

AFRICA

The solar power market in Africa

How will the Paris Agreement on climate change affect the development of solar power across Africa? Lawyer Tom Eldridge says that will depend largely on the scale of the project.

Well documented and startling in their magnitude, the hard facts and figures are clear for all to see. 600mn African people are classified as energy poor. And with two out of every three people having no access to power at all, there is an almost incomprehensible electricity shortage in the continent. This shortage is across the scale of generation, transmission and distribution assets. Yet, conversely, sunlight is plentiful, and so is the availability of land on which to build power generation assets.

As part of the global consensus under the Paris Agreement, African countries are now legally committed to a carbon-reduced future. Leadership (both political and business) is now challenged to look to solar (along with other forms of renewable electricity generation) to best address

electricity shortages, as one of the most immediate, efficient and, in the context of the Paris Agreement, acceptable resources available.

Immediacy is key: without diminishing the severity of the risks faced by many industrialised countries, including the UK, in 'keeping the lights on' in a post-carbon world, the priority for African leadership (as with many other developing regions) is keeping people alive today.

African solar – the current situation

Recent solar developments in Africa present an impressive summary of projects, technologies, regulatory and fiscal systems and incentives. These are attracting a range of developers, investors and consumers. From one of the world's largest concentrating solar power (CSP) solar projects, to an array of individual home systems, Africa has seen a material increase in solar powered generation.

The mighty

No discussion on African solar should begin without an acknowledgement of the massive Noor solar complex being developed by the Moroccan Agency for Solar Energy (Masen) in Ouarzazate, on the edge of the Moroccan desert. The complex covers an area the size of two hundred football pitches. With

three planned phases using CSP and a new variant on CSP technology, it will be capable of generating 350 MW of electricity with an intended storage capacity of up to seven hours.

Following the successful phase one opening and construction commencement of phase two, Masen announced last November plans to develop two further PV and CSP plants, with combined generation of 400 MW. The announcement reinforces the Kingdom's ambitions, formalised within its Paris Agreement commitments, to utilise solar for electricity generation. Significantly, Morocco's ambitions extend beyond a solely domestic market with a hope of one day exporting power to Europe.

The mini

The micro solutions powering homes, schools and business across Africa must receive similar attention. The dramatic decrease in the global cost of PV panels has been complemented with the following range of developments:

- advancement in battery and storage capacity;
- improvements in electrical appliance efficiencies (such as LEDs);
- increases in security arrangements for installed

Small-scale solar power provides a cost-effective off-grid solution for rural areas

Photo: Shutterstock



- panel systems;
- availability of 'lift and shift' arrangements providing for greater mobility;
- the provision of dual/hybrid energy supply services and systems combining PV panels with, for example, diesel generators and, perhaps most significantly; and
- deployment of a range of mobile payment systems using cellular and satellite technology, allowing for pay-as-you-go arrangements which support businesses that can install and sell electricity direct to households.

These developments are not specific to Africa. But their deployment, as vital off-grid or mini-grid solutions, has been enormously important in an attempt to practically address programmes for rural electrification.

In between the mighty and the mini
Sitting in between the mighty Masen and the entrepreneur providing solar home systems to local villages is the impressive range of utility-scale PV projects across Africa. These projects are founded on a spread of feed-in tariff and power purchase commitments, each underpinned by national or regional legislation and regulation.

South Africa is a stand-out country in this regard, not just in an African context, but also in a global sense. Having implemented five rounds of renewable energy procurement through its Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), South Africa has been ranked tenth globally for the deployment of utility-scale solar power. In addition, the GET FIT Program seeks to attract similar utility-scale deployment of solar and other renewable technologies in the East African region.

In terms of individual projects, the 8.5 MW PV project developed by Gigawatt Global in Rwanda was East Africa's first utility-scale solar project. As recently as last December, Uganda announced the start-up of a 10 MW PV plant in the north-east of the country, generating electricity for 40,000 households.

Meanwhile, the Nigerian Bulk Electricity Trading company last summer signed Nigeria's first solar power purchase agreement as part of a programme involving more

than ten developers with an aggregate capacity of 975MW of utility-scale solar power.

Last, the impressive Scaling Solar programme, developed and innovated by the World Bank Group, is seeking to combine expertise around advisory, policy, procurement, legal, financing and practical services in a way to deliver privately funded PV solutions – grid-connected and operational – within two years, thus addressing concerns of timing and delivery of larger-scale PV. In the summer of last year, the auction in Zambia under this programme resulted in bids being won on the basis of record low-cost solar tariffs. To date, Senegal, Madagascar and Ethiopia make up the other countries joining the programme.

The Paris Agreement

Opinion around the impact of the Paris Agreement on Africa has been mixed. On the positive side, the commitment from the more developed countries to allocate finance to developing countries to assist them with their climate adaptation and mitigation needs is formalised in a pot of \$100bn. The Paris Agreement further provided for this pot to be revised upwards from 2025. But the requirement for the developing countries to provide their own contributions has not been met so favourably. The African Adaptation Gap Report of the UN Environment Report says that African countries must, between them, raise \$3bn a year between 2016 and 2020.

A further aspect of the Paris Agreement that has received commentary in an African context concerns the substance and ongoing scrutiny of individual countries' Intended Nationally Determined Contributions (INDCs). These set out a country's planned contributions for long-term climate action.

Once a country has ratified the Paris Agreement it must submit a more final Nationally Determined Contribution (NDC). The Paris Agreement says that these plans will be updated every five years. Prior to the Agreement coming into effect last November, all African countries (except Libya) had submitted INDCs, with 14 countries having ratified the agreement and submitted their NDCs.

Concerns raised around these plans focus on the ability of the countries to implement them and meet their goals and aspirations without a significant resourcing commitment from the developed

countries in the form of financing, technology transfer and capacity building.

Demand for power

Arguably, it is just too soon to say whether the Paris Agreement will have a positive or negative impact on the future of solar deployment in Africa. The INDCs and NDCs will be tested over time. But in any discussion on Africa it is hard to look beyond the desperate need for immediate accessibility to electricity, regardless of its generation source. It thus becomes a hugely controversial and sensitive issue. The problems of financing new large-scale power generation and the associated transmission and distribution implications remain.

The priority of the Paris Agreement is to focus on alternative generation sources to address the carbon issue. African leadership is faced with this commitment at a time when in some cases access to hydrocarbons and coal is more immediate. Some leadership has focused on the very small, almost negligible, contribution African countries have made to carbon emissions in the past and will do on an ongoing basis. In this context, the Paris Agreement with its legal and financial commitments imposed on these countries, represents an unfair position. Why should those countries invest in new technologies when their own current resources are cheaper and more available?

The future of solar deployment in Africa will be driven more by immediate electricity demand than by global regulation around carbon reduction. The smaller-scale, off-grid PV solutions should continue to receive the support necessary as the best means of providing quick and basic electricity to households and small businesses. At the same time, governments, utilities, international donors and multilateral agencies and investors should try to address the funding and political issues inherent in large, grid-based solutions. ●

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