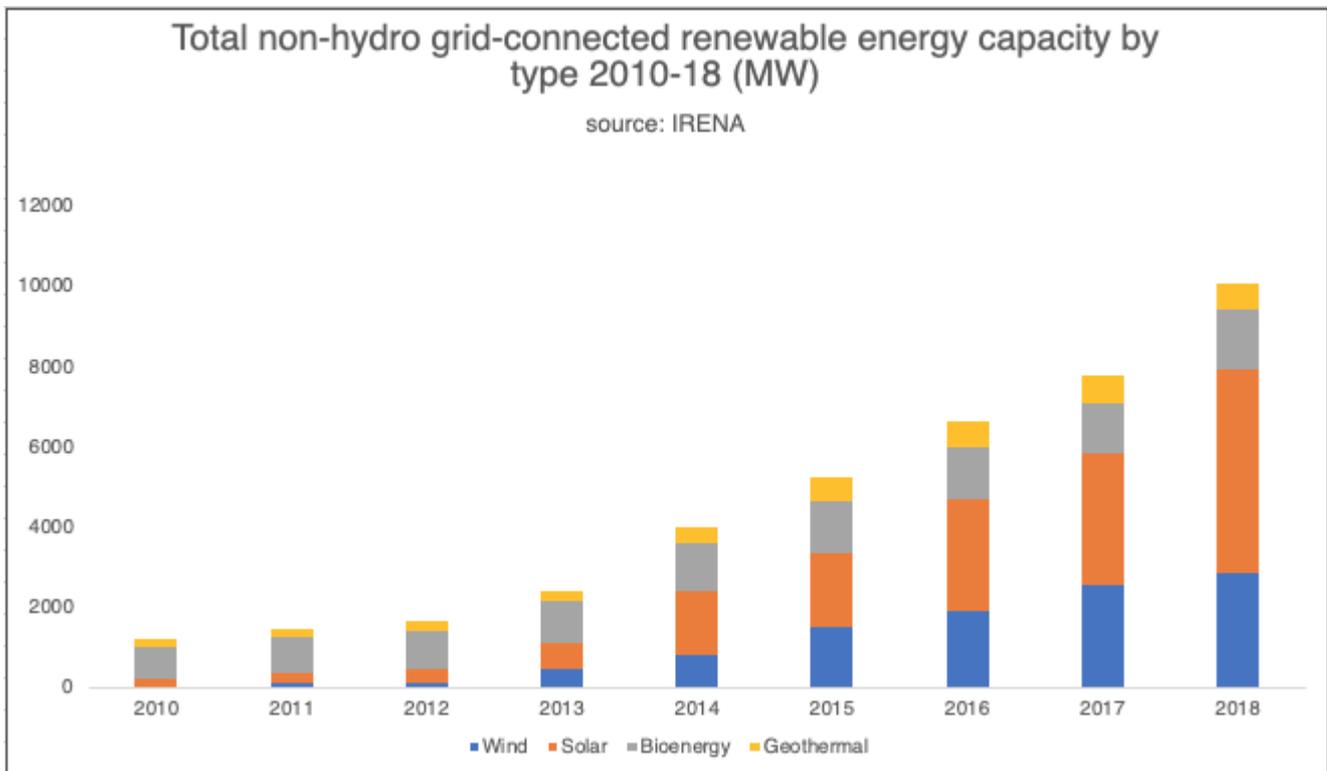


Renewable energy projects, particularly utility-scale grid connected developments, are emerging as an investment bright spot and capacity growth out-performer in sub-Saharan Africa’s wider power market. This will continue over the coming years, underpinned by strong underlying demand for electricity, the lower-risk profile of renewable energy assets compared with conventional power infrastructure, and the continued implementation of government support mechanisms, namely procurement auctions.

Amid a backdrop of slowly rising private sector involvement, notably via independent power producers, the deployment of renewable energy capacity, both on and off-grid, has grown rapidly in sub-Saharan Africa (SSA) over the last decade. According to data from IRENA, grid-connected renewable energy capacity in SSA (excluding hydropower) totalled just over 10 GW by the end of last year, compared to 1.2 GW in 2010.^[1]



To put this expansion into the context of the wider power sector, around 5.4 GW of non-hydro renewable energy capacity was installed between 2010 and 2016, according to the latest available comparative data, compared to 9.7 GW of thermal, 3.2 GW of hydropower and only 60 MW of nuclear power capacity. In terms of growth, the non-hydro renewable energy sector was a notable out-performer, with capacity increasing by more than 450% over the period. The contribution renewable energy makes to the overall electricity generation mix of the SSA region remains extremely small, however, due largely to the limited capacity factor of intermittent renewable energy.

Governments across the region are increasingly adopting regulatory frameworks, such as feed-in tariffs and, more recently, competitive auctions, in order to expand their domestic renewable energy sectors. While these regulatory frameworks still encounter contractual challenges, many have been successful in attracting investment.

South Africa has been the trailblazer in procuring renewable energy capacity in this regard, by introducing the auction-based Renewable Energy Independent Power Producer Procurement Programme in 2011. The majority of the large-scale grid connected renewable energy capacity that has been commissioned in SSA has been in South Africa (5.3 GW, or around 53% of the total). That being said, numerous other countries have followed suit, with notable examples including the World Bank-backed Scaling Solar initiatives in Zambia, Senegal, Madagascar and Ethiopia, and Uganda's "Get Fit" programme.

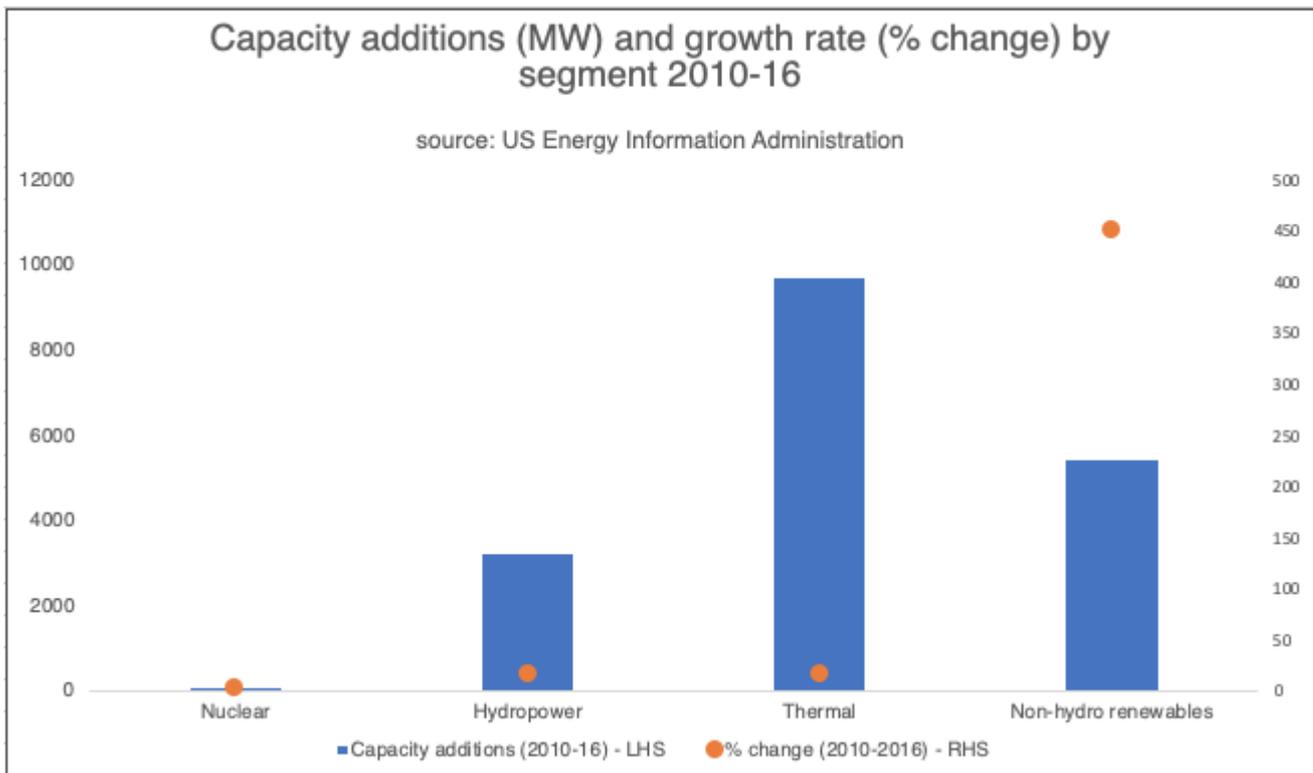
This, coupled with gradual improvement of investment climates more generally, will continue to be a major facilitator of growth in the sector, providing prospective developers with "bankable" projects in which to invest. The frameworks for renewables projects typically offer long-term, guaranteed power-purchase agreements, thereby ensuring stable returns.

Significant electricity deficit to capitalise on

The significant investment potential of renewables in SSA and indeed the wider power sector, is underpinned by strong underlying demand for electricity and the ongoing need to increase electrification rates.

It is estimated that more than 620m people across the SSA region do not have access to electricity and those who do are exposed to high costs and supply fluctuations.^[2] Low levels of electrification and a lack of installed capacity are the key reasons behind [the underserved nature of the region's power market](#). As an illustration of this, consumption per capita in the region is only one-seventh of the global average.

This high level of energy poverty in SSA stems in large part from the low levels of investment from both private investors and state utilities. Public sector utilities have historically been responsible for most of the investment in energy infrastructure across SSA. However, a lack of financial resources exacerbated by economically unviable tariffs and weak revenue collection have contributed to underinvestment and resulted in an underdeveloped power sector.



Lower risk profile and government support mechanisms

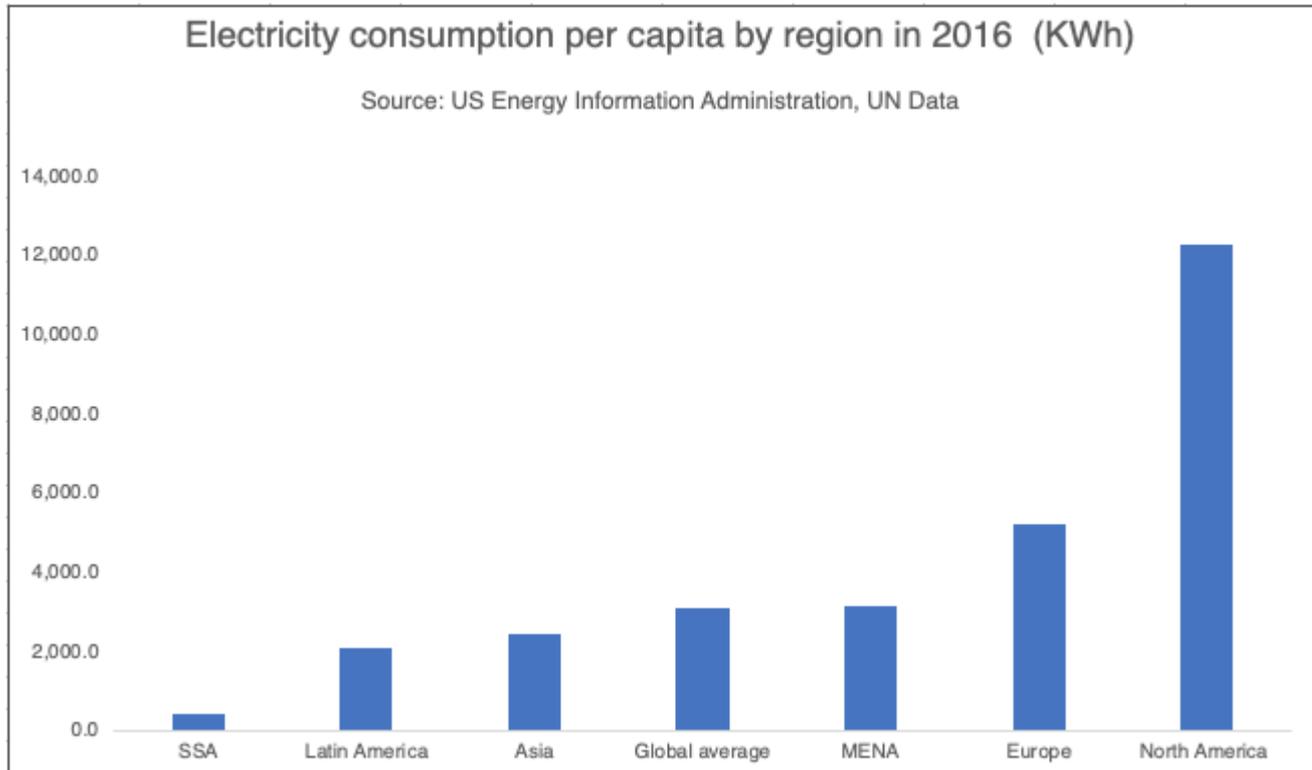
A combination of strengthening investor interest in SSA renewable energy markets and the

implementation of government procurement mechanisms will continue to sustain renewables growth in the coming years, particularly in terms of utility-scale, grid-connected projects.

Off-grid and micro-grid renewable energy systems are being increasingly deployed in SSA and are playing an important role in boosting electrification in the region. However, donor funding is still often required to fill the viability gap with these projects and investor appetite has generally been stronger for utility-scale projects.

In many countries across the region, utility-scale renewable energy assets are increasingly perceived as a more attractive investment opportunity compared to conventional power sector assets, given their lower risk profile. Renewable energy projects are typically quick to build; are not exposed to feedstock volatility risks (unlike thermal-fuelled power projects); and are scalable and well suited to more dispersed rural environments within SSA.

The sector also receives a high level of support from development finance institutions, including the World Bank and the African Development Bank. This is helping to reduce the risk of renewable energy projects through the provision of funding, guarantees, credit enhancement products and programmes aimed at strengthening institutional capacity.



The underserved nature of the market is exacerbated when future demand projections are taken into consideration. Macroeconomic and demographic fundamentals combined with increasing levels of urbanisation, industrialisation and electrification initiatives will see power demand in the region rise rapidly over the coming decades. According to a report by McKinsey, SSA electricity consumption in 2040 will be around 1,600 TWh, roughly four times the level recorded in 2010.^[3]

Large project developers to capitalise

Despite the attractiveness of renewable energy in SSA, there are still pertinent risks facing investors. Access to finance, the creditworthiness of the off-taker, grid infrastructure bottlenecks, including a lack of centralised grid network, and the high operational risks associated with developing infrastructure assets in SSA markets are commonly cited investment barriers.

In this environment, large project developers with the technical expertise and financial firepower to better withstand these risks and capitalise on economies of scale will outperform in terms of bidding

successfully in procurement auctions. In line with this, European utilities and renewable energy companies looking to diversify from their home markets, such as Enel Green Power, EDF Renewables, Mainstream Renewable Power, Engie and Neoen, have established a strong presence in the region's renewable energy markets, notably through South Africa and Zambia's auction programmes.

Furthermore, two notable GCC companies are well placed to capitalise given their focus on geographical diversification and their large size, namely the UAE's Masdar Clean Energy and Saudi Arabia's ACWA Power. Highlighting this, ACWA Power has been awarded the development the Gad and Dicheto solar projects in Ethiopia with a winning final price bid of \$0.025 per KWh for the electricity generated. This is the lowest ever tariff for a photovoltaic project in Africa (as of September 2019) and among the lowest globally. Meanwhile, Masdar currently operates a wind power project in the Seychelles and a 15-MW solar power project and rural solar initiative in Mauritania.

Georgina Hayden is an energy consultant and co-founder of research and analysis firm, North Shore Analysis. She has a special interest in the low carbon economy, and the challenges and opportunities facing stakeholders operating in an increasingly digitalised, decarbonised and decentralised energy system. Before that, she was Head of Power & Renewables Research at Fitch Solutions. She holds a master's degree in Geopolitics, Territory and Security from King's College London.

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