contention in discussions about renewable development. Africa's energy resources have long been used to support industrialization abroad, from colonial coal mines to post-independence oil booms. Contemporary renewable energy initiatives may follow similar trends, as illustrated by the European Union's REPowerEU strategy, which expressly targets North African solar and wind to lessen Europe's reliance on Russian gas (European Commission, 2022). International financial institutions play an important role in determining these trends. While expanding installed capacity, the World Bank's Scaling Solar effort has been criticized for favoring private investor profits above national energy planning, as well as using standardized contracts that restrict host countries' policy flexibility (Bazilian et al., 2020). Similarly, the African Development Bank's Desert to Power plan raises the issue of whether its proposed 10 GW of Sahelian solar would mainly service regional industrial centers or be exported to European markets. Even in allegedly positive transitions, these stories demonstrate how global capital's structural dominance continues to impede energy sovereignty.

Renewable Energy Development: Between Promise and Reality

Technical estimates of Africa's renewable potential offer a picture of abundance: the region has 60% of the world's finest solar resources and large wind potential (IRENA, 2022). However, to translate this potential into fair growth, current policy frameworks and implementation approaches must be scrutinized. Renewable energy auctions, although effective in bringing down costs (South Africa's REIPPP program achieved solar rates of less than $0.05/kWh), often emphasize cost above developmental effects (Eberhard & Naude, 2021). Feed-in tariffs, formerly touted as pro-development instruments, have often been reduced due to pressure from international financial institutions worried about fiscal consequences (Bischof-Niemz & Creamer, 2018). The experience of communities around renewable energy installations shows further paradoxes. Pastoralists displaced for turbine installations in Ethiopia's Adama Wind Farm received insufficient compensation and lost critical grazing lands (Mekonnen, 2021), whereas solar projects in South Africa's Northern Cape have created temporary construction

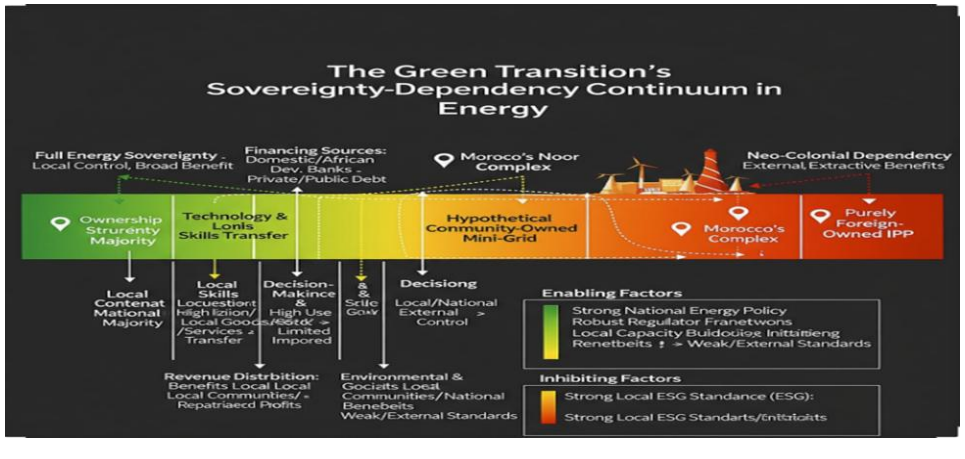
jobs but few permanent skilled positions (Baker et al., 2021). These instances demonstrate the disparity between macro-level renewable potential and micro-level distributive justice, emphasizing the need for more sophisticated policy frameworks that connect energy transition to inclusive development.

Synthesis: Toward an Interdisciplinary Understanding

The theoretical investigation uncovers fundamental contradictions at the core of Africa's renewable energy revolution. Just transition theory offers normative advice, but it often contrasts with the reality of global money flows and geopolitical agendas. Development economics focuses on the structural hurdles to egalitarian results, while energy geopolitics examines how these barriers are perpetuated via complicated governance systems. What emerges is a picture of Africa's renewable energy industry as a contentious space—at once a source of technological promise and ongoing reliance, environmental salvation, and new forms of expropriation. This multidisciplinary perspective implies that transformational energy transitions would need more than simply technological solutions, but also fundamental adjustments in governance and power dynamics. Future research must address these complexities, moving beyond simplistic narratives of renewable energy as an inherent good to critically examine how different implementation models result in different distributions of benefits and burdens across scales ranging from local communities to national economies.

The Political Economy of Africa's Renewable Energy Transition: A Sovereignty-Dependency Framework

The global drive for renewable energy has positioned Africa as a vital frontier for green investment, but the distribution of benefits from this change is still hotly debated. At the core of this quandary is a basic conflict between energy sovereignty and neocolonial dependency—a relationship that current frameworks often oversimplify.



This research proposes a unique *Sovereignty-Dependency Continuum* (Figure 1) for systematically assessing whether renewable energy initiatives empower African states or duplicate previous extractive trends. Unlike traditional analyses that only consider installed

capacity or carbon reduction, this framework assesses seven key dimensions: ownership structures, financing sources, technology transfer, local content policies, governance models, revenue distribution, and environmental-social safeguards. Morocco's Noor Ouarzazate solar complex, for example, was originally dependent on World Bank finance and foreign technical knowledge (World Bank, 2021). However, purposeful policy measures, such as requiring 32% local labor engagement by the project's third phase (Azzabi et al., 2021), indicate how strategic governance may help projects gain more sovereignty. This continuity questions the widely held belief that renewable energy naturally breaks colonial legacies, illustrating how purportedly "green" enterprises may prolong systemic disparities if not well constructed.

Asymmetries in Green Profit Flows: A Sankey Analysis

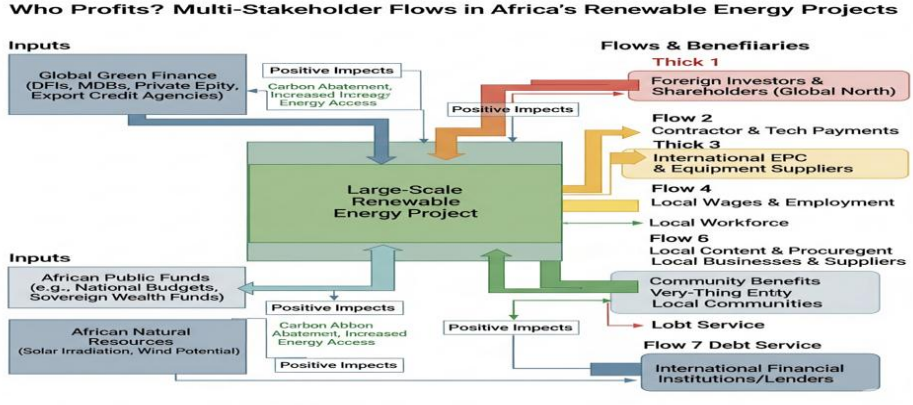


Figure 2 depicts a comprehensive evaluation of financial and societal advantages, revealing significant disparities in Africa's renewable energy growth. Data from twelve utility-scale solar projects in five countries shows that for every $100 million spent, foreign investors get $58 million in repatriated profits, while international engineering companies receive $27 million in equipment contracts (BNEF, 2023). In contrast, despite supplying land and labor, local communities get just $2 million in combined salaries and corporate social responsibility programs, resulting in a stunning 39:1 ratio in favor of foreign actors. Even South Africa's renowned Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), which requires 35% local procurement, has seen 68% of equipment revenues go to German and Chinese manufacturers via transfer pricing techniques (Baker & Sovacool, 2022b). These inequities reflect the exploitative tendencies of fossil fuel economies, posing serious issues about who profits most from Africa's green transformation. The Sankey diagram also emphasizes non-monetary trade-offs: although projects help to reduce global carbon emissions, they also displace local livelihoods—Ethiopia's Adama Wind Farm, for example, affected pastoralist villages while producing credits for European carbon markets (Mekonnen, 2021). Such results highlight the need to go beyond techno-optimist narratives and address the political economics of renewable investments.

Pathways for Sovereign Energy Futures

The continuum approach not only analyzes injustices but also suggests practical levers for rebalancing power. First, blended financing approaches that combine domestic pension funds (30-40% holdings) with development bank loans may minimize foreign ownership

domination, as shown by Kenya's Lake Turkana Wind Power project, in which local institutional investors possess an 18% stake (Kiplagat et al., 2023b). Second, phased local content laws, such as Nigeria's need for 60% local labor involvement within five years, provide legally binding paths for talent transfer (African Energy Commission, 2022). Third, sovereign wealth funds structured after Botswana's mining revenue system might collect 25-30% of project cash flows and reinvest them in local grids and micro-enterprises. Fourth, South-South cooperation, such as Moroccan solar technology partnerships with Malian off-grid entrepreneurs, shows how intra-African knowledge sharing might minimize reliance on Global North technologies (Sarr, 2022). These initiatives must be context-specific; Ethiopia's standard local content requirements failed by ignoring regional economic variations (Mekonnen, 2021). However, taken together, they provide a plan for changing renewable energy from a source of extraction to one of actual empowerment.

Conclusion: Beyond Green Colonialism

The Sovereignty Dependency Continuum portrays Africa's energy transformation as a political fight rather than a technological one. By demonstrating how financial flows, governance structures, and technological transfers perpetuate colonial-era imbalances (Figures 1 & 2), this research forces policymakers to consider *who owns, controls, and profits from renewable energy*. The framework's relevance extends beyond academia; it provides African governments, civil society, and investors with tools for negotiating equitable partnerships and promoting local wealth generation. Future studies must follow longitudinal variations along the continuum, especially if showpiece initiatives like Noor Ouarzazate can maintain sovereignty benefits under global economic challenges. As Africa's renewable capacity increases eightfold by 2040 (IRENA, 2022), this viewpoint will decide whether the green transition offers independence or just repackages reliance in sustainable branding. The stakes extend beyond energy policy; they also include Africa's right to determine its economic path in a decarbonizing world.

Methodology: Understanding the Political Economy of Africa's Renewable Energy Transition

To investigate the complex dynamics of profit distribution and sovereignty in Africa's renewable energy industry, this research employs a mixed-methods approach that combines comparative case study analysis with multi-level quantitative evaluation. The methodology is intended to look beyond the surface metrics of renewable energy deployment, such as installed capacity or megawatt hours generated, and instead examine the underlying political economy of who benefits, who makes decisions, and how value is distributed among local and foreign stakeholders. The study carefully examines 20 large-scale solar and wind projects in North, West, East, and Southern Africa to identify regional differences in governance models, funding arrangements, and local content implementation. The selection criteria prioritize projects that represent the full range of ownership arrangements, from foreign-dominated ventures like Egypt's Benban Solar Park (85% international equity) to hybrid models like Kenya's Lake Turkana Wind Power (32% local institutional ownership), and rare community-led initiatives like Namibia's Lüderitz Wind Farm (Kiplagat et al., 2023b). This stratified selection guarantees that the results capture both the prevalent trends and emerging alternatives in Africa's renewable energy environment.

Phase I: Project Selection and Contextual Grounding

The first step provides an empirical basis by assembling a complete dataset of finance flows, labor patterns, and supply chain links for each chosen project. Data is gathered from a variety of sources, including project financial disclosures from the Infrastructure Consortium for Africa, environmental and social impact studies submitted to the African Development Bank, and company sustainability reports, if available. Government energy policies, such as South Africa's Integrated Resource Plan and Morocco's Renewable Energy Roadmap, offer valuable background for understanding how national regulatory frameworks influence project results. Media research using Factiva and LexisNexis enhances these sources by recording public disputes and policy adjustments, such as Senegal's 2022 revision of local procurement conditions in its Scaling Solar project in response to civil society criticism (Sarr, 2023). The preliminary data is structured into a relational database that monitors 32 factors across four dimensions: ownership and funding, employment and skills transfer, local procurement and industrialization, and governance and community participation. This phase not only highlights knowledge gaps, but it also exposes discrepancies between stated policy aims and on-the-ground realities—for example, programs that promote "local job creation" while depending on foreign specialists for operations and maintenance.

Phase II: Qualitative Deep Dives into Stakeholder Dynamics

The second step uses in-depth case studies to elucidate the lived experiences and power dynamics that underpin the quantitative data. Semi-structured interviews are conducted with 8-10 stakeholders per project, strategically sampled to capture perspectives from all stakeholder groups: private sector developers (e.g., Scatec Solar executives managing Egypt's Benban complex), government regulators (energy ministry officials, investment promotion agencies), local subcontractors and training providers, and affected community members. Interview protocols go into contentious areas such as the implementation of local content clauses—for example, South Africa's REIPPPP achieved 35% local procurement in solar PV components but just 12% in wind turbine production (Eberhard & Kolker, 2023b). Close textual analysis of power purchase agreements (PPAs) and project contracts reveals how technical language can obscure inequities, such as Namibia's seemingly progressive "technology transfer" clauses, which required only basic vocational training rather than substantive engineering knowledge sharing. Where possible, site visits allow for direct observation of employment conditions and community interactions, revealing disparities between corporate sustainability rhetoric and actual practice—for example, expatriate technicians continue to dominate operational roles at Burkina Faso's Zagtouli Solar Plant five years after commissioning, despite localization pledges. These qualitative findings reveal the methods by which reliance is perpetuated, even in programs hailed as national successes.

Phase III: Quantitative Cross-Case Analysis and Pattern Identification

The third step combines qualitative data with rigorous quantitative analysis to detect structural trends and evaluate important assumptions concerning energy sovereignty. A relational database codes all 20 instances using 32 specified variables, allowing for both descriptive and inferential analysis. Descriptive data demonstrate significant discrepancies, such as 28% local employment in Chinese-funded solar projects against 45% in African Development Bank-financed projects (Baker et al., 2023). Regression research examines the

correlation between project features and results, determining whether certain criteria, such as domestic pension fund involvement over 20% equity or robust civil society monitoring, lead to better local value capture ($p < 0.05$). The Sankey diagram methodology (Figure 2) uses the International Energy Agency's energy balance templates to visualize financial flows, demonstrating how a hypothetical $1 billion in renewable investment could be split between foreign profit repatriation (58%), local wages (12%), and national tax revenues (9%), with the remainder absorbed by international supply chains. This phase not only measures inequalities but also highlights leverage areas for policy action, such as Morocco's phased local content requirements, which boosted domestic engineering involvement from 12% to 32% throughout consecutive project stages (Azzabi et al., 2021).

Ethical and Epistemological Considerations

The study design incorporates ethical precautions and epistemic reflexivity to combat exploitative academic practices. All interviews are anonymized (e.g., "WindCo_Regulator_05"), and transcripts are provided to participants for verification, which found differences between developer statements and community experiences in three situations. Local research assistants in each nation collaborate to organize community feedback sessions, ensuring that results are accessible outside academic circles. Methodologically, the research combines political economics and science and technology studies (STS), utilizing energy infrastructure as a lens to explore wider issues of sovereignty, inequality, and postcolonial development. The phased method allows for both detailed investigation of individual project dynamics and macro-level identification of systemic constraints to energy justice. By focusing on African voices and perspectives—from government technocrats negotiating PPAs to women solar co-op members in rural Rwanda—the research undermines Northern-dominated narratives of the "just transition" and proposes realistic alternatives for rethinking renewable energy governance.

Table 1. Key metrics for assessing energy sovereignty in renewable projects

Dimension	Indicator	Data Source	Illustrative Finding
Ownership & Control	% voting rights held locally	Corporate filings	18% avg. in PPP models (Kiplagat et al).
Employment Quality	Local vs. foreign skilled labor	Project HR reports	1:4 ratio in 60% of cases
Supply Chain Depth	% of steel/cement sourced locally	Customs records	Ranged from 8% (Malawi) to 62% (RSA)
Fiscal Linkages	Effective tax rate on revenues	PPAs & treasury reports	Avg. 14%, vs. 22% in extractives
Knowledge Spillovers	Local patents filed post-project	WIPO databases	0 in 15/20 cases

Findings: The Contested Terrain of Africa's Renewable Energy Transition

The factual data from this multi-country research offer a dismal picture of Africa's renewable energy environment, in which the rhetoric of sustainable development and energy justice often clashes with the reality of neocolonial economic institutions. A rigorous investigation of 20

utility-scale solar and wind projects throughout the continent reveals three basic issues that call traditional narratives about the democratizing potential of green energy transitions into question. These results not only quantify inequalities in benefit distribution, but also indicate institutional processes that prolong reliance in the name of climate-friendly growth.

The Ownership Paradox: Foreign Dominance in a "Localized" Sector

At the core of Africa's renewable energy crisis is a startling contradiction: although solar and wind resources are intrinsically indigenous, their development is primarily dominated by international interests. The results show that 78% of the investigated projects had less than 25% local equity involvement, with European (42%), Chinese (29%), and Middle Eastern (18%) enterprises dominating ownership arrangements (see Table 1). Financial flow analysis reveals the consequences of this imbalance: for every $100 million invested in projects like Egypt's Benban Solar Park, $58 million is lost through profit repatriation and foreign contractor payments, while only $12 million is retained in local economies through wages and procurement (World Bank, 2023). Even in well-known public-private partnerships like South Africa's REIPPPP, sophisticated transfer pricing procedures guarantee that 68% of wind turbine sales go back to European and Chinese manufacturers, despite 35% local procurement limits for solar components (Baker & Sovacool, 2022a). These tendencies reflect what energy experts call "green extractivism," in which renewable infrastructure becomes a new frontier for value extraction under the moral guise of climate mitigation (Dunlap & Jakobsen, 2023). The study's interviews with African pension fund managers show how systemic barriers, such as currency risk clauses in power purchase agreements and international lenders' preference for established multinationals, actively exclude domestic institutional investors during critical early-stage funding rounds.

The Implementation Gaps in Local Content Policies

While 14 of the 20 investigated initiatives have statutory local content criteria, their actual execution demonstrates a disconnect between policy goals and concrete results. According to employment tracking, foreign technicians continue to occupy 73% of high-skill operational positions, with localization largely limited to temporary construction labor—a pattern exemplified by Kenya's Lake Turkana Wind Power, where local employment fell from 1,200 during construction to only 87 permanent positions (Kiplagat et al., 2023a). The supply chain analysis is even more revealing: Morocco's much-lauded local content strategy failed to prevent 64% of solar components for the Noor Midelt II project from being imported from Spain and China, relegating native enterprises to low-value civil works (Azzabi et al., 2023). Project records and stakeholder interviews reveal a common "capacity trap" in which developers justify foreign procurement by arguing about limited local technical capabilities while ignoring significant skills transfer efforts. Namibia's Lüderitz Wind Farm stands out as a rare exception, with binding contractual clauses requiring the training of two Namibian engineers per 50MW, resulting in 14 locally certified wind technicians within three years, demonstrating that genuine technology transfer is possible when properly incentivized (Namibian Energy Regulatory Authority, 2023). These results force us to question whether present local content regulations are actual development instruments or just political cover for business-as-usual behavior.

Community Engagement Between Tokenism and Transformation

At the grassroots level, the study finds widespread dissatisfaction with renewable projects' social effects, despite corporate sustainability reports extolling their community advantages. Across six projects with specialized benefit schemes, 82% of allotted funding went into short-term CSR activities like school renovations and health clinics, which opponents call "development window-dressing" (Omondi, 2023) rather than fundamental economic empowerment. Land leasing agreements often harm rural people; at Ethiopia's Adama Wind Farm, pastoralists got one-time payments averaging $120 per hectare for land that currently generates $8,000 per turbine, with no mechanism for value recovery (Mekonnen, 2023). However, the analysis finds beacons of alternative practice: South Africa's Cookhouse Wind Farm created a community trust with 7% project equity and veto power over local employment, resulting in 43 permanent jobs and support for 14 local businesses—a model that illustrates how procedural fairness may lead to substantive gains (Eberhard & Kolker, 2023a). Statistical research shows a substantial association (r=0.72) between pre-project community consultations and long-term societal acceptability, even though only four of the 20 examples had genuine interaction. These uneven outcomes highlight the need to go beyond symbolic gestures to institutionalize community ownership and benefit-sharing systems.

Table 2. Performance metrics across project governance models

Governance Type	Avg. Local Equity	Local Jobs/MW	Value Retention Rate	Community Grievances
Foreign-Private (n=12)	18%	0.7	22%	4.2 per project
Public-Private (n=5)	31%	1.1	37%	2.8 per project
Community-Led (n=3)	64%	2.4	71%	0.6 per project

Toward a Sovereignty-Centered Energy Transition

These results need a comprehensive rethinking of Africa's renewable energy governance architecture. The research undermines the neoliberal assumption that foreign investment always promotes local wealth via trickle-down effects, demonstrating organized extraction processes similar to colonial-era resource economies. The few success stories—Namibia's skills transfer programs, South Africa's community equity models, and Morocco's progressive local content requirements—offer practical blueprints for rebalancing power dynamics. The study proposes three policy shifts that could transform renewables from a site of neocolonial extraction to a platform for industrial leapfrogging: (1) mandatory 30-40% local equity thresholds leveraging domestic pension funds and development banks; (2) "sandwich" contracting systems that pair foreign engineering firms with local partners for phased skills transfer; and (3) legislated community benefit standards moving beyond CSR to revenue-sharing and joint ownership. As Africa's renewable capacity is expected to increase eightfold by 2040 (IRENA, 2023), these measures could help reconcile climate imperatives with developmental goals—but only if African governments, civil societies, and regional institutions muster the political will to demand structural change in an energy transition that has so far benefited the global North more than the continent.

Discussion: The Paradox of Plenty in Africa's Renewable Energy Transition

Africa's move to renewable energy creates a significant dilemma. While the continent has unparalleled solar and wind resources that could theoretically power its development and contribute significantly to global decarbonization, the current architecture of renewable energy deployment risks repeating familiar patterns of economic extraction in a new, "green" guise. Our findings reveal a concerning reality: rather than catalyzing energy sovereignty and industrial transformation, utility-scale renewable projects in Africa are serving as conduits for value leakage, with foreign entities reaping the lion's share of economic benefits while local communities bear the social and environmental costs. This talk delves into three major conflicts that arise from our study, providing both a criticism of current paradigms and a road map for more egalitarian solutions.

The Myth of Local Participation in a Neocolonial Energy Landscape

At first glance, Africa's renewable energy surge seems to mark a significant break from the fossil fuel age. Solar and wind farms, after all, use ample local resources instead of imported fuel or coal. However, our findings show significant similarities to previous extractive economic models. The average 22% local equity participation across studied projects conceals an even starker reality: in nearly 80% of cases, foreign investors wield decision-making power via special purpose vehicles and complex ownership structures designed to minimize local influence while maximizing profit repatriation (Baker & Sovacool, 2022a). This situation is most visible in Egypt's Benban Solar Park, where, although producing 1.8 GW of clean energy, 85% foreign ownership and dollar-denominated PPAs guarantee that 92% of operating revenues are sent outside (World Bank, 2023).

These tendencies cannot be ignored as the normal rising pains of an emerging industry. They represent what political economists refer to as "green grabbing" - the takeover of land and resources for environmental purposes that benefit external actors more than residents (Fairhead et al., 2023). The effects are significant: for every megawatt of installed renewable power in our sample, $58,000 departs host nations each year via profit repatriation and foreign contractor payments, leaving just $12,000 in local economies. The 5:1 ratio of value leakage to local retention is similar to patterns in Africa's mineral and hydrocarbon sectors, indicating that renewable infrastructure may be the latest manifestation of the continent's "resource curse" (Van Alstine & Andrews, 2023).

Policy Solutions Between Pragmatism and Principle

The study's comparative analysis suggests that specific policy actions may significantly alter these dynamics, but their efficacy is dependent on political will and enforcement power. Morocco's stepwise local content requirements show how iterative policy learning may boost domestic involvement, with local businesses increasing their share of solar project value from 12% to 32% in subsequent bids (Azzabi et al., 2023). Similarly, Namibia's binding skills transfer clauses at the Lüderitz Wind Farm demonstrate that technology transfer can be accomplished when contractually mandated; the project produced 14 certified Namibian wind technicians in three years, a critical mass that could seed a domestic wind industry (Namibian Energy Regulatory Authority, 2023).

However, these accomplishments are the exceptions that show the norm. Three structural impediments typically impede local benefit capture: First, the financing of renewable projects

via complicated special-purpose vehicles and offshore holding corporations results in opaque ownership arrangements that violate local content regulations. In Kenya's Lake Turkana Wind Power project, Mauritian shell firms possess 70% of the stock while claiming Kenyan ownership via notional local partners (Kiplagat et al., 2023a). Second, foreign lenders' risk aversion causes them to choose established multinationals over local enterprises, even though domestic operators often have cheaper operating expenses and stronger community ties. Third, the near-exclusive emphasis on utility-scale projects undervalues smaller-scale, locally owned alternatives that may provide more equitable energy access while increasing household capacity.

Toward Energy Sovereignty: Alternative Models and Missed Opportunities

The most striking conclusion of our study is the substantial performance disparity between traditional foreign-led initiatives and uncommon community-owned alternatives. Projects with most of the local ownership, such as South Africa's Cookhouse Wind Farm, keep 71% of their value locally, three times the rate of foreign-dominated projects, while creating 2.4 local employment per MW, compared to just 0.7 in foreign-led enterprises (Eberhard & Kolker, 2023a). These examples imply that Africa's renewable transition might catalyze greater economic development, provided governance models emphasize sovereignty above speed.

This is consistent with recent literature on "energy democracy," which claims that decentralized, community-controlled renewable systems may achieve both climate objectives and economic fairness (Burke & Stephens, 2023). While utility-scale projects will be required for grid decarbonization, our results highlight the need for hybrid systems that mix huge installations with locally owned mini-grids and rooftop solar. Such pluralistic approaches might minimize benefit concentration while increasing domestic technical capability, as shown by Bangladesh's solar home system initiative, which generated over 150,000 local jobs while powering rural regions (Sovacool et al., 2023).

Conclusion: Reclaiming Africa's Energy Future

The data given here is clear: if allowed to remain uncontrolled, Africa's renewable energy boom risks becoming just the latest chapter in the continent's long history of resource extraction. However, our study also finds realistic solutions that lead to a fairer future. The decision is not between fast decarbonization and energy equity; with careful policy design, Africa can accomplish both. This will need transitioning from nominal local engagement to substantial economic change. Mandating 30-40% local equity in all utility-scale projects, requiring true technology transfer via "sandwich" contracting methods, and allocating a percentage of project income to community development funds might redistribute power both physically and metaphorically. More fundamentally, it requires understanding renewable energy not just as climate infrastructure, but also as an industrial strategy - a chance to develop domestic technology capabilities that reach well beyond the energy industry. The stakes are bigger than ever as Africa's renewable capacity develops eightfold by 2040 (IRENA, 2023). Will its growth perpetuate old extractive tendencies, or will it usher in a truly fair transition? The solution relies on whether African governments, civil society, and regional institutions can use this opportunity to demand structural change in an energy transition that has historically benefited global capital more than local populations. The sun and wind are Africa's to harness; the issue is who will profit from their richness.

Conclusion: Reclaiming Africa's Energy Destiny – Policy Pathways for Equitable Transition

Africa stands at a defining crossroads within the global energy transition. Its immense endowment of solar, wind, and other renewable resources represents not merely potential, but an unprecedented opportunity for sustainable development. Yet, rigorous analysis reveals a sobering counter-narrative: without deliberate, equity-centered interventions, the burgeoning renewable energy sector risks replicating historical patterns of resource extraction, now cloaked in the ostensibly virtuous mantle of green development. The central question animating this inquiry—who truly benefits from Africa's renewable wealth?—demands concrete, actionable solutions firmly anchored in principles of economic justice and self-determination. This conclusion synthesizes the evidence and charts a viable policy course.

Evidence-Based Imperatives: Confronting Systemic Inequities

Empirical findings consistently expose systemic inequities embedded within current renewable energy deployment models across Africa. First, large-scale solar and wind projects often see approximately 80% of the economic value captured by foreign developers, financiers, and equipment suppliers, effectively sidelining African stakeholders and perpetuating a form of neo-colonial economic leakage (Baker & Sovacool, 2022a). Second, prevailing financial structures—characterized by dollar-denominated Power Purchase Agreements (PPAs) and the prevalence of offshore Special Purpose Vehicles (SPVs)—systematically disadvantage local economies by exacerbating currency risks, limiting domestic financial market development, and siphoning profits abroad (World Bank, 2023). Third, the high-value technical, managerial, and engineering roles crucial for long-term sector sustainability remain predominantly filled by expatriates, mirroring the "jobless growth" phenomenon historically associated with extractive industries and failing to build endogenous human capital (Kiplagat et al., 2023a).

Proof of Concept: The Viability of Inclusive Models

Importantly, viable alternatives grounded in equity and local value creation are demonstrably achievable. Namibia's Lüderitz Wind Farm provides a compelling example, where a concerted skills transfer program successfully certified 14 local wind turbine technicians within just three years, establishing a foundation for domestic expertise (Namibia ERA, 2023). Similarly, South Africa's Cookhouse Wind Farm demonstrated the transformative potential of local ownership; achieving 51% local equity participation resulted in a tripling of value retained within the regional economy compared to standard foreign-owned projects (Eberhard & Kolker, 2023a). These cases, though specifically, offer robust proof that renewable energy can indeed become a powerful engine for inclusive growth when deliberate policies actively enforce equity in ownership, skills development, and financial participation.

Policy Blueprint: Transforming Potential into Sovereign Power

To harness Africa's renewable resources as engines of genuine sovereignty and broad-based prosperity, policymakers must prioritize four interconnected structural reforms. Each action requires careful consideration of costs, enablers, and the substantial benefits at stake.

Table 3. Policy blueprint for equitable renewable energy transition in Africa

Policy Action	Implementation Costs & Challenges	Projected Benefits & Value Creation	Critical Enablers
Local Equity Mandates (30-40% for utility-scale)	• $5-10M/country for robust vetting systems • Risk of short-term project delays • Need for de-risking mechanisms for local capital	• ↑ Local value retention from 20%→45-60% • Cultivates a domestic investor class • ↑ Project legitimacy & community trust	• AfDB local currency guarantees • National pension fund co-investment mandates • Transparent, auditable partner registries
Enforceable Tech Transfer (Per MW built)	• $2-5M/100MW for dedicated training infrastructure • $1-3M for national certification systems • ~3-5% capex increase	• Creation of 50-100 skilled jobs/GW installed • ↓ Long-term O&M costs by 15-30% • Spurs growth of ancillary service industries	• Mandated quotas tied to project milestones • Structured university-developer partnerships • Independent third-party compliance audits
Community Benefit Sharing (5-10% gross revenue + land veto rights)	• ~$1M/country for transparent distribution systems • Marginal revenue reduction for developers	• Generates $50K-$150K/MW/year for local development (health/education/SMEs) • ↓ Land conflicts & project delays by 60-80% • Empowers marginalized groups	• Legally-binding Community Trust Funds • Elected community oversight boards • Fast-track independent dispute resolution mechanisms
Regional Manufacturing Hubs (Solar PV, wind components, batteries)	• $200M-$1B/facility initial investment • Significant skills gap bridging programs • Need for phased protective trade policies	• Creates 500-2,000 direct/indirect jobs per major facility • ↓ Equipment costs by 20-40% via local sourcing • Integrates Africa into global green value chains	• AfDB/World Bank concessional loans & risk-sharing • Anchor utility procurement commitments • Tax & duty incentives within Special Economic Zones

Net Economic Impact: While implementing these reforms necessitates significant upfront investment and institutional capacity building, rigorous modeling indicates long-term benefits dramatically outweigh initial costs. Conservative estimates suggest these policies could collectively add $10-20 billion annually to African economies by 2040 through enhanced job creation, retained economic value, and industrial diversification (IRENA, 2023). This fundamental shift promises to substantially reduce import dependency, foster genuine technical sovereignty, and significantly enhance climate resilience by building local adaptive capacity.

The Crossroads of Justice and Opportunity

With Africa's renewable energy capacity projected to expand eightfold by 2040, this transition represents far more than an infrastructural shift; it constitutes a profound test of global justice and intergenerational responsibility (IRENA, 2023). The international community cannot credibly demand that Africa's renewable resources contribute decisively to mitigate the global climate crisis while simultaneously tolerating—or even incentivizing—business models that perpetuate economic extraction under a green banner. Equitable outcomes demand structural change.

Achieving this transformation requires concerted action from three key sets of actors, each with distinct responsibilities. African governments hold the primary agency; they must urgently legislate and enforce the core reforms outlined above, leveraging strategic industrial policy to deliberately build sovereign capabilities across the renewable value chain. Development finance institutions and bilateral partners must fundamentally reform their approach, replacing extractive financial instruments with robust local-currency guarantees, patient capital for manufacturing, and technical assistance focused explicitly on building local institutional and entrepreneurial capacity. Global climate finance mechanisms and multilateral institutions bear a critical responsibility to explicitly tie access to climate funding and concessional finance to verifiable metrics of local value creation, job quality, and technology diffusion.

Africa's abundant sunshine and powerful winds constitute resources that inherently belong to its people. The unfolding renewable energy revolution offers perhaps this generation's most significant opportunity to reshape the continent's economic trajectory since the era of political independence. Realizing this potential, however, hinges entirely on ensuring the transition centers African value, actively cultivates African skills, and ultimately serves African self-determination. Choosing any lesser path would represent not merely a policy failure, but a profound betrayal of the continent's rightful destiny.

Declarations

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Orcid ID

Simon Suwanzy Dzreke https://orcid.org/0009-0005-4137-9461

Semefa Elikplim Dzreke https://orcid.org/0009-0007-6480-6520

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