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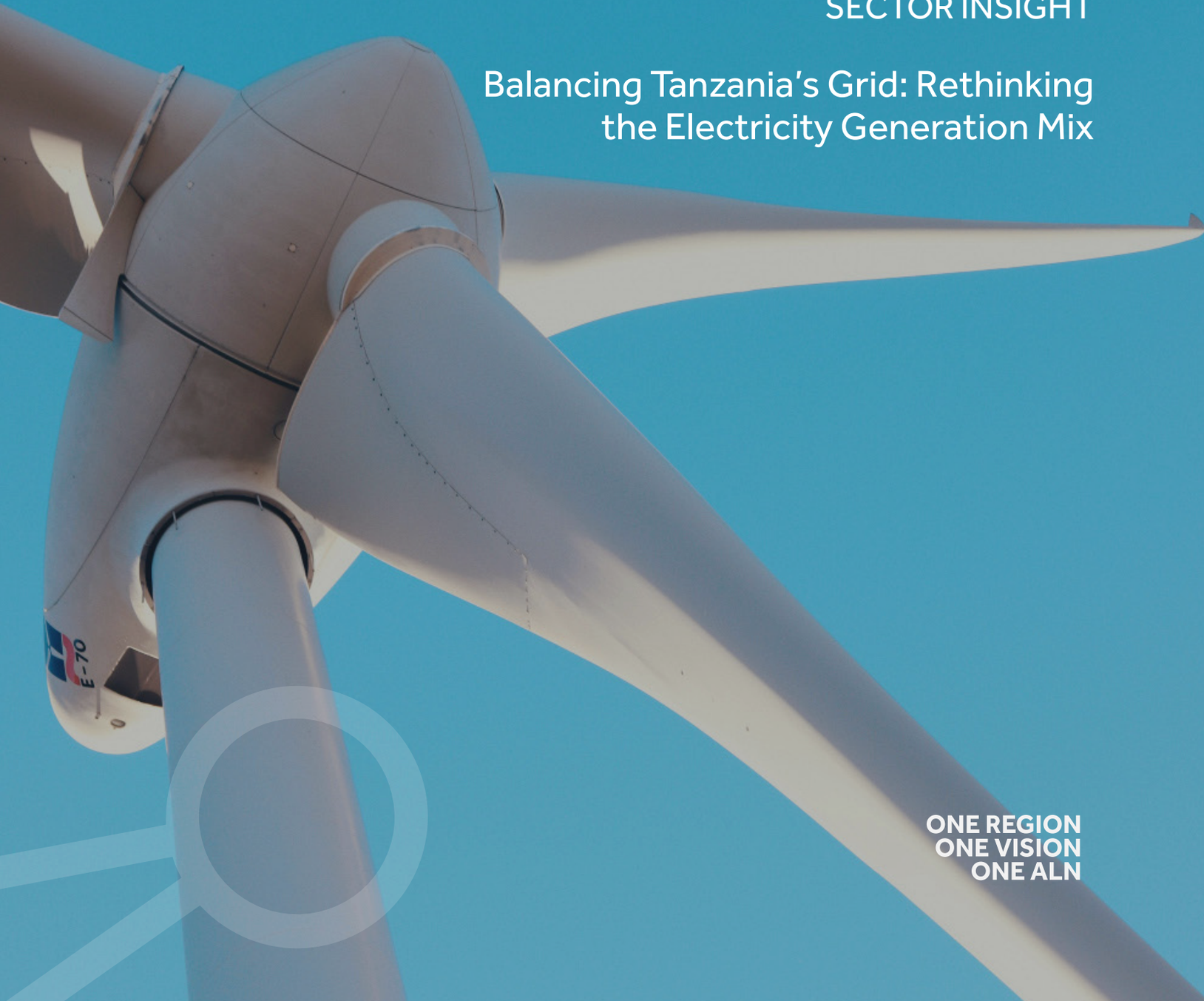
INVESTING IN TANZANIA

SECTOR INSIGHT

Balancing Tanzania's Grid: Rethinking the Electricity Generation Mix



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Tanzania's Current Position

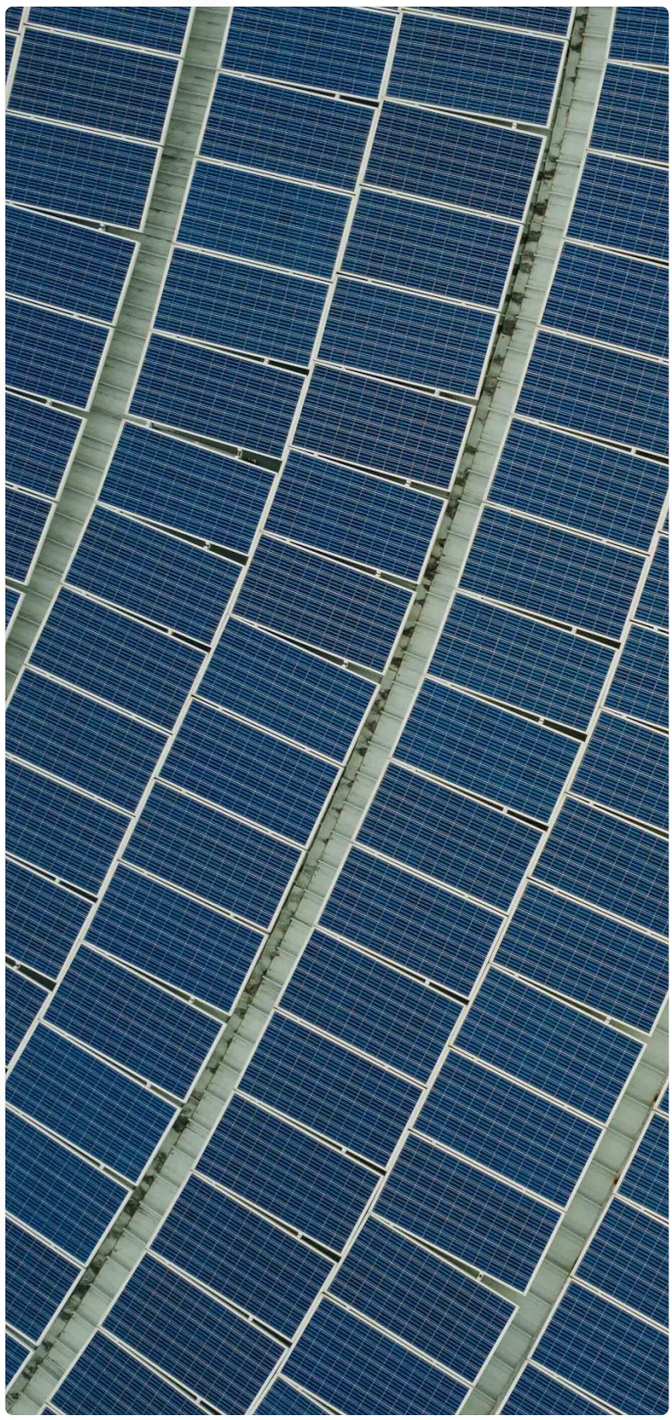
As with all signatories to the Paris Agreement, Tanzania has committed to reducing emissions.

Tanzania's fast-growing economy and rising population are exerting increasing pressure on the electricity grid, and, the government, in its National Energy Compact presented to the Mission 300 Africa Energy Summit, has set ambitious targets for 2030 including:

i. **connecting 8.3 million additional households to the grid;**

ii. **increasing electricity access from 46% in 2022 to 75%; and**

iii. **ensuring that 75% of its energy mix comes from renewable sources.**



To meet these targets, and achieve a diversified, stable and sustainable energy future, Tanzania will need to look towards its abundant natural resources: solar, wind and geothermal.

Following the full activation of all nine turbines at the Julius Nyerere Hydropower Project in April 2025, which added 2,115 Megawatts (MW) to the grid, Tanzania's operating domestic generation capacity reached 4,031.71 MW.

This represented an astonishing increase from March 2024 of 86.6%, and comprised 67.4% hydropower, 29.7% natural gas, 2.5% heavy fuel oil and diesel, 0.3% biomass and cogeneration, and 0.1% solar.

Tanzania supplements its domestic generation capacity with regional imports. In 2024, it imported approximately 1,264,290 MWh of electricity at an average cost of USD 0.085 per kWh.

In a Budget speech delivered by the Ministry of Energy on 28 April 2025, it was announced that a deal is being finalised to import 100 MW of electricity from Ethiopia, at a lower cost of USD 0.077 per kWh, with the intention of resolving persistent voltage drops in the north of Tanzania.

Tanzania's current energy mix is remarkable, in global terms, for the negligible contributions of coal and heavy fuel oil, placing it in an enviable position to meet the targets agreed in Paris. However, whilst natural gas is significantly cleaner than coal, the Intergovernmental Panel on Climate Change Sixth Assessment Report notes that a utility scale solar photovoltaic system will emit approximately one tenth the CO_2 emissions of natural gas generation over its life cycle.

The challenge is no longer just about increasing energy generation and grid capacity; it is also about ensuring energy security in an increasingly polarised world.

This requires building a resilient, balanced grid that supports economic growth, safeguards the environment and protects against market volatility.

Renewed drive in the exploration and development of its oil and natural gas reserves and infrastructure, and towards compressed natural gas, forms part of a general trend of energy diversification and away from the risks associated with energy imports. Whilst the dominance of hydropower as an energy source is marked, it compares favourably to is regional peers; hydropower comprises 97% of Ethiopia's 5200 MW capacity, and 93% of Uganda's 2,048.1 MW.

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Gas and Hydro

Gas

Tanzania possesses an estimated 57 trillion cubic feet of proven natural gas reserves, amongst the top ten in Africa. Private sector investment in the Songo Songo, Kiliwani North, Mnazi Bay and Mkuranga fields, the expected high levels of interest in the Fifth Licensing Rounder for Offshore Blocks No. 4/1B and 4/1C in Southern Tanzania, and the issuance of a development licence for the Ntorya gas field, indicate ongoing optimism for Tanzania.

Most of Tanzania's gas-fired power plants are operated by the state-owned Tanzania Electric Supply Company (**TANESCO**) (which is responsible for generation, transmission, and distribution), and rely on domestically produced natural gas, supplied through long-term Gas Supply Agreements (**GSAs**) with upstream producers.

Whilst GSAs offer a degree of pricing stability, full cost recovery and pricing flexibility is difficult. It is hoped that, in time, Tanzania will attract further private investment and active participation by multinational oil and gas producers; Mozambique's 450 MW Temane Gas Project, co-developed by Globeleq, Sasol, and Electricidade de Moçambique with support from international development financiers, may serve as a helpful model for a bankable PPA structure and execution discipline.

Hydro

Hydropower is Tanzania's largest energy source, with TANESCO operating multiple plants. Climate change, although beyond anyone's control or foresight, has led to unpredictable weather patterns and drought, which impact hydropower generation and cause widespread regional disruption.

Excess rainfall can cause operators to discharge water without generating power, run turbines below optimal conditions, and stress grid infrastructure. Where Hydropower Projects are under joint management, such as at Rusumo Falls and Kakono, competing needs and priorities must be carefully managed and coordinated.

Solar and Wind Energy: Untapped Potential?

According to the African Development Bank Group, Tanzania receives between 2,800 and 3,500 sunshine hours annually, with solar radiation levels of 4 – 7 kWh/m²/day. It also possesses the natural assets to harness wind energy with the World Bank estimating that areas like Kititimo (9.9 m/s) and Makambako (8.9 m/s) could provide an estimated 1,500 MW of wind power in total.

The Electricity Act 2008 Cap 131 (the **Electricity Act**) promotes private sector participation in solar and wind energy development.

Although historic solar development initiatives have tended to concentrate on donor-funded rural electrification and mini-grid efforts, projects like the 150 MW Kishapu Solar Plant (expected to deliver 50 MW by 2025) demonstrate that these policies are gaining traction, notwithstanding that all such complex infrastructure projects take time to negotiate and finance.

The intermittency of solar and wind energy poses challenges for grid stability and consistent baseload management.

To address this, there is a need for grid storage solutions; utility-scale storage has proved a difficult area to interest private investors due to the large-scale up-front costs involved.

The Energy and Water Utilities Regulatory Authority **(EWURA)** should implement a dedicated regulatory framework and regulatory incentives (such as capital subsidies and tax-based incentives for storage and firming technologies), which would enable cost-reflective tariffs and provide bankable Power Purchase Agreements (**PPAs**).

This will be essential not only to stabilise the grid, but also to ensure that variable renewables can reliably contribute to Tanzania's baseload power supply.

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Geothermal Energy - A Stable Baseload Source

Geothermal energy is a suitably stable baseload power complement to variable hydropower, solar and wind energy sources. According to the Tanzania Geothermal Development Company (the TGDC), Tanzania has an estimated geothermal potential of 5,000 MW, primarily concentrated in the regions of Mbeya, Songwe, and Arusha.

However, as noted in the World Bank's 2025 AES Compact and by industry trackers like the Global Geothermal Alliance, the sector has so far attracted less than USD 20 million in committed financing. The Energy Policy 2015 recognised the benefit of Tanzania's geothermal resources, leading to the development of the Ngozi geothermal plant in Mbeya.

Policy Shifts and Investment for a Resilient Energy Mix

According to Tanzania's 2021 Nationally Determined Contribution under the Paris Agreement, transitioning to a 100% renewable energy-driven grid by 2050 would require an estimated USD 160 billion of investment, as well as public financing, regulatory reforms, and private sector participation.

The key challenges to meeting this target include:

a. High investment costs.

b. Limited private sector participation.

c. Unforeseen impediments to implementation.

To address these challenges, Tanzania must prioritise the following policy and investment shifts:

a. Modernising Transmission Infrastructure

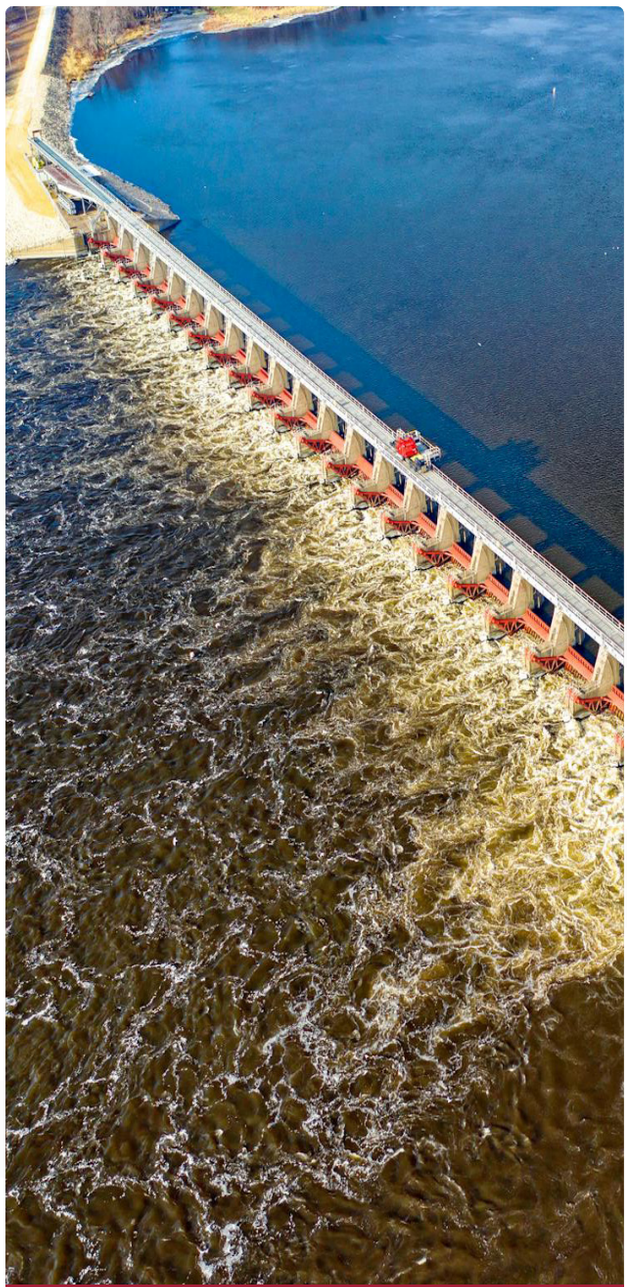
TANESCO must invest in upgrading the grid to accommodate renewables. Although the legal framework permits private sector participation in electricity distribution and transmission (to a limited extent), implementation has been slow and ad hoc. Policy reforms should, therefore, focus on operationalising these frameworks and fast-tracking mechanisms that allow for scalable private investment in grid infrastructure.

b. Attracting Private Investment

Tanzania should implement a structured IPP Procurement Programme, which includes clear regulatory guidelines, competitive tariffs, and effective risk-sharing mechanisms, to encourage competitive pricing. Concrete incentives such as tax breaks and exemptions on capital expenditure, or accelerated depreciation for imported equipment and tariff support on operating expenses, can significantly boost investor confidence by improving project bankability and ensuring stable long-term returns.

c. Enhanced Regulatory Framework

Tanzania should enhance existing regulatory frameworks, such as the Electricity Act and the Energy Policy 2015, to address the barriers to renewable energy deployment, including streamlining and fast-tracking licensing processes, ensuring cost-reflective tariffs, and providing clear guidelines for grid integration of renewable energy projects.



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Conclusion

Regulatory reforms, private investment, and modern grid infrastructure are key to unlocking the country's vast renewable energy potential. A balanced, resilient energy system will not only meet growing demand but also secure long-term economic and environmental sustainability.

Should you have any questions on investing in Tanzania's energy sector please do not hesitate to contact us.

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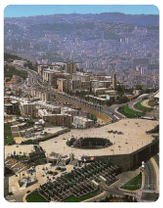

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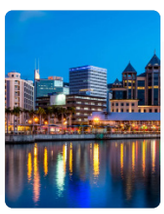

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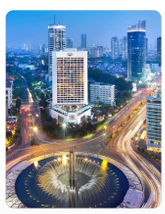

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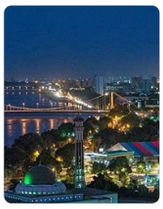

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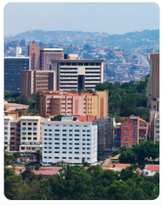

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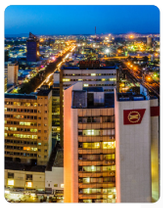

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