



## Year in Review: Off-grid 2018

2018 was another important year for the various segments of the burgeoning off-grid industry. It was a year less about raising money than investing it to build the foundations of future growth.

**T**he off-grid sector is going through an exciting period of expansion, partnership, innovation and learning and as long as investors continue to believe in the opportunity, the technology and the business models, the sector should prove resilient to bumps along the road.

Most large solar home system companies now have established business models and product lines, which they are taking to new markets using tested methods of raising financing. Large equity raises in 2017 and early 2018 as well as the entry of huge European utilities into the market, notably Engie and EdF, provided funds for the consolidation of businesses and expansion into new markets outside of East Africa. Companies are also moving into the next phase of product development, looking at larger, more sophisticated systems able to manage power from multiple sources including the grid, small mini-grid systems and systems for small businesses.

There is still scepticism about the sustainability of the business model in some quarters, with concerns about the cost of gaining and maintaining customers and the quality of portfolios. This has led to a focus on service add-ons such as television services and partnerships with established local businesses. Theft and gaming the systems has also been an issue for some companies and the sector is potentially vulnerable to new regulation, particularly around consumer finance and interest rates.

Development finance institutions (DFIs) have also begun to implement much larger programmes in off-grid rural electrification, finding their niche in geospatial mapping and incentivising companies to operate in harder to reach areas. There is a growing multiplicity of funds established by DFIs to invest in the sector and an increasing focus on financial innovation.

Perhaps counter-intuitively, the much longer established commercial and industrial market is at a somewhat earlier stage of transition to technologies and business models. Traditional diesel and rooftop solar installers have found their businesses buoyed by increasing grid tariffs, but new models are emerging which aim to provide fully integrated technical and financial solutions.

Two models have found traction. New debt and equity funds have been set up for commercial and industrial projects, with the aim of raising money upfront to build portfolios of projects capable of sustaining longer term commercial debt and bonds.

Most of these funds have only been through one or two raises and it remains to be seen how sustainable and scalable the model will be.

Companies leasing systems have also been gaining momentum. Advancing the well-established model to new technologies has been particularly effective in markets like Ghana, where the cost of power is high. Similarly, rental giant Aggreko as well as competitors like APR Energy have been developing much larger solar-diesel-battery and diesel-battery options capable of powering large off-grid mines.

The mini-grid market serving rural communities has proved challenging but considerable strides have been made through pilot projects and a growing body of research and experience. Non-governmental organisations and universities still play a crucial role in this sector, but the number of mini-grids operating is growing and developers are reporting broadly positive results, although profitability has so far been limited. Limited opportunities for load growth in rural agricultural communities has resulted in some ad hoc attempts to actively increase demand, with mixed results.

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## Market developments

# World not on track to meet energy targets

The United Nations' global target of universal access to energy by 2030 will not be met, but the latest tracking report shows real gains in electrification in poorer countries, and progress overtaking population growth for the first time in sub-Saharan Africa, writes Dan Marks

The world is not on track to meet the United Nations' seventh Sustainable Development Goal (SDG) of access to affordable, reliable, sustainable and modern energy for all by 2030, according to Tracking SDG7: The Energy Progress Report. The report, which was formerly the Sustainable Energy for All (SE4All) initiative's Global Tracking Framework, was launched on 2 May at the SE4All Forum in Lisbon.

The report is published by the World Bank with input from the International Energy Agency, the International Renewable Energy Agency, the United Nations Statistics Division and the World Health Organisation.

SDG7 has five targets to achieve by 2030; to ensure universal access to affordable, reliable and modern energy services; substantially increase the share of renewable energy in the global energy mix; double the rate of improvement in energy efficiency; enhance international cooperation to facilitate access to clean energy research and technology; and expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries.

According to the report, current progress falls short on all fronts, although "real gains are being made in certain areas". In particular, the report praises the expansion of access to electricity in poorer countries and "progress overtaking population growth for the first time in sub-Saharan Africa". Energy efficiency is improving in the industrial sector. While renewable energy has made impressive gains in the power sector, these gains have not been matched in transport and heating, which account for 80% of global energy consumption between them. Access to clean cooking fuels and technologies remains well off target, having been neglected by policymakers and failed to take off as a private market.

### Electricity access gains

The World Bank figures suggest that electricity access has increased from 83% to 87% since 2010 and is likely to reach 92% by 2030 on the current trajectory. This would leave 674m people worldwide without power in 2030. Forty countries have achieved universal access to power since 2010, including Egypt, Tunisia and Morocco. Not unsurprisingly, sub-Saharan Africa has the largest access deficit, alongside South Asia.

Lack of access to power is concentrated in the 20 countries with the largest access deficits, which account for 80% of the unelectrified population. Bangladesh, Ethiopia, Kenya and Tanzania show some of the strongest improvement, expanding access by at least 3% of the population between 2010 and 2016.

Kenya shows the highest rate of improvement globally by more than 2% each year than the next highest, in Bangladesh.

Access challenges are overwhelmingly experienced in rural areas, which account for 87% of people without electricity. Off-grid electrification has helped, but the benefits are limited to pioneering countries where off-grid solar power already reaches 5%-15% of the population. Identifying the barriers to implementing low-cost solar power is "a crucial priority for policymakers", the report said.

Affordability is another key challenge for access. In countries with low electrification rates, households often spend twice as much on electricity as in high electrification countries. Improving coverage and precision of household surveys is seen as a key focus for better understanding the quality of electricity and clean cooking services. Affordability and reliability cannot currently be accurately measured and figures on off-grid power are incomplete.

"The experience of countries that have substantially increased the number of people with electricity in a short space of time holds out real hope that we can reach the billion people who still live without power," said World Bank senior director for energy and extractives Riccardo Puliti. "We know that with the right policies, a commitment to both on-grid and off-grid solutions, well-tailored financing structures, and mobilisation of the private sector, huge gains can be made in only a few years. This in turn is having real, positive impacts on the development prospects and quality of life for millions of people."

### Clean cooking on the back burner

Some 3bn people, more than 40% of the world's population, do not have access to clean fuels and technologies for cooking, the report said. Progress since 2010 has also been limited, with access rising from 58% to 59% over the period. Household air pollution from inefficient stoves using unclean fuels are responsible for around 4m deaths/yr, with women and children most at risk.

To achieve the clean cooking fuel target, the rate of increase in access would have to grow from 0.5% currently to 3% from 2017 to 2030. On current trends, 2.3bn people will still be reliant on dirty cooking fuels and technologies by 2030. Again, sub-Saharan Africa is a poor performer. The region has seen population grow at four times the rate of access to clean cooking. Seven of the 11 countries where population has outpaced access are located in Africa.