

# The Impact of COVID-19 on the Off-grid Renewable Energy Sector in Nigeria

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The coronavirus (COVID-19) pandemic brought a dreadful start to the decade. Although the COVID-19 outbreak originated in Wuhan, central China, it has since spread to almost every country, causing over 120,000 deaths, and infecting around two million people globally as of April 16, 2020<sup>1</sup>. Moreover, the pandemic has triggered an unprecedented economic crisis as shown by the collapse of stock markets, slump in air travels, and major disruptions to global production and supply chain. The International Monetary Fund (IMF) projected that the global economy would contract sharply by -3% in 2020, with recovery expected in 2021<sup>2</sup>. Meanwhile, governments have responded with stimulus packages worth over \$9 trillion in order to limit the economic impacts of the pandemic<sup>3</sup>.

The pandemic has also disrupted the energy sector in fundamental ways. According to the International Energy Agency (IEA), oil demand plunged by over 30% as industries shut down and travels are restricted due to strict lockdown measures imposed across the world. As a result, oil prices dropped below \$30, a fall of almost 50% between January and March 2020, thanks to both a slowing global economy and an initial lack of coordination among major oil-producing countries over production cuts.<sup>4</sup>

Furthermore, the pandemic may slow the global energy transition. Analysts forecast disruptions in the global supply chain of both solar and wind technologies due to the lockdowns in China and other major economies. The Bloomberg New Energy Finance downgraded its 2020 global solar demand forecast from 143 to 108 gigawatts and noted that wind energy faces “considerable downside risks”.<sup>5</sup> However, others have claimed that low oil prices also present opportunities for governments to slash fossil fuel subsidies and strengthen carbon taxes in order to provide a level playing field for renewables to compete effectively. According to Fatih Birol, the Executive Secretary of the IEA, governments should “seize the opportunity” and put “clean energy at the heart of the stimulus plans to counter the coronavirus crisis”.<sup>6</sup>

While a lot has been written on the effects of the COVID-19 outbreak on energy markets, little is known about how the pandemic is disrupting the decentralized clean energy sector in sub-Saharan Africa (SSA), where around 600 million people lack access to electricity. During this period of lockdowns, access to reliable and clean electricity is extremely important not only for households’ wellbeing but also for powering healthcare centers at the forefront of responding to the pandemic.<sup>7</sup> In recent years, the use of off-grid solar solutions has become widespread across SSA and has been especially touted as a crucial vehicle for achieving reliable, affordable and clean energy access for all

(SDG7). Between 2019 and 2022, the off-grid solar is estimated to provide access to clean energy services for over 740 million people, mainly in Africa.<sup>8</sup>

This article provides a preliminary analysis of the mechanisms through which the COVID-19 pandemic is impacting the off-grid solar sector in Nigeria and sub-Saharan Africa at large. An online survey was administered among members of the Renewable Energy Association of Nigeria (REAN), a body of solar home systems (SHS) companies and mini-grid developers across Nigeria, to elicit their responses on the channels through which their businesses have been disrupted by the pandemic and their assessments of the long-term effects for business sustainability and energy access. Also, interviews were conducted with five experts working in energy consultancy, development agency, and the Rural Electrification Agency in Nigeria.

## The impact of COVID-19 pandemic on the Nigerian economy

Like other sub-Saharan African countries, the health

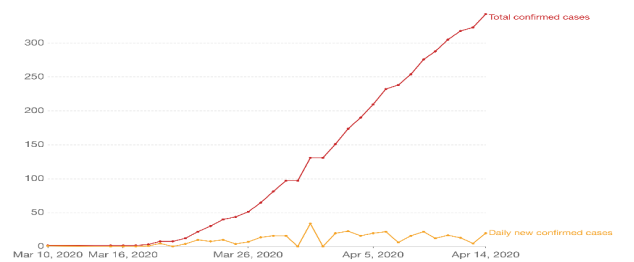


Figure 1: Total and daily confirmed cases of COVID-19 cases in Nigeria

impact of the pandemic is relatively low in Nigeria compared to Western countries. However, given weak health systems, crowded housing conditions, widespread poverty, as well as uncertainty over the future spread of the virus, the implications of the COVID-19 outbreak could be far-reaching in the country. As of April 15th, Nigeria has 343 confirmed cases of COVID-19 (Figure 1) but the number of new infections is rapidly rising. Some have argued that actual cases are much higher than the official figures due to low test capacity. The Nigerian government has imposed lockdown in Abuja and two other states

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See footnotes at end of text.

– Lagos and Ogun –, as well as restrictions in several other states, to curb the spread of the virus. Schools and airports have been shut across the country for several weeks.

Given that crude oil accounts for over 80% of public revenues and export earnings, the Nigerian economy has been hit hard by the pandemic. Crashing oil prices bring an enormous fiscal strain on the government, forcing it to cut projected expenditures in the 2020 budget. Between January and April 2020, Nigeria's foreign reserve has declined by \$4 billion, the largest drop in several years, while the Nigerian Naira is fast losing its value even as the Central Bank of Nigeria (CBN) struggles to prevent a precipitous devaluation of the currency.<sup>9</sup> Combined, these foreshadow an imminent economic catastrophe in the country. The Nigerian government has responded by launching the COVID-19 Fiscal Stimulus in order to support the economy.<sup>10</sup> Yet, this would be largely financed through the borrowing of \$6.9 billion from the World Bank and IMF due to limited fiscal space. Similarly, the Central Bank of Nigeria has announced a palliative package to encourage banks to extend credit to businesses to boost economic activity.

With an "inevitable" recession on the horizon in Nigeria, lower economic activity and heightened risks present significant challenges for the sustainability of the off-grid solar sector.

### The status of renewable energy in Nigeria

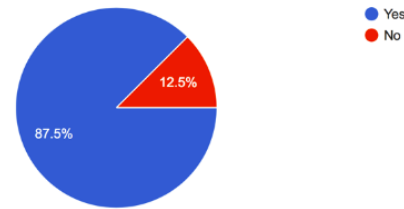
Electricity access remains a perennial challenge in Nigeria, where 77 million Nigerians lack access to electricity. Gas-fired power plants constitute 80% of electricity generation, while hydro-dams accounts for nearly all of the remaining 20%. Nigeria's non-hydro renewable energy resources have remained largely unexploited, with solar and wind energy accounting for less than 1% of electricity generation. Meanwhile, the country has high solar insolation levels, especially in northern Nigeria, vast landmass and strong wind speeds suitable for generating electricity using both solar panels and wind turbines. A recent article published in *Climate Policy* shows that standalone solar and hybrid mini-grids could provide modern energy access to over 88 million Nigerians by 2030<sup>11</sup>, helping to avoid \$14 billion annual spendings on diesel generator sets. However, achieving this requires increased investments into the off-grid solar sector, well-planned integration of distributed solutions into the energy infrastructure, and favorable policies.

Therefore, promoting access to clean energy is central to achieving and lifting millions of people out of poverty.

### The impact of the pandemic on Nigeria's off-grid solar sector

While it may be early to assess the full effects of COVID-19 pandemic on the off-grid clean energy sector in Nigeria, findings from this research provide valuable preliminary evidence on the nature of the disruptions facing the sector and the implications for clean energy

*Have you experienced delays in procuring solar components during the pandemic period?*

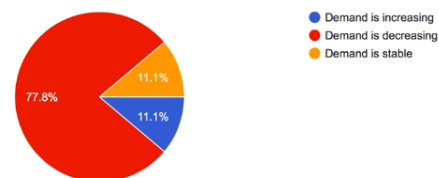


access in the country. We have organized the effects of the pandemic on the off-grid market under four themes: supply disruptions, demand shocks, shrinking investments, and slow energy access.

### Supply disruptions

The immediate impact of the pandemic comes from the supply side of the decentralized sector. Due to lack of domestic capacity to produce clean energy technologies, the Nigerian off-grid businesses rely on the importation of solar components from China, Europe, and the U.S. Given that production has been affected in major economies over the past several weeks, the supply chain of clean technologies in Nigeria has been significantly disrupted.

The survey results indicate that about 88% of solar off-grid operators have experienced delays while trying to import solar components (such as panels, batteries, etc.) since the outbreak of the pandemic four months ago. This is likely to result in a shortage of solar products that would worsen unless countries adopt a coordinated response to ensure global trade continues smoothly. The majority of the respondents also expect *How is the demand for your off-grid services changing as more people stay at home?*



more delays over the next 3 – 6 months as global trade is teetering from uncertainties amidst stranded shipments in China and other countries.

Another major challenge to the supply chain comes from a shortage of workforce during the pandemic. The off-grid sector is labor intensive involving collaboration among networks of solar installers, technicians, sales agents, and distributors. Due to safety reasons and travel restrictions, most off-grid businesses in many states have halted operations because of limited manpower across the industry.

### Demand shocks

The impact of the pandemic on the demand side of the Nigerian off-grid energy market is mixed but

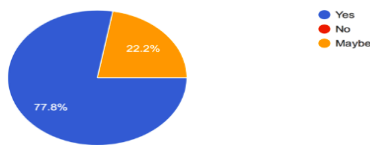
generally indicates a downward trajectory. Around 78% of respondents reported decreasing demand from customers in the last several weeks, with adverse implications for business continuity and resilience of solar companies.

Falling demand is traced to specific factors facing customers. On the commercial side, micro, small and medium enterprises (MSMEs) that use roof-top solar PV are closed, thus, their energy use is minimal. On the household side, declining demand is attributed to income slowdown affecting people due to restrictions on economic activity. Given that most clients are in the lower- or middle-income class, they face a financial trade-off between buying essential goods (such as food) and meeting other needs (such as solar power); obviously, customers are more likely to prioritize the former. As one respondent put it, “in the context of [poverty] where people are struggling to survive, energy is not going to be a top priority”. Moreover, travel restrictions make it harder for PAYGO<sup>12</sup> customers to reach sales agents to buy subscription cards for unlocking their solar solutions.

### Shrinking investments

Nigeria has one of the world's largest off-grid markets with the potential to generate \$8 billion in

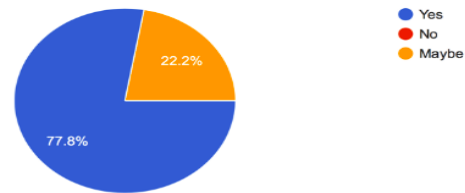
*Do you anticipate that your business will experience financial difficulties in the next 3 months and above?*



annual revenues<sup>13</sup>. However, investment into Nigeria's off-grid clean energy sector has been limited due to poor regulatory and policy frameworks, and lack of diversified financing instruments<sup>14</sup>. The COVID-19 pandemic is likely to shrink the already limited private investments in the off-grid sector by delaying ongoing projects and deterring new capital investments.

It was found that the pandemic threatens the financial sustainability of off-grid businesses. About 78% of the respondent reported that they anticipate experiencing financial difficulties over the next 3 months or so. Specifically, three factors compound financial risks in the sector. First, supply chain disruptions will limit sales growth over the next several months. Second, falling demand due to financial troubles facing customers is likely to cause liquidity shortfall in the off-grid market. Third, strict travel measures make it difficult to run businesses smoothly and complete ongoing projects. For instance, a respondent, who heads an energy consultancy firm in Lagos, reported that a visit to a mini-grid project site in Southwest Nigeria has been indefinitely postponed due to travel restrictions, thereby putting the project on hold. These factors have the potential to grind the

*Do you think that the pandemic would slow progress towards SDG7 in Nigeria?*



sector to a halt.

Moreover, the pandemic has led to cancellations of planned conferences and indabas which traditionally connect off-grid enterprises with potential investors. About 67% of respondents know of a business event that has been canceled due to the pandemic. This is expected to reduce new investments and financial deal-making opportunities in the sector. Although online technologies are increasingly used to facilitate communications among different stakeholders in the industry, the pandemic would significantly reduce new physical investments due to the need for site inspections, solar installations, maintenance, among others.

### Slow energy access

Energy access is central to human development and lies at the heart of achieving other SDGs such as zero poverty (SDG1), health and wellbeing (SDG3), and women empowerment (SDG5)<sup>15</sup>. Yet, energy access is not immune to the impacts of the pandemic. While it is premature to make a definitive claim, it is generally believed that the pandemic would slow progress towards achieving the SDG7 in Nigeria, with devastating consequences for millions of people without electricity. However, this depends on the length of the lockdown in Nigeria as well as the extent to which global trade in clean technologies is impacted by the pandemic. Besides, some expect that the pandemic would only have temporary effects on the off-grid businesses without having long-term crippling impacts due to the sheer size of the Nigerian off-grid sector.

Furthermore, assessing the effects of the pandemic on energy access would require observing how it affects the operations of the Rural Electrification Agency (REA), Nigeria's government department responsible for expanding access to electricity in remote communities, mainly using off-grid solar, as well projects run by development agencies such as the Solar Nigeria Program and Power Africa. A staff of the REA said that the agency is only operating “skeletal services” involving limited managerial activities. Project monitoring and evaluation have been canceled which would obviously delay the disbursement of grants to mini-grid developers. Although the REA released a statement that it would facilitate the disbursement of grants to mini-grid developers during the pandemic period, there has yet to be any payment and it remains unclear whether the agency can operate efficiently remotely. More broadly, the pandemic would be



detrimental to plugging the huge electricity access gap in Nigeria.

In addition to its enormous health and economic impacts, the COVID-19 pandemic is taking its toll on the off-grid clean energy sector in Nigeria and Africa at large. This article showed that the pandemic has led to supply chain disruptions, declining demand, falling investments and reduced energy access in the Nigerian off-grid renewable energy sector. Given the bleak economic outlook of the country, the off-grid solar industry is likely to trail behind even if the economy reopens in the nearest future. Yet, the off-grid industry, financial institutions and governments across sub-Saharan Africa can help keep the lights on for vulnerable people through a coordinated response.

Off-grid energy companies should prioritize the continued provision of power to communities as long as it is feasible, even in the event of non-payment by some customers. This will ensure that energy access is available to support economic activity and limit the economic damage on vulnerable customers at this difficult time. Customers should be given the option to pay at a later date or even better, the government should subsidize the bills of poor customers. The off-grid industry should also leverage technological solutions (e.g., AI and mobile money) to sustain efficient operations without putting their workforce at risk of the virus.

Financial institutions can support the off-grid sector through the provision of long-term finance. As Nigerian banks often do not lend to off-grid businesses, this is the right time for them to extend vital loans to help the sector to thrive financially. Banks could also extend maturities of existing loans without additional interest payments. For instance, the latest decision of All On<sup>16</sup>, an off-grid clean energy impact investment company, to suspend interest payments on all its loans to solar companies in Nigeria throughout Q2 2020 is highly commendable and should be followed by other investors. Similarly, multilateral agencies like the World Bank need to provide more grants specifically targeting decentralized renewable energy companies, making them part and parcel of responding to the pandemic and building resilience in poor African countries.

The government's first line of support is to facilitate the clearance of clean energy products at the ports and to allow their easy transportation nationwide to minimize supply chain disruptions. This is crucial because solar companies often complain about long queues and customs delays as major logistical challenges. The government could also support solar companies by lifting import taxes on clean energy technologies, extending concessional loans and emergency grants, and ensuring favorable policies and regulatory frameworks. It is encouraging that the Nigerian government is collaborating with the off-grid energy industry to deploy solar to power in COVID-19 response facilities, potential isolation centers, and other healthcare centers. Given that less than 28% of health facilities in sub-Saharan Africa have reliable electricity, this is an innovative effort that would not only help in ensuring constant power in health centres

but would also create new demand in the off-grid industry, helping companies to remain afloat.

More broadly, the government should recognise energy access as an essential service and facilitate strategic operations of off-grid solar companies especially in rural areas. Lastly, the government should encourage domestic production of clean energy technologies in order to mitigate against future supply chain disruptions and create green jobs in the decentralised renewable energy sector.

## Footnotes

<sup>1</sup>Max Roser, Hannah Ritchie and Esteban Ortiz-Ospina (2020). Coronavirus Disease (COVID-19) – Statistics and Research<sup>1</sup>. Retrieved from: <https://ourworldindata.org/coronavirus> [Accessed April 14, 2020]

<sup>2</sup>International Monetary Fund (2020). World Economic Outlook, April 2020. <https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020>

<sup>3</sup>Goergieva, Kristalina (2020). Confronting the Crisis: Priorities for the Global Economy. <https://www.imf.org/en/News/Articles/2020/04/07/sp040920-SMs2020-Curtain-Raiser> [Accessed April 13, 2020]

<sup>4</sup>International Energy Agency. (2020). The global oil industry is experiencing a shock like no other in its history (2020). Put Clean Energy at the Heart of Stimulus Plans to Counter the Coronavirus Crisis. <https://www.iea.org/commentaries/put-clean-energy-at-the-heart-of-stimulus-plans-to-counter-the-coronavirus-crisis> [Accessed April 10, 2020]

<sup>5</sup>Bloomberg New Energy Finance (2020). How Virus Outbreak May Change Solar Manufacturing <https://about.bnef.com/blog/how-virus-outbreak-may-change-solar-manufacturing-qa/> [Accessed April 12, 2020]

<sup>6</sup>Birrol, Fatih (2020). Put Clean Energy at the Heart of Stimulus Plans to Counter the Coronavirus Crisis. <https://www.iea.org/commentaries/put-clean-energy-at-the-heart-of-stimulus-plans-to-counter-the-coronavirus-crisis> [Accessed April 10, 2020]

<sup>7</sup>Ogunbiyi, Damilola (2020). Here's why energy security is a vital tool in tackling a pandemic. <https://www.weforum.org/agenda/2020/04/pandemic-energy-access-coronavirus/> [Accessed April 8, 2020]

<sup>8</sup>GOGLA (2019). Investing in the solar off-grid sector: What you need to know. Utrecht, Netherlands.

<sup>9</sup>Steers Data (2020). The Impact of COVID-19 on the Nigerian Economy. Lagos, Nigeria.

<sup>10</sup>Ministry of Finance (2020) <https://statehouse.gov.ng/wp-content/uploads/2020/04/HMFBNP-Final-Press-Statement-on-Responding-to-the-COVID-19-06.04.2020-v.7.docx-1.pdf>

<sup>11</sup>María Yetano Roche, Hans Verolme, Chibuike Agbaegbu, Taylor Binnington, Manfred Fishedick & Emmanuel Olukayode Oladipo (2019) Achieving Sustainable Development Goals in Nigeria's power sector: assessment of transition pathways, Climate Policy, DOI: 10.1080/14693062.2019.1661818

<sup>12</sup>Pay-as-you-go (PAYGO) model is one in which customers pay pre-paid instalments weekly or monthly to use solar power mostly enabled by digital technology.

<sup>13</sup>Rocky Mountain Institute (2018). Minigrad Investment Report: Scaling the Nigerian Market. The NESG: Abuja, Nigeria.

<sup>14</sup>Isah, Abdulrasheed, A Tale of Two Countries: Financing Renewable Energy in Nigeria and Brazil (April 24, 2019). USAEE Working Paper No. 19-400. Available at <http://dx.doi.org/10.2139/ssrn.3377029>

<sup>15</sup>Akinkugbe-Filani, Rolake (2020). 5 things you should know about COVID-19 and energy access. <https://medium.com/@rolakeakinkugbeF/5-things-you-should-know-about-covid-19-and-the-global-energy-access-debate-fe5ce3b9ae3d>

<sup>16</sup>Isaac, Nyaogu (2020). Nigerian Impact Investor All On Announces Moratorium on Loan Interest payments. Business Day April 15, 2020. <https://businessday.ng/exclusives/article/nigerian-impact-investor-all-on-announces-moratorium-on-loan-interest-payment/>