

RENEWABLE ENERGY—AFRICA’S NEXT “MOBILE” REVOLUTION?

By George F. Ward

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Wind turbines are being used to generate electricity near the small town of Darling, situated on the outskirts of Cape Town, South Africa. (Source: AP Photo/Schalk van Zuydam.)

Ambassador (ret.) George F. Ward is editor of Africa Watch and a Research Staff Member at the Institute for Defense Analyses.

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Jubilee Alliance Party profile picture and CORD poster from each party’s Facebook’s page.



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IDA’s three federally-funded research and development centers provide objective analyses of national security issues and related national challenges, particularly those requiring scientific and technical expertise.

IDA’s Africa team focuses on issues related to political, economic, and social stability and security on the continent.

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The Dimensions of the Power Challenge

According to the [International Renewable Energy Agency](#), in 2013, 160 gigawatts (GW) of power-generation capacity existed in the African continent as a whole. Of that total, 100 GW came from aging plants that from a technical point of view should be retired before 2030. Yet demand projections suggest that Africa will need 610 GW of installed power-generation capacity by that year. Building power-generation facilities is only one part of the challenge. Another major part is connecting power plants to consumers through transmission lines. Given the vast distances involved and the predominantly rural nature of Africa’s population, the transmission problem is sometimes harder to solve than the power-generation one.

Still another challenge is the widespread maintenance by governments of [electricity](#) rates that do not reflect the cost of production. Without the prospect of an adequate return, investors are understandably loath to enter many African markets. In addition, governments will need to facilitate permitting procedures for construction of power plants and transmission lines.

Every country in sub-Saharan Africa will need a comprehensive plan that addresses all these aspects of the power challenge. At present, many governments have set power-generation goals, but few have identified the resources or formulated the integrated plans that will be necessary to achieve them.

The Surge of Renewable Power Sources

Africa’s [sources](#) of renewable energy include solar energy, wind energy, hydropower, geothermal energy, and various sorts of biomass. Today, approximately half of all the energy consumed in Africa comes from biomass—the burning of firewood and charcoal, usually in inefficient cook stoves. Hydroelectric sources represent less than 1 percent of total energy consumed, and solar, wind, and geothermal comprise even less. Looking solely at [sources of electricity](#), hydropower rises to around 20 percent of the total; biomass almost disappears as a factor; and solar, wind, and geothermal still contribute only on the order of 1 percent each. Fossil fuels, mainly coal, account for the rest.

This picture is beginning to change because of falling prices for renewables generally and because of better public-private planning in a few countries. As [Linklaters](#), a consultancy, notes, “renewable energy technologies are trending towards cost-competitiveness with fossil fuels and there is evidence to support cost parity in certain cases. Economic development and the deployment of renewable technology in Africa are now synergistic because of this movement towards parity.”

In its analysis, Linklaters uses as a metric the Levelised Cost of Power (LCOE), which is a unit representing the per-kilowatt cost of building and operating a plant over its assumed life cycle and at an assumed utilization rate. The conclusion: “at least at the lower end of the range [of costs], onshore wind, solar photovoltaic, biomass, hydropower and geothermal are all cost-competitive with fossil fuels, based on today’s costs and taking into account any future cost decreases.” This supports the [projection](#) by the International Energy Agency (IEA) that renewable energy will meet two-thirds of the growth in demand for power in sub-Saharan Africa by 2020.

The South African Experience

Achieving sustained growth in renewable electric generating capacity will depend on the capacity of sub-Saharan African countries to combine effective government planning and market incentives. Currently, significant, program-driven growth in renewable energy is limited to a [few countries](#) such as South Africa and Kenya. South Africa’s Renewable Energy Independent Power Producers Procurement Program ([REIPPPP](#)) is perhaps the best example of the sort of agile and innovative policy that is needed. The REIPPPP includes a market-based bidding process for independent power producers; agreements by the national power company, Eskom, to purchase the power; and framework support agreements by the government.

In five bidding cycles since November 2011, the REIPPPP has contracted for more than 6.3 GW of renewable energy from 102 projects, and wind projects comprise more than half the total capacity. The program projected that nearly 3 GW would be connected to South Africa’s grid by the end of 2016. Notably, each bidding cycle has seen a reduction in prices for solar and onshore wind energy: the average bid price for solar power [declined](#) from 3.44 South African Rand per megawatt in the first REIPPPP bid cycle to .85 Rand in the fourth cycle.

The Challenges Ahead

Despite Africa’s abundance of renewable energy sources, significant challenges remain. All the renewable resources—hydro, solar, wind, bioenergy, and geothermal—are either intermittent (solar and wind) or unevenly distributed (hydro, geothermal, and biomass). Large-scale hydropower is possible in only a few countries such as the Democratic Republic of the Congo and Ethiopia. Geothermal sources have so far been exploited only in the Great Rift region in Kenya. Many renewable sources are located far from the urban areas that produce most of the demand for electricity, so costly transmission systems are required. And it is unlikely that the African electric grid will reach many remote rural areas in the next decade. Small-scale solar, wind, and hydro can provide interim solutions in those areas at the mini-grid and household levels.

Conclusion

Given the aforementioned challenges and Africa’s rapidly growing demand, it is likely that new production of renewable energy will play an increasingly important, but not exclusive, role in meeting sub-Saharan Africa’s power needs. Renewables will be an essential part of the African power solution, but not revolutionary in the way that mobile technology came to dominate African telecommunications. Especially when the sun does not shine and the wind does not blow, Africa will continue to need fossil fuel generating capacity. This capacity will [also need to grow](#), even if not as rapidly as renewable energy production, in the march toward meeting the continent’s electricity needs.

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Jubilee Alliance Party profile picture and CORD poster from each party's Facebook's page.

Background: History of Violent Elections

Kenya, a country of [46](#) million located in East Africa, has had an extended [history](#) of violence surrounding elections since its move to multiparty politics in the early 1990s. Kenya's most recent and intense electoral crisis took place after the December 2007 vote, when communal violence left up to [1,200](#) killed and 600,000 displaced. The violence was ended by a power-sharing agreement signed in early 2008 between former President Mwai Kibaki and Odinga, who became prime minister under the coalition government. The 2013 elections, which put an end to the power-sharing period, pitted Odinga against Kenyatta. At the time, Kenyatta faced charges of crimes against humanity at the International Criminal Court (ICC) for his alleged involvement in the 2008 post-election violence (the charges were later dropped). Despite some outbreaks of violence surrounding the poll, Kenyatta prevailed in a tight, but much [less](#) violent, election than in 2007.

Political Landscape Before the 2017 Election

Once the Jubilee Alliance was in power, some [cracks](#) emerged within it, especially after the ICC dropped charges against Kenyatta in 2014 but continued their case against Deputy President William Ruto. When the charges against Ruto were [vacated](#) in April of last year, however, the Jubilee Alliance solidified and [strengthened a previously loose alliance](#), becoming a formal party in September 2016. Kenyatta and the Jubilee Alliance are running on a [platform](#) of economic growth, stability, and education. It will be difficult for Odinga and the opposition to unseat Kenyatta in August, given the ruling party's ostensible unity following the ICC saga. But the opposition's chances should not be discounted, especially if it is able to form a united opposition coalition, which appears to be in the works. Odinga and several other opposition figures, including Musalia Mudavadi, Kalonzo Musyoka, and Moses Wetang'ula, are in discussions about forming a cohesive umbrella coalition, to be called the [National Super Alliance](#) (NASA), to take on Kenyatta and Ruto. Big questions remain, however, about who would ultimately lead such a grouping, as Odinga, Mudavadi, Musyoka, and Wetang'ula are all currently [vying](#) for the top spot. The opposition's main [critiques](#) of the Kenyatta administration are that it is corrupt, has doled out government positions based on ethnicity, and lacked sound pro-economic growth policies.

Rising Tensions and Fresh Memories of Violence

Memories are still fresh from the 2007 poll and its ensuing violence. Just last month, Kenyatta [told](#) Kenyans: "I do not have to remind you what disunity looks like. We know all too well what happened the last time we failed to treat each other as one family." Increasing [tensions](#) between the ruling Jubilee Alliance and the opposition have stoked fears of a rerun of the 2007 violence in the 2017 elections. A [fistfight](#) broke out in parliament in December 2016 during debates over several election laws, which the opposition believes the ruling party will use to tilt the election in its favor. In June of that year, eight politicians from both Jubilee and CORD were arrested on hate speech allegations. And in May [five](#) people were killed in clashes between opposition demonstrators, who were protesting the makeup of the country's electoral commission,

and Kenyan security forces. The ruling party eventually capitulated on the issue of the electoral commission, agreeing to revamp its composition in August. But it appears the intense political maneuvering from both sides has come at a price. According to a recent opinion poll, up to 60 percent of the Kenyan population [cited](#) election violence as their biggest worry of 2017.

Conclusion

Given the [benefits](#) of incumbency, the ruling party's unity, and the expected backing from the large Kikuyu and Kalenjin ethnic groups (Kenyatta is a Kikuyu, Ruto a Kalenjin), the Jubilee Alliance appears to be in the driver's seat for the 2017 elections. As [argued](#) by political scientist Nic Cheeseman, a united opposition may stand a chance. But time is running out for the opposition to get its house in order before the election; the longer the opposition waits to do so, the more difficult it will become to form a strong and cohesive coalition. Regardless of how the next eight months play out, rising tensions and widespread fears of electoral violence suggest that the prospect of poll violence is real and that Kenya's regional and international partners should keep a close eye on Kenya as the vote nears.

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