Africa's Energy PPPs Succeed When Planning, Policy, and Public Interest Are Prioritized

By **Andrew Kamau**, **Dr. Vivek Shastry** and **Sacha Rongé**

Africa's energy infrastructure is at a crossroads. Energy infrastructure remains a critical priority across the continent amid severe energy shortages and with reliable power being essential for economic growth, industrialization, and social development. But while the continent is rich in natural resources, many governments face limited fiscal capacity for the large-scale investment that energy infrastructure requires. This deficit has been exacerbated by heightened debt levels and economic shocks such as the COVID-19 pandemic and geopolitical crises.[1]

Public-Private Partnerships (PPPs), which leverage private sector expertise and investment to reduce the fiscal burden on governments, have emerged as a key strategy to address financing bottlenecks for infrastructure projects.[2] The performance of PPP projects across Africa has been mixed, with successes tempered by shortcomings in project preparation, procurement, risk management, and transparency.[3] Without identifying and addressing these challenges, PPPs can incur high costs while producing limited benefits.

Drawing on a comparative analysis of three diverse projects[4]—the Bujagali Hydroelectric Project in Uganda, the Tema LNG Import Terminal in Ghana, and the Kathu Solar Park in South Africa—this commentary explores how differences in project preparation, governance structures, and stakeholder alignment have influenced PPP project outcomes. Going beyond well-known shortcomings, it focuses on the enabling factors—such as institutional capacity, policy coordination, transparent procurement, and community engagement—for PPPs to deliver

affordable and sustainable energy services while minimizing fiscal risks. By examining what distinguishes more successful projects from those that fall short, this commentary offers practical insights into how PPPs can be structured and supported to better serve the public interest, especially in fiscally constrained environments.

Project Summaries

The Bujagali Hydroelectric Project in Uganda

Bujagali is a 250-megawatt (MW) hydroelectric power station that was developed as one of Africa's first large energy PPPs on a 30-year Build-Own-Operate-Transfer (BOOT) concession. The project reached financial close in 2007 and began operations in 2012. At commissioning, it was the largest privately financed hydroelectric plant in sub-Saharan Africa.

Outcomes: Bujagali effectively doubled Uganda's generation capacity, eliminating daily load-shedding that had been causing up to 90 days of power outages per year for businesses. The reliable supply it provided replaced expensive diesel generators and became the backbone of Uganda's grid, spurring industrial growth. The project also set positive precedents for local participation and development. It employed about 4,000 Ugandans during construction in accordance with local content targets[5] and funded health facilities, education programs, skills training, and water supply systems for local communities.[6] In addition, the project reduced Uganda's trade deficit and dependence on fossil fuels by displacing oil imports used for thermal power generation.[7]

Challenges: Bujagali's development, which spanned nearly two decades, was plagued by false starts and controversy. The initial developer (AES) withdrew in 2002 amid allegations of corruption and a World Bank inquiry, forcing a reboot of the project with new sponsors in 2005.[8] After the restructuring, total project costs more than doubled from roughly $530 million to over $1 billion, raising the cost per MW from about $2.3 million to $3.6 million. These overruns led to high electricity tariffs (~$0.15 per kWh, among the highest in East Africa) with no subsidies to cushion consumers.[9]

In sum, Bujagali delivered much-needed power and proved the PPP model's viability, but weak upfront planning and procurement inflated costs and limited the project's broader socio-economic impact.

The Tema LNG Import Terminal in Ghana

The Tema LNG Import Terminal is a recently completed but not yet operational energy PPP intended to provide more natural gas to Ghana's power sector. Expected to be sub-Saharan Africa's first liquefied natural gas (LNG) import facility, the project is structured as a BOOT partnership

between Ghana's national oil company (GNPC) and private investors led by Helios Investment Partners. The $350 million terminal consists of a floating regasification unit paired with a floating storage unit, in addition to a 6.5 km undersea pipeline and onshore facilities. It is designed for an import capacity of up to 1.7 million tonnes of LNG per year.[10]

Ghana pursued this project to diversify its fuel supply for power generation,9 anticipating that national electricity demand will double between 2022 and the early 2030s. Although Ghana has developed significant domestic gas (about 335 million cubic feet per day [MMcfd] from the Jubilee, TEN, and Sankofa fields) and imports (some via the West African Gas Pipeline [50–60 MMcfd]), it still experiences periodic power shortages (dubbed "dumsor" in Ghana). The LNG terminal was seen as a way to enhance energy security, utilize under-used thermal power plants, and potentially re-export gas in the region.[11]

Challenges: The Tema LNG PPP has encountered major hurdles in planning and execution. A key issue has been misaligned demand forecasting. In 2019, Ghana was already obligated to pay for more gas than it used due to take-or-pay contracts on existing domestic supply (notably the Sankofa field). By 2020, the government was paying an estimated $1.5 billion per year for unused power generation capacity and gas, a heavy strain on public finances.[12] External factors compounded the problems: the global LNG market tightened in 2021–22 (exacerbated by Russia's invasion of Ukraine and the war that ensued), causing prices to spike and making it difficult for Ghana to secure affordable long-term LNG supply contracts. The project missed its original 2020 commissioning date. As of mid-2024 the onshore infrastructure was in place (the floating storage/regasification vessel sailed away in 2022) but no gas supply had been secured.[13] The terminal has still not delivered any gas to the grid.

Tema LNG underscores the need for realistic demand analysis and policy coordination in PPPs. Ghana did enact a new PPP Act in 2020 to provide the framework and institutional arrangements for private participation in projects, but weak project preparation for Tema LNG meant the facility was at risk of becoming a "white elephant"—providing no energy while adding financial burdens. Moving forward, Ghana will need to rebalance its gas obligations (e.g., by finding industrial off-takers or neighbouring markets for the imported LNG) if it wants to avoid paying for idle infrastructure.[14]

In sum, the Tema LNG project demonstrates the importance of accurate demand forecasting and coordinated policy planning in energy PPPs. Despite its potential to enhance energy security, the project highlights how weak preparation and misaligned contracts can turn major infrastructure into financial liabilities.

The Kathu Solar Park in South Africa

The Kathu Solar Park is a 100-MW concentrated solar power (CSP) plant that was developed through a PPP arrangement under South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The project was awarded in 2014 (Round 3.5 of REIPPPP) as part of a competitive bid process encouraging private investment in the power sector. It was developed by a consortium led by ENGIE (48.5% ownership) alongside several South African partners, including the Sishen Iron Ore Community Development Trust and Investec.[15] Kathu reached financial close in 2016 and began commercial operations in January 2019. It employs parabolic trough CSP technology with 4.5 hours of molten-salt thermal storage, enabling it to supply dispatchable power during evening peak hours. The plant operates under a 20-year power purchase agreement with the national utility (Eskom) at a tariff of around $0.14 per kilowatt hour (kWh) (2019 terms).[16]

Outcomes: Kathu is widely viewed as a PPP success story that delivered both energy and socio-economic benefits. Commissioned amid chronic power shortages in South Africa due to underinvestment by Eskom, it now supplies clean electricity to roughly 179,000 homes, bolstering energy security and diversifying South Africa's coal-dominated grid. Its thermal storage allows it to meet demand during peak hours and thereby improve grid reliability.16 The project was also structured to ensure local community benefits: a community trust holds a stake and the consortium shares 1 percent of operating revenues with local communities. Kathu's construction created about 14,000 local job opportunities (largely short term), and its operation is supported by 80 permanent jobs (with mostly local hires).[17] Moreover, the developers sourced roughly 40 percent of equipment and services from local firms, helping stimulate the domestic supply chain, and the investors funded community infrastructure, including a new water pipeline that now provides clean water to approximately 600 households in an area that previously lacked reliable supply. These measures built strong stakeholder support and aligned the project with sustainable development goals.[18]

Challenges: Despite its successes, Kathu has faced challenges common to many large PPPs. The project became operational later than initially planned (2019 instead of 2016) due to lengthy bidder selection and financing processes. This was compounded by intermittent policy uncertainty around renewables, including a decision by Eskom to delay signing power purchase agreements for new independent power producers.[19] Strong backing for the project from the Department of Energy and National Treasury helped to resolve these issues and ensure the government would honor its PPA commitments.

The Kathu experience highlights the importance of political will and policy consistency to PPP success. South Africa's establishment of a dedicated IPP Office and use of standardized contracts under the REIPPPP were instrumental to providing the transparency and credibility needed to attract private investors. The office was set up in 2011 as a joint project between the Department of Energy, the National Treasury, and the Development Bank of Southern Africa.[20]

In summary, Kathu Solar Park offers a model of an inclusive PPP approach, demonstrating that when well-structured and supported, renewable energy PPPs can deliver on their promises (on time and on budget) with meaningful community benefits, even in a challenging environment.

Takeaways for Future PPPs

These three projects show that for PPPs in Africa to achieve affordable, reliable, and sustainable energy outcomes, governments and stakeholders need to focus on the following critical improvements:

- **Strengthen PPP planning and project selection:** Robust upfront planning, such as independent feasibility studies, demand forecasts, and cost-benefit analysis, before committing to PPP projects can help ensure they align with national energy needs and least-cost development plans. The Bujagali case shows how a lack of early planning can lead to project delays and cost overruns. Instead of pushing ahead to meet political timelines, governments may need to postpone or redesign PPPs that show misaligned risks or marginal benefits, as was the case with Tema LNG.
- **Enhance transparency and competitive procurement:** Open, competitive bidding for PPP projects can help maximize value and reduce corruption. The Bujagali case shows that non-transparent negotiated deals can inflate costs and erode public trust. In contrast, Kathu's clear tender process under well-defined rules clearly contributed to its success. Governments can publicly disclose key contract terms (tariffs, subsidies, guarantees) and procurement results to improve accountability, deter foul play, and help avoid costly disputes down the line.
- **Build institutional and regulatory capacity:** Capable institutions, streamlined interagency coordination, and consistent political support can help enable effective execution of PPPs. As the case of Tema LNG shows, good laws in and of themselves are insufficient. The Kathu example conveys the importance of strengthening dedicated PPP units with expertise in finance, law, and project management, and empowering independent energy regulators to oversee PPP contracts. Regular training and involvement of experienced transaction advisors can bolster local capacity, while institutionalizing transparency and oversight can reinforce accountability.[21]

- **Embed stakeholder engagement and social safeguards:** Proactively involving local communities and integrating environmental safeguards from the start can help the project contribute to inclusive growth and win public support, as the Kathu case shows. These measures can also prevent resistance that leads to the kinds of delays and cancellations that occurred initially at Bujagali. PPP contracts can include environmental and social measures in line with international standards to mitigate harms and ensure that affected communities benefit from these projects.
- **Ensure policy consistency and align with sector reforms:** Situating PPP initiatives within a broader energy-sector reform agenda, such as utility restructuring, cost-reflective tariffs, and enabling independent power producers (IPPs) to sell into the grid or regional power pools, can create a level playing field and more reliable off-takers for PPP projects. For example, South Africa's move to unbundle Eskom and establish the IPP Office helped attract investment in projects like Kathu. Likewise, aligning PPP efforts with renewable energy targets and climate commitments can attract green financing and ensure long-term sustainability.[22]

About the Authors

Andrew Kamau serves as the a Co-Director for the Energy Opportunity Lab, leading the lab's projects outside of the United States. Andrew was the Principal Secretary for Petroleum and Mining in the Ministry of Petroleum and Mining, charged with technical undertaking on behalf of the Government of Kenya in the areas of Oil, Gas, and Mining. He has a wealth of experience in the energy sector having worked in energy trading, oil and gas operations, and the mining sector for over 30 years. Believing in steadfast leadership to deliver complex projects, Andrew has spearheaded several Government initiatives that have benefitted Kenyans. His vantage has allowed him insight on how to structure, negotiate, and navigate interventions that have lasting and positive impact. Among his greatest accomplishments in this regard, Andrew championed the rapid uptake of Liquid Petroleum Gas (LPG) as a primary cooking fuel and moving the per capita consumption from 3kg to 7.5kg in eight (8) years. This initiative contributed to reduction of households reliant on charcoal and firewood as a cooking fuel and reduced serious indoor pollution incidence among vulnerable women and children.

Andrew advocated for initiatives to shift the transportation of most refined petroleum products fromroad to rail and lake barges, thereby reducing costs and the carbon footprint. He oversaw the construction of a new rail siding, connecting the Kenya Pipeline Storage to the Port of Kisumu, allowing for the transportation of refined petroleum products by rail barges from Kenya to Port Bell in Uganda. Relatedly, he led the team working on the rehabilitation of the long defunct Nairobi-Nanyuki rail line, allowing for fuel, agricultural goods, and passengers to be transported after nearly 30 years' absence.

In the mining sector, Andrew has championed transparency through implementation of data and technology driven solutions, with a focus on identifying and leveraging minerals that will be critical for the energy transition and for which the 4th Industrial revolution is reliant. From finalization of the cadaster system that forms the bedrock for transparency in licensing, to the acquisition of geological data, Andrew has provided leadership to ensure that the country is well-positioned to capitalized on its natural resource's wealth.

Prior to his role in Government, Andrew assisted governments to conclude complex trading transactions in energy by structuring practical solutions that took into account local context and financial constraints. For instance, in the power sector in Democratic Republic of Congo (DRC), Andrew successfully negotiated a contract to rehabilitate two (2) turbine groups at the Inga Hydroelectric Dam on the Congo River thereby paving way for commercial mining activity

that benefitted both the Government and its private sector partner. His intuitive insight into the most critical inputs for successful ventures in the oil and gas sector allowed him to assist the DRC government with supply of over USD 60 Mn of refined petroleum products using insurance instruments issued by the Government of South Africa and backed by oil revenue from companies producing oil in the DRC. He also crafted interventions for supply of crude oil to the Ndola oil refinery in Zambia and refined products worth over USD 200 Mn to the TEMA oil refinery in Ghana with structures that did not require both Governments to issue payment instruments.

Through his life's work, Andrew has applied himself to the energy sector's challenges and opportunities on the Continent, noting that the resilience of developing economies in Sub Saharan Africa will depend on new thinking. He has participated as a thought leader on the energy transition conversation including encouraging approaches that balance the requirements of industrialization and climate change adaptation. He remains passionate about offering refreshing and non-traditional perspectives on the energy sector's contribution to sustainable economic development.

Beyond contributions as a public servant and international energy sector specialist, Andrew has a passion for philanthropy and has served as chairman of the Komati Foundation, a non-profit organization in South Africa, working specifically with students and young professionals to nurture leadership skills and service ethics. For his public service to Kenya, Andrew was awarded the First Class, Order Chief of the Burning Spear (CBS) in 2016. In 2005, Global Pacific Partners awarded him the Africa Oil & Gas Deal Maker of the Year.

Dr. Vivek Shastry is a Senior Research Associate at the Center on Global Energy Policy, Columbia SIPA. His work focuses on issues of energy access, opportunity, and justice across India, Africa, and the U.S., supporting CGEP's Energy Opportunity Lab and the India Program. He has published several peer-reviewed articles in diverse journals, contributing to the literature on global energy poverty, U.S. energy transition, and energy use in the built environment. In addition to interdisciplinary research, he brings many years of strategic planning, partnership building, and program implementation experience through his prior work with SELCO Foundation.

Dr. Shastry earned a PhD in Public Policy from the University of Texas at Austin, where his doctoral research focused on understanding the consequences of poor electricity at rural health facilities, and the impacts of adopting productive uses of renewable energy among rural entrepreneurs. He also holds master's degrees in Sustainable Design, and Community and Regional Planning from the University of Texas at Austin, and a bachelor's degree in Civil Engineering from National Institute of Technology Karnataka, India.

Sacha Rongé is pursuing an MPA at Columbia University's SIPA, focusing on energy and infrastructure in emerging markets. He is part of the Energy Opportunity Lab at the Center on Global Energy Policy (CGEP), under the supervision of Andrew Kamau. In this role, Sacha's research primarily explores the role of public-private partnerships in closing the energy investment gap in Sub-Saharan Africa. Additionally, he focuses on developing strategies to repurpose associated gas emissions for productive uses across the continent.

Previously, Sacha was a strategy consultant advising corporations, non-profits, and public authorities in emerging markets. He holds a bachelor's degree in Management from the University of Warwick.

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