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Powering Africa's Digital Future: The Challenge of Energy for Data Center Development

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As the global economy increasingly digitizes, the infrastructure supporting this shift must evolve accordingly. In Africa, where the demand for digital services is surging — fueled by mobile penetration, fintech innovation, and a young, connected population — the case for expanding data center capacity is clear. However, the continent's potential is hindered by underdeveloped energy infrastructure, presenting a significant bottleneck.

Why Data Centers Matter

Data centers form the backbone of digital transformation, underpinning cloud storage, AI applications, e-commerce platforms, and digital government services. According to the International Energy Agency (IEA), global electricity consumption by data centers is projected to exceed 800 TWh by 2026, up from 460 TWh in 2022. A significant portion of this demand comes from generative AI and machine learning applications, which consume up to 10 times more energy than traditional searches.

Africa, despite being one of the fastest-growing regions for digital adoption, accounts for less than 1% of the world's data center capacity. The Africa Data Centres Association estimates that the continent requires at least 1,000 MW of new capacity across 700 facilities to meet demand. Yet, meeting this need will depend not only on digital infrastructure investments but also on solving a persistent and costly energy challenge.

The Energy Challenge: Costs, Capacity, and Volatility

Data center development will play a pivotal role in ensuring digital sovereignty and fostering a resilient, domestically-driven digital economy in Africa.

Sub-Saharan Africa exemplifies both the promise and the challenges of this transformation. While demand for digital services is accelerating, access to reliable energy remains a major obstacle. Many countries across the region grapple with limited energy access, high electricity costs, and outdated infrastructure characterized by frequent outages and heavy reliance on imported fuel sources.

This interplay of costs and reliability poses significant challenges for energy-intensive data centers. According to recent industry analysis, energy supply has emerged as the **single most critical**

issue facing digital infrastructure investors. As demand for electricity rises—driven by AI, cloud computing, and the digitization of public services—grid expansion is struggling to keep pace. As a result, securing **reliable, affordable power** is now a top strategic priority for data center developers and investors alike.

Despite these challenges, several sub-Saharan countries—including **Côte d'Ivoire**, **Gabon**, and **Senegal**—are making significant progress. While legacy grid issues persist, these countries are actively investing in **renewable energy projects** that could create the enabling environment needed for sustainable data center growth.

- **Côte d'Ivoire**: In June 2023, the country launched its largest solar power plant in **Boundiali**, delivering 37.5 MWp of capacity with an expansion target of 83 MWp by 2025. This project aligns with Côte d'Ivoire's national goal to source **45% of its electricity from renewable energy** by 2030.
- **Senegal**: The **Taiba N'Diaye Wind Farm**, commissioned in 2021, is West Africa's largest wind energy project, with a total capacity of **158 MW**. It plays a central role in Senegal's broader strategy to diversify its energy mix and reduce dependence on imported fossil fuels.
- **Gabon**: Though less frequently spotlighted, Gabon is actively positioning itself as a renewable energy leader in Central Africa. In 2021, the government launched a **hydropower development strategy** to boost clean energy capacity. Notably, the **Kinguélé Aval Hydroelectric Project**, co-financed by the African Development Bank and IFC, will add 35 MW of capacity upon completion and help stabilize electricity supply in the Estuaire province, home to Libreville—the capital and potential hub for digital infrastructure. Gabon has also attracted investment in **solar hybrid systems** for rural electrification, aiming to reduce diesel reliance and support the decentralization of energy access. These initiatives create a more stable power framework suitable for future data center deployment.

Lessons from Leading Data Center Markets

Morocco is emerging as a pivotal player in North Africa's data center market, driven by international energy investments and its strategic position connecting Europe, Africa, and the Middle East. Major global tech companies, including Oracle, Microsoft, Google, and Amazon Web Services (AWS), are drawn to Morocco's rapidly expanding digital economy and its modern infrastructure. The country is fostering a favorable environment for data center growth through government-backed initiatives that enhance ICT infrastructure, making Morocco an attractive destination for both local and international data center operators.

The country's stability and investments in renewable energy further position it as a sustainable choice for data center operations. With projects like those from Africa Data Centres, Gulf Data Hub, and N-ONE Datacenters, Morocco's growing data center ecosystem is poised to meet the increasing demand for cloud computing and data storage across North Africa and beyond. By 2028, Morocco is expected to be a key hub for digital services, offering world-class data center facilities.

Looking to other pioneers in the continent, countries like Kenya and South Africa offer valuable lessons. Kenya, rich in geothermal resources, has attracted significant investments such as a $1 billion geothermal-powered data center from Microsoft and G42. This clean, non-intermittent energy solution provides a reliable power source for data centers. Similarly, South Africa is leading solar integration, with projects like the 12 MW solar farm being developed by Africa Data Centres and Distributed Power Africa, designed to power critical centers like Johannesburg and Cape Town. Such initiatives showcase the potential for public-private partnerships to address challenges of grid

unreliability and position Africa as a growing leader in sustainable data center infrastructure.

These examples underscore the importance of strategic planning, infrastructure investment, and the integration of renewable energy sources in building resilient, sustainable data centers.

Policy and Legal Implications

From a legal perspective, developing a data center project requires meticulous contractual structuring. Long-term Power Purchase Agreements (PPAs) and Behind-the-Meter (BtM) agreements introduce project-specific risks — notably, the risk that delays in one part of the project (either the power plant or the data center) could lead to disruptions. Legal advisors must anticipate and address potential regulatory challenges, grid permitting complexities, and the need for future-proofing clauses to safeguard the project's viability.

A comprehensive review of existing legislation, identification of key obstacles, and potential time-consuming issues (such as securing land) are crucial steps in ensuring the project's success. Moreover, structuring energy supply projects to support data center operations is fundamental for ensuring the project's bankability.

Conclusion: A Call to Action

Africa stands at a crossroads: with the right investments in both digital and energy infrastructure, the continent could leapfrog into a new era of economic autonomy and technological resilience. However, if energy bottlenecks are not addressed head-on, Africa risks falling behind just as the world accelerates into a data-driven future.

The roadmap is clear: invest in renewables, embrace innovative models like BtM PPAs, partner across sectors, and establish clear regulatory frameworks. Energy is no longer a background concern for digital infrastructure investors — it is the cornerstone. Data center growth and power sector development must now proceed hand-in-hand.

For Africa, this is not just a technical challenge — it is a strategic imperative.

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