

PAYGo Market Attractiveness

CASE STUDY: NIGERIA




LIGHTING GLOBAL
Catalyzing markets for modern off-grid energy

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Pay-As-You-Go Market Attractiveness Index 2019

CASE STUDY: NIGERIA

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The team would like to thank stakeholders who kindly agreed to engage in the study, including representatives from government agencies, development partners and PAYGo providers.



Lighting Global is the World Bank Group's initiative to rapidly increase access to off-grid solar energy for the 840 million people living without grid electricity world-wide. Lighting Global – managed by IFC and the World Bank – works with manufacturers, distributors, governments, and other development partners to build and grow the modern off-grid solar energy market. Our programs are funded with support from the Energy Sector Management Assistant Program (ESMAP), The Public – Private Infrastructure Advisory Facility (PPIAF), The Netherlands' Ministry of Foreign Affairs, The Italian Ministry for the Environment, Land, and Sea (IMELS), and the IKEA Foundation.



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FOREWORD

Energy access remains a critical challenge for the more than 860 million people lacking access to modern energy. In the last ten years, solar off-grid lighting and energy solutions have transformed the global energy access landscape, providing a reliable complement to the grid. Today, close to 180 million people have benefited from using Lighting Global Quality Verified solar lighting products. The transformation of these off-grid markets received a major boost with the introduction of the Pay-As-You-Go (PAYGo) business model – an innovative approach that has revolutionized consumer financing. The PAYGo model has not only demonstrated tremendous promise in scaling up access and closing the energy gap, but also in graduating consumers to larger solar home systems (SHS) that can provide an expanded array of needs beyond lighting.

The statistics from the PAYGo model are compelling – sales volume grew by 30% in 2018, with revenues having an even better trajectory with 50% growth, primarily driven by larger SHS sales. According to the <https://www.lightingglobal.org/resource/sales-impact-data-report-h2-2018/>, PAYGo companies represent 24% of the sales volume but accounted for 62% of the industry's revenue. The success transcends energy access, with PAYGo having an impact in driving and expanding financial inclusion across Africa through digital payments. In some markets, solar payments have represented many consumers' first interaction with digital/mobile payments.

But where the model holds great promise across global markets, PAYGo companies have largely concentrated their efforts in East Africa. The region accounts for nearly 70% of global PAYGo market segment revenues. It is a market characterized by an attractive solar, fiscal, digital and financial policy environment, making market insights and data readily available. The PAYGo market attractiveness index (PAYGo MAI) responds to the industry's need for deeper market insights to inform and facilitate PAYGo expansion and entry plans. The 2019 version of the PAYGo MAI now covers 24 countries across Sub Saharan Africa and Asia.

The index provides businesses, policymakers and practitioners with a tool to assess these markets along a 71-point indicator matrix under three main pillars: demand, supply and enabling factors. In addition, we hope that development partners and policy makers will use the PAYGo MAI as a diagnostic tool to highlight gaps and opportunities for policy interventions and reforms.

A critical factor to note is that this tool does not seek to supplement the equally vital qualitative market research that companies should undertake to define their own value propositions, route to market, unit cost economics of last mile distribution, and other elements. Neither was this tool intended to classify, or rank countries based on their PAYGo attractiveness. Any such classification is incidental, relative, and comparative to others. Finally, focus summaries for select countries have been developed to provide a deep dive into specific PAYGo solar markets. These summaries are due to be published throughout the 2019 calendar year.

We hope that this index provides an informative tool to inform strategic and policy reform plans. We know that this business model holds great promise that will soon extend into the productive use of solar energy in agriculture and beyond.



Russell Sturm
Global Lead For Energy Access
International Finance Corporation



SUMMARY

Nigeria's off-grid solar pay as you go (PAYGo) market has experienced rapid growth over recent years, with over 1.7 million households now using off grid solar products. Current market penetration is nonetheless low at 4% of the potential market, reflecting high levels of unreliable grid connections and unelectrified populations.

Interest amongst PAYGo companies is high with many entering the market, but business development time can be longer than in other markets, up to three years before making sales.

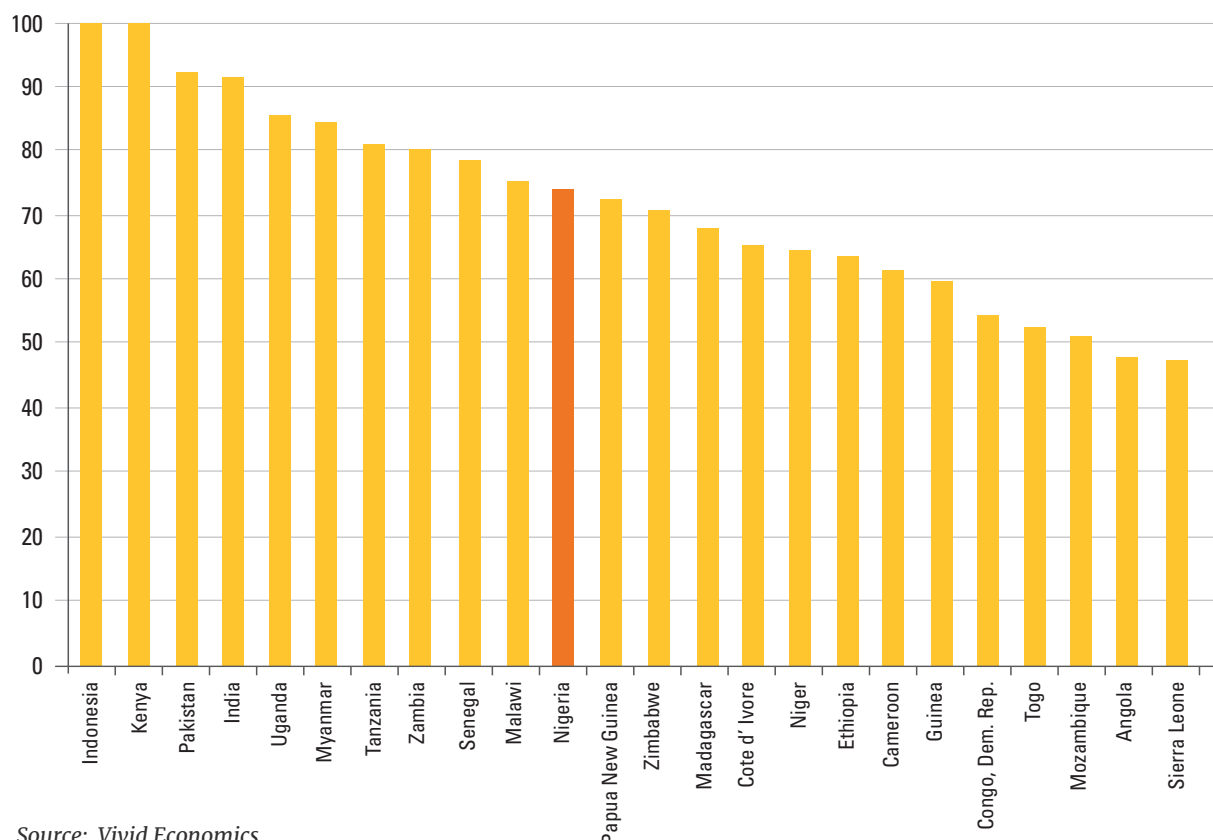
These start-up time requirements include developing local market intelligence, training field agents and importing equipment into the country for distribution.

Direct policy support for PAYGo is limited, but national policies include targets aligned with PAYG market development. Policy goals include 8,000 MW of off grid solar power in rural areas by 2030, expanded ICT access in rural areas and improvements in access to both electricity and financial services. Recent Central Bank regulations aim to expand the mobile money offerings in the country by allowing mobile network operators to serve as Payment Services Banks.

The PAYGo market has good prospects for market growth, which is likely to positively impact rural livelihoods. Levels of access to electricity, financial services and mobile technology are low across rural areas and concentrated in the North East and North West of the country. Deployment of the PAYGo business model at scale would deliver energy access while promoting financial and digital inclusion in rural areas.

This country focus serves as a deep dive into the off-grid solar market delivered through PAYGo business models in Nigeria. It builds on high level analysis provided in Lighting Global's PAYGo Market Attractiveness Index. The findings are informed by both desk-based review of country reports from the off-grid energy and mobile industries, development partners and government agencies and engagement with key stakeholders and PAYGo providers in Nigeria.

Figure 1. Nigeria is ranked 11 of 24 countries assessed in the PAYGo Market Attractiveness Index



Source: Vivid Economics

The country focus is structured as follows:

- Section 1 summarises Nigeria’s performance in the Lighting Global PAYGo market attractiveness index;
- Section 2 describes the current state of the PAYGo market in Nigeria, including business models used to deliver both energy credit;
- Section 3 sets out the potential for development of the PAYGo market, considering the potential future demand for PAYGo products, and recommended policies to improve the investment climate for the PAYGo sector that could be supported by national governments and development partners.



1 NIGERIA'S PERFORMANCE ON THE PAYGo MARKET ATTRACTIVENESS INDEX

Nigeria represents a very large potential market for off-grid solar (OGS) products, and for the pay as you go (PAYGo) business model. The population is large in absolute terms at nearly 200 million people, and just 40% of the overall population is connected to the main electricity grid. Even those who do have access to the main grid report a very unreliable connection. Customers with an unreliable grid connection represent a potential market segment for OGS (and PAYGo services).

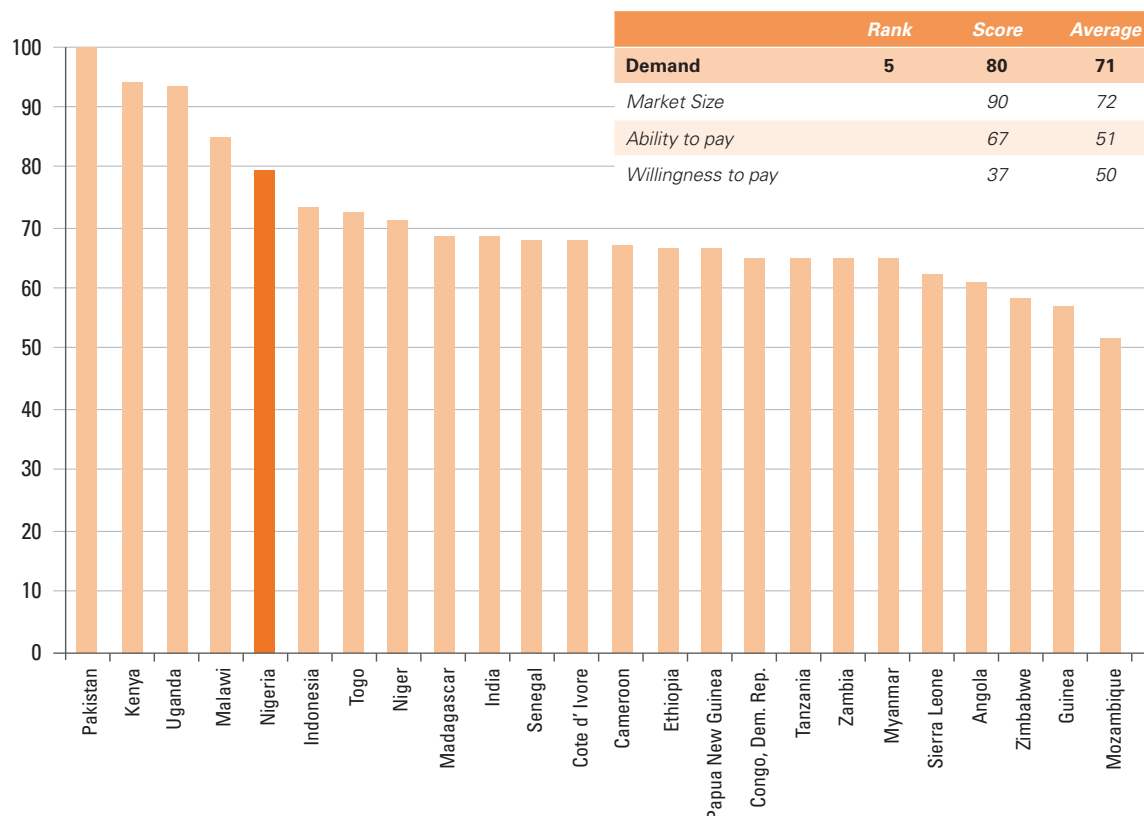
These are relatively high income customers who already spend a relatively large share of income on lighting and mobile phone charging, currently from other sources – largely backup gasoline and diesel generators. However, low access to credit and limited use of mobile payments indicate potential barriers to accessing this demand for off grid and under grid energy services that can be delivered through a PAYGo business model.

The potential to meet this demand with OGS products and the PAYG business model is average – with abundant solar radiation and relatively mature consumer finance markets, but a comparatively low skills base.¹ The basic building blocks – ample sunshine and an established consumer finance market – are in place for PAYGo products to develop. Limitations to developing sustainable business models include a lack of early stage equity finance and low access to financial services for consumers, as evidenced by a relatively small current OGS and PAYGo market.

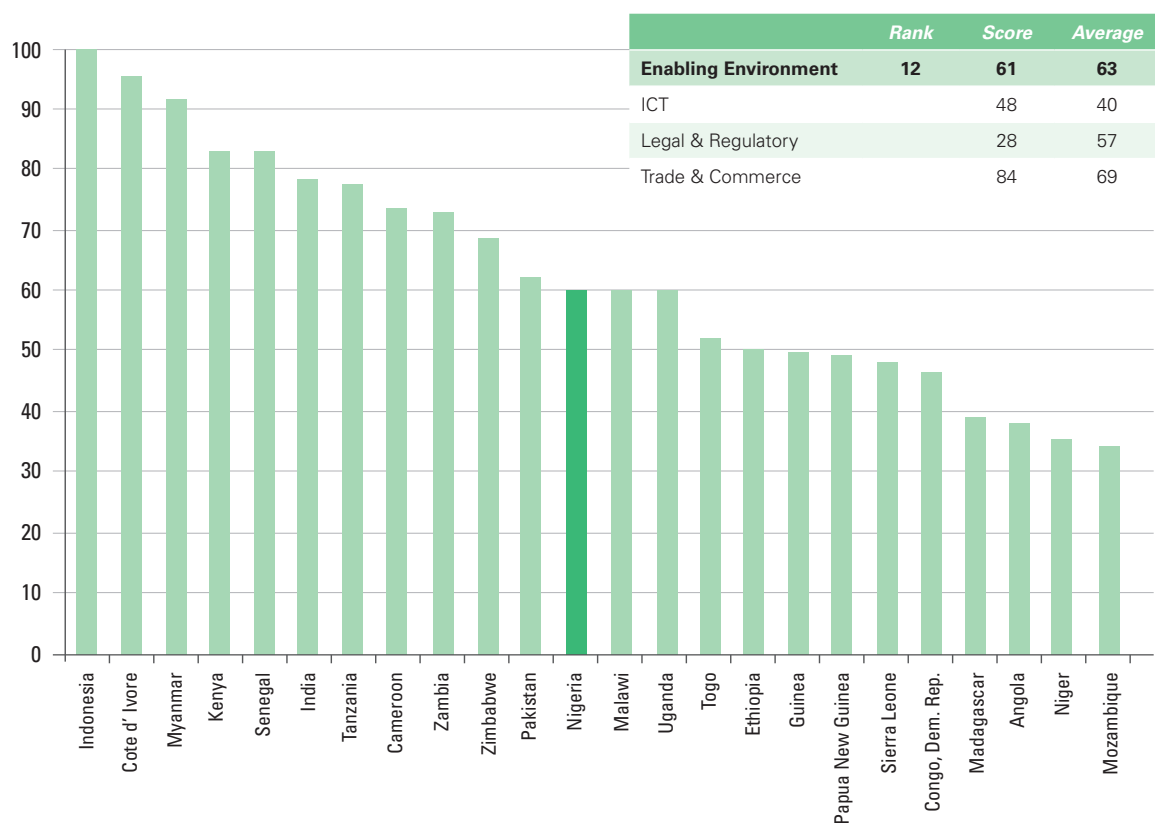
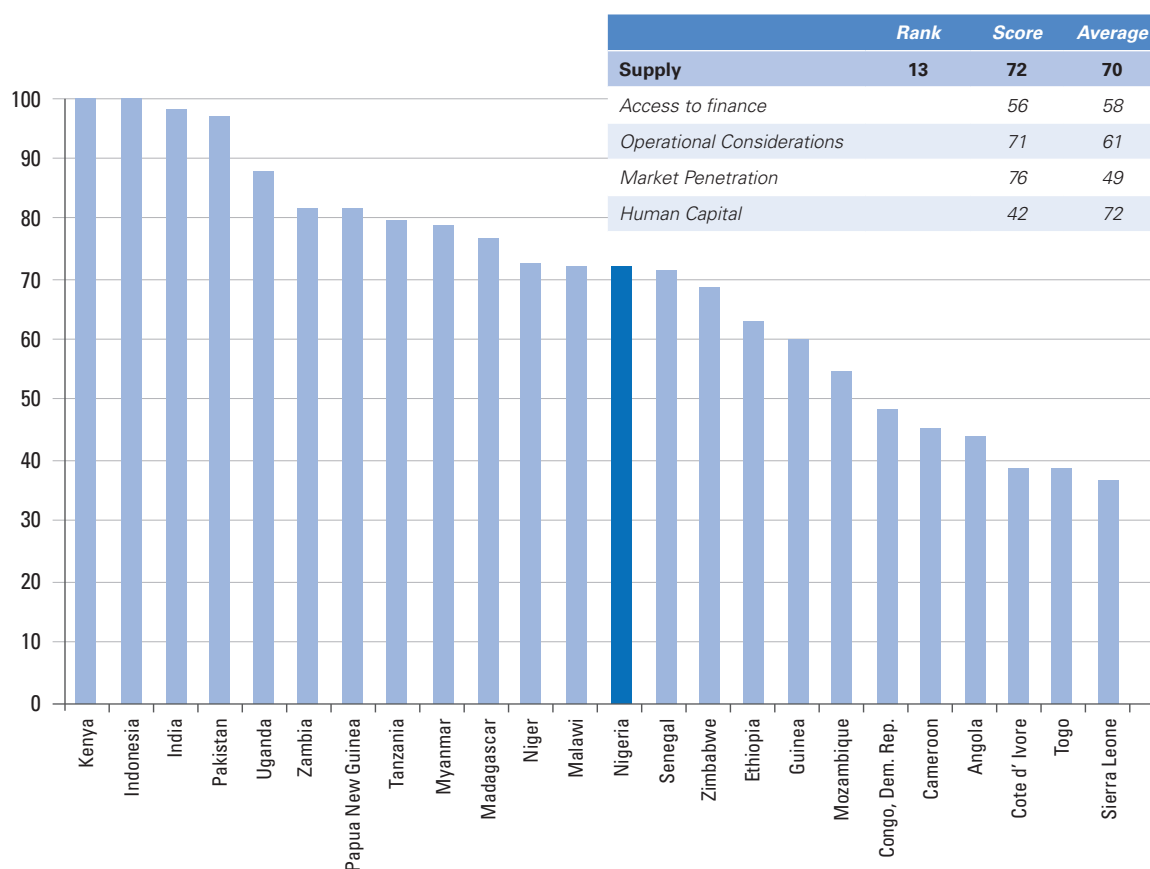
The general business climate is favourable to international companies, but the policy and regulatory environment has not fostered development of the PAYGo market to date.

Relative to other countries, business start-up costs are low and internet penetration is high. Targeted policy support for renewable energy is limited, including a lack of fiscal incentives for imported solar kit. Physical and digital security remain relatively low.

Figure 2 Nigeria is ranked high in the PAYGo MAI for market demand factors, but average for enabling environment and supply indicators



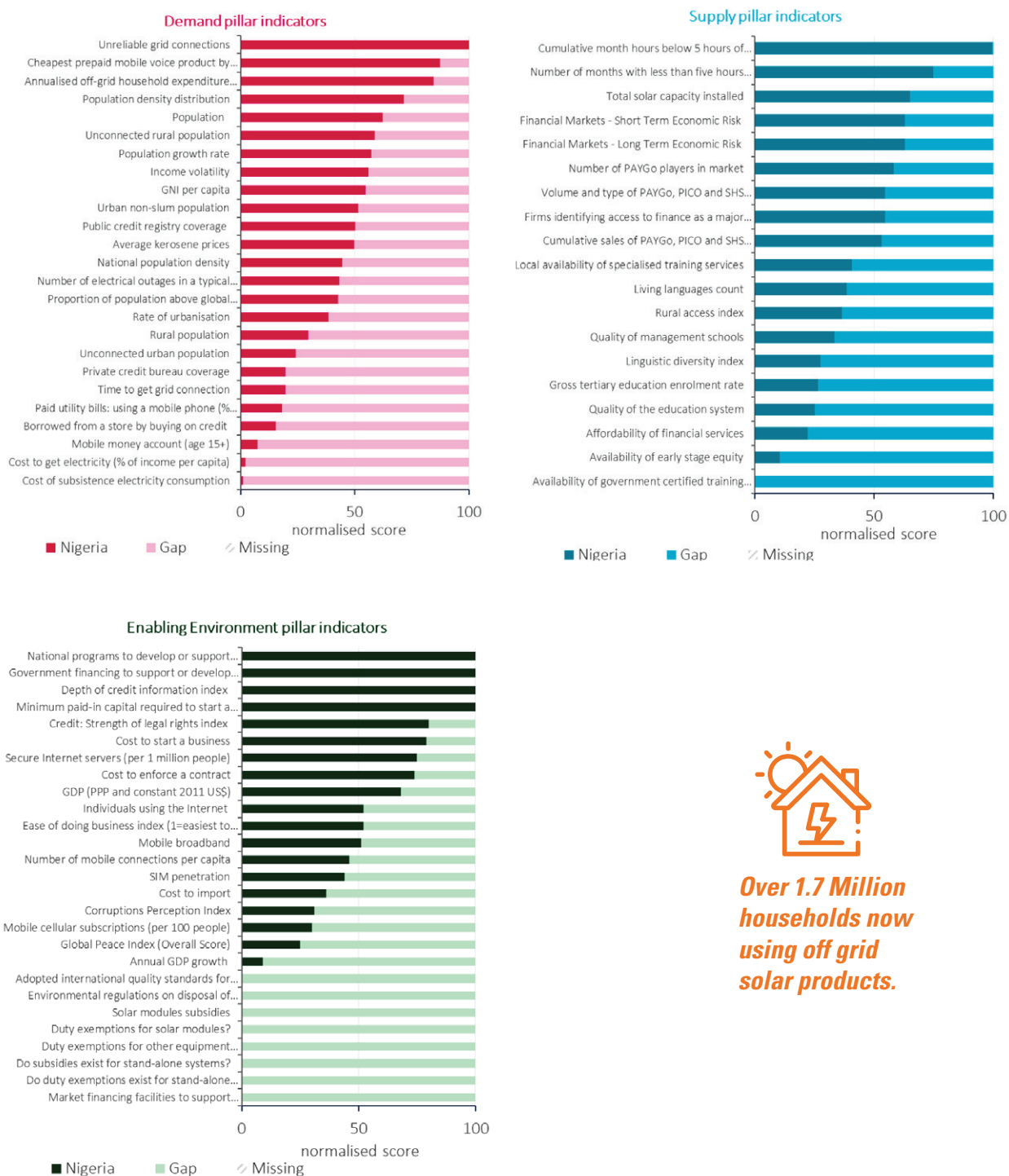
¹ Nigeria scores 59/100 on 'Access to finance' indicators, which suggests a mature consumer finance market when compared to other countries considered in the Market Attractiveness Index. However, access to finance remains a barrier to PAYG sales, as explored in Sections 2 and 3 below.



Source: Vivid Economics

Figure 2 and 3 show Nigeria's performance on the PAYGo Market Attractiveness Index (MAI). Indicators are displayed on a normalised scale, where a score of 0 reflects the lowest score in the set of countries considered and a score of 100 reflects the highest score in the set.

Figure 3 A large population with an unreliable grid place Nigeria high on the PAYGo MAI demand pillar, but limited policy support for renewable energy indicates room for improvement in the enabling environment



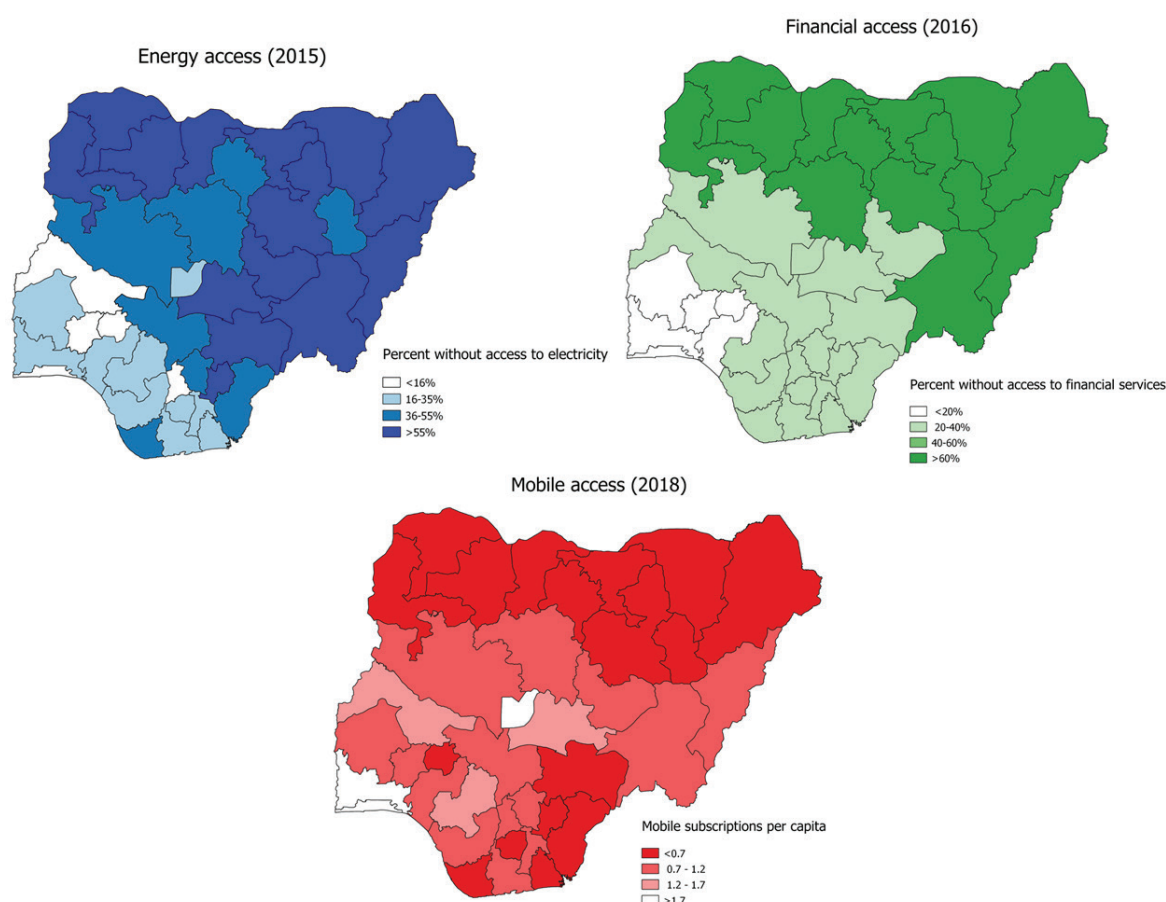
Source: Vivid Economics

2 THE CURRENT MARKET FOR PAYGo IN NIGERIA

2.1 The development context for PAYGo energy markets

Nigeria's development is constrained by low and unequal access to energy, mobile technology and financial services. These are discussed in turn in the following sub-sections and summarised in Figure 4.

Figure 4. Low levels of access to energy, financial services and mobile connectivity are highly concentrated in the north east of Nigeria



Note: Financial access data is reported on the regional level, all others on the state level

Source: Vivid Economics, based on data from GIZ (2015), National Bureau of Statistics (2018) and EFINA (2017)

2.1.1 Energy access

Energy access remains a significant development priority, with a large share of the population unelectrified. Over 40% of the overall population – approximately 75 million people – lacks access to electricity.² This share is even higher in rural areas,

where 59% of the rural population lacks access to electricity. Of those who do have grid access, 56% report their connection as unreliable.³

² World Bank (2018) World Development Indicators database

³ Afrobarometer data on grid reliability. For this study, an 'unreliable' grid connection is defined as everything less than having access all the time (using the Afrobarometer categories)

Large populations without reliable access to energy creates a significant opportunity for off grid solar technologies, including through PAYGo business models. Unreliable grid connections have to date been addressed through the widespread use of diesel and natural gas generators, estimated to produce 50% of all electricity consumed in Nigeria.⁴ Off-grid solar home systems represent a viable alternative to fossil-fuel powered generators at as low as half the cost to consumers.⁵ Mobile-enabled pay as you go models are especially attractive, with 85% of Nigeria's population living within mobile coverage.⁶

The government has set an ambitious target of reducing the share of rural population without access to electricity, increasingly through deployment of off-grid solar technology. The Rural Electrification Agency (REA) is committed to providing power for rural communities with a focus on off grid solar – it has established a target of 25% of the rural population to be served by OGS by 2020⁷ and 40% by 2030. The Agency has recently launched the Nigerian Electrification Project in collaboration with the World Bank, which aims to provide reliable off-grid power supply for 250,000 small businesses and 1 million households.⁸

2.1.2 Financial access

Though levels are above average amongst comparator countries in Sub-Saharan Africa and South/South East Asia, access to financial services in Nigeria remains a constraint on development of the PAYGo market. Less than 40% of the population have accounts with financial institutions⁹ and only 5% pay utility bills from these accounts (1% used a mobile phone to make utility payments). Only 6% of the population and 2% of households in the bottom 40% of the income

distribution have mobile money accounts (through mobile money operators).¹⁰ This low uptake of credit facilities reflects a cash-oriented culture, in which PAYGo companies report having to educate potential customers on how a credit-financed off-grid solar system can support their personal and business development needs.¹¹ The Central Bank's Financial Inclusion Strategy aims to more than halve the share of Nigerians excluded from financial services to 20% in 2020, while improving the capacity of the financial system to promote safe, legitimate commerce.¹²

The use of mobile money payment systems is growing quickly and could support expansion of the PAYGo business model. Mobile money accounts increased from 6 million in 2013 to 9 million in 2014.¹³ Stakeholders identify lack of access to payment systems as a major barrier to scaling up PAYGo products in the country,¹⁴ and the Central Bank of Nigeria has partnered with banks and mobile money operators to train and deploy 500,000 mobile money agents throughout the country by 2020 (from 11,000 in 2017).¹⁵ National targets include a commitment to become a cashless economy by 2021, which will likely drive the growth of mobile money and (digital) financial inclusion.

PAYGo companies also face constraints in accessing finance for business expansion.

Companies are reliant on business credit in order to provide cash flow while staff are trained and equipment is cleared through customs. Limited access to finance for company operations provides a supply-side constraint on market growth, with high commercial lending rates, averaging 17.5%.¹⁶ Stakeholders indicate single digit interest rates and increased lending to SMEs are required to finance business development.¹⁷

4 80% of the population using these as secondary power sources, per GSMA (2016) Assessing the opportunity for pay-as-you-go solar in Nigeria

5 REA (2017) The off-grid opportunity in Nigeria: Upscaling minigrids for least cost and timely access to electricity

6 GSMA (2016) Assessing the opportunity for pay-as-you-go solar in Nigeria

7 Notably the off-grid electrification strategy aims to develop 10,000 minigrids by 2023 which will provide power to 14% of the population (IFC forthcoming) as well as 5 million SHSs for residential and SMEs by 2023

8 REA (2019) The Nigeria Electrification Project

9 A 2018 government review estimates that 41.6% of the adult population is financially excluded (52.5% in rural areas) as reported in Federal Republic of Nigeria (2018) National Financial Inclusion Strategy (Revised)

10 USAID (2018) The Digital Financial Services Landscape in Nigeria: Enabling Market Conditions for Pay-As-You-Go Solar

11 Stakeholder interviews carried out by the consultants

12 Federal Republic of Nigeria (2018) National Financial Inclusion Strategy (Revised), includes a target to harmonise due diligence/know your customer (KYC) requirements for opening and operating accounts/mobile wallets on all financial services platforms

13 GSMA (2016) Assessing the opportunity for pay-as-you-go solar in Nigeria

14 Consultant team interview with development partner representative 20 February 2019

15 Federal Republic of Nigeria (2018) National Financial Inclusion Strategy (Revised)

16 World Bank (2019) Lending Interest rate (%)

17 Stakeholder interviews carried out by the consultants

2.1.3 Mobile access

Mobile network coverage is high in urban areas, but limited connectivity remains a challenge for serving some rural areas.

Nigerians currently subscribe to an average of 0.8 phones per person,¹⁸ relatively low compared to SIM penetration in other West African countries (Cote d'Ivoire has a penetration rate of 1.3 phones per person, Ghana 1.2).¹⁹ The National ICT Roadmap aims to increase rural access coverage by 40% to 2020.²⁰

There is a link between addressing energy access and creating a more attractive environment for mobile services.

Mobile network operators report an increase of 10-14% in Average Revenues Per User with improved energy access.²¹ PAYG customers generate twice the revenue per user for mobile money provider vs an average customer.²²

Good mobile coverage has been leveraged to offer PAYGo off-grid solar products paid with airtime credits.

A partnership between MTN, the largest mobile operator, and Lumos Nigeria PAYGo

company has marketed OGS energy services payable by mobile airtime credit.²³ MTN's customer base of 66 million subscribers offers a significant potential market for PAYGo products, with 73,000 systems deployed at the close of 2017.^{24 25}

2.2 The current state of the PAYGo market

Cumulative sales of off-grid solar products (including both PAYGo and cash sales) have grown to 1.7 million households (serving an estimated 8 million people), up from just 100,000 in 2014 – with an estimated 820,000 units sold in 2016.²⁶

This represents a 36% market growth rate over 2014-2017, which included an economic recession in 2016. Further disaggregated data is only available for 2018, during which the PAYGo share of units sold comprised 30% of total sales (compared to cash sales).²⁷ Sales of pico-PV products are typically more popular with rural communities without grid access, while plug-and-play (PnP) solar home systems (SHSs) and larger off-grid units are popular in urban and peri-urban areas to complement intermittent grid connections.²⁸



This low uptake of credit facilities reflects a cash-oriented culture, in which PAYGo companies report having to educate potential customers on how a credit-financed off-grid solar system can support their personal and business development needs.

18 National Bureau of Statistics report an equivalent subscription rate of 0.87 in 2018 [NBS 2018]

19 USAID (2018) The Digital Financial Services Landscape in Nigeria: Enabling Market Conditions for Pay-As-You-Go Solar

20 Federal Republic of Nigeria (2017) National ICT Roadmap 2017-2020

21 GSMA (2016) Assessing the opportunity for pay-as-you-go solar in Nigeria

22 USAID (2018) The Digital Financial Services Landscape in Nigeria: Enabling Market Conditions for Pay-As-You-Go Solar

23 <http://www.lumos.com.ng/our-service/>

24 <https://www.pnewswire.com/news-releases/boost-for-off-grid-solar-as-lumos-global-reports-exponential-growth-in-2017-669359343.html>

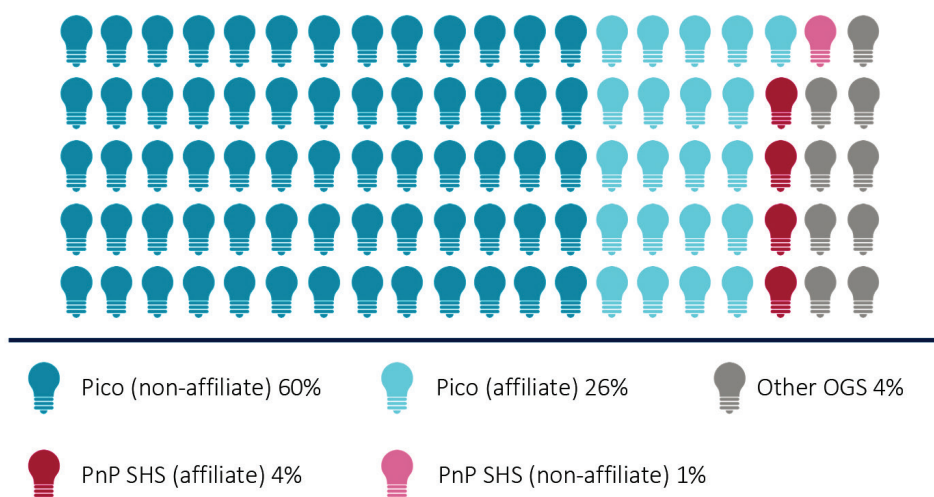
25 <https://www.ncc.gov.ng/stakeholder/statistics-reports/industry-overview#view-graphs-tables-2>

26 Cumulative numbers based on data from the second half of 2014 to 2017, including sales of all in use OGS, using Nigeria's country-level data for non-GOGLA affiliate market share of 30% for pico-PV devices and 70% for SHS. Methodology based on GOGLA's sales reports 2014-2017 and GOGLA (2018), 'Standardized Impact Metrics for the Off-Grid Solar Energy Sector'

27 GOGLA (2018), 'Global Off-Grid Solar Market Report: Semi-Annual Sales and Impact Data' and H2 2018 data provided to consultants by GOGLA

28 Stakeholder interviews carried out by the consultants

Figure 5 Off grid solar sales, by volume of product – Nigeria, 2016



Note: 'affiliate' companies refer to companies that are GOGLA members, are Lighting Global Program Associates or have products that meet Lighting Global Quality Standards

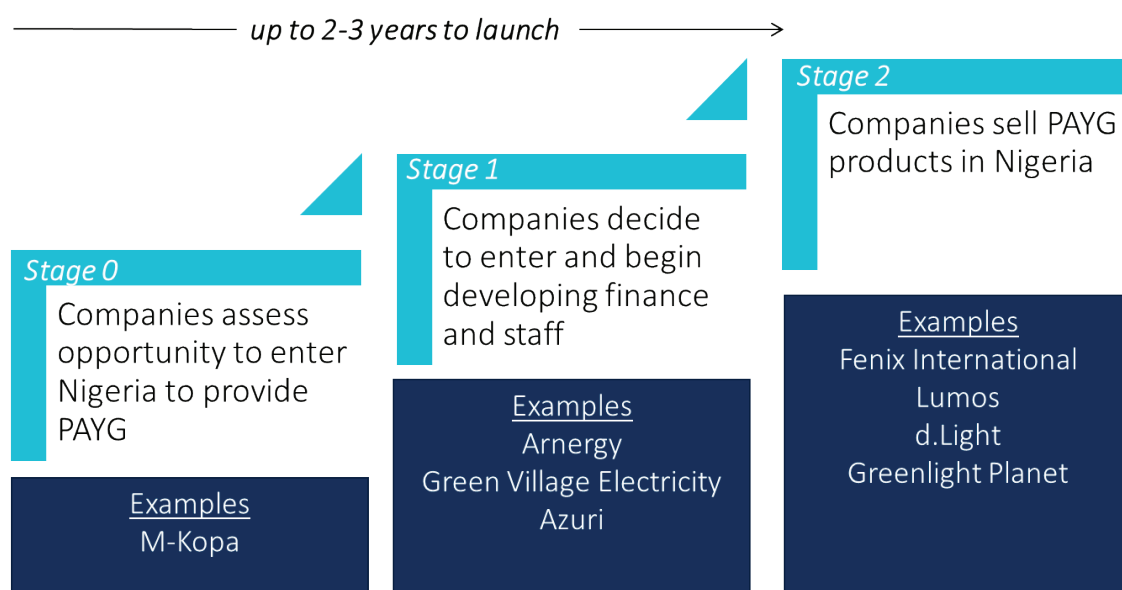
Source: Vivid Economics, based on data from Dalberg (2018)

PAYGo companies are currently active across three stages of development, shown in Figure 6.

This development pipeline reveals a strong interest in the market (reflecting the substantial potential market for PAYGo products) but also indicates a significant start-up period to fully access the market, though start up times are varied across companies

from months to years.²⁹ Government and donor programmes have sought to provide support to new market entrants during the development period, including the UK-funded Solar Nigeria Program, WBG/REA Nigeria Electrification programme and initiatives supported by the African Development Bank and USAID.

Figure 6 PAYGo companies are interested in Nigeria, but can require up to 3 years to begin selling products after entry



Source: Vivid Economics, based on GSMA (2014) and stakeholder interviews

²⁹ Zola Electric recently announced plans to sell OGS products in Nigeria over the next three years (<https://www.thisdaylive.com/index.php/2019/03/06/zola-electric-announces-expansion-into-nigeria/>)

The PAYGo product offering products is significantly different from East Africa - where PAYGo expanded rapidly in the last decade – and requires time in country to develop a locally relevant offer. Companies report three areas in which customisation is required:

- first, assessing the market demand for individual PAYGo products in Nigeria requires on the ground research as reliable market data (e.g. census, local electricity connections and town-level GDP)³⁰ is not easily available for external analysis;
- second, low capacity amongst existing payments systems constrains roll-out of products to rural communities; and,
- finally, cash flow delays related to importing solar kit can create significant delays in meeting demand once payment systems are in place.³¹ Cost-reflective prices (including a good understanding of costs from duties and imports) and some forecasting of time required to get products into the country and into the hands of customers is needed.

These barriers, in combination with the 2016 recession, have driven PAYGo companies to focus on the easier-to-reach urban and peri-urban market, with many providing OGS devices as supplementary power sources to customers with unreliable grid connections. While PAYGo companies originally focussed on reaching rural populations, the focus now includes urban and peri-urban markets where populations are more concentrated (lower cost to reach), and increased perceptions of risk posed by consumer debt on company balance sheets during a recession.³² Higher-income urban markets are seen as relatively lower risk, more connected to financial networks and more aware of the product offering than more remote communities.

PAYGo companies have innovated to test new business models, such as using mobile airtime credit to pay for off-grid solar power (described in Box 1) and partnering with financial institutions to market financeable energy systems (Box 2).

BOX 1: PAYGo COMPANIES ARE PILOTING AN AIRTIME CREDIT PAYMENT SYSTEM TO OVERCOME PAYMENT SYSTEM BARRIERS

Alternative business models using airtime credit for payment have are being tested in the absence of accessible mobile money systems, representing an innovative approach to providing off-grid solar power through PAYGo models. Lumos Nigeria has partnered with MTN – the largest mobile network operator – to offer a PAYGo SHS product that can be paid for with airtime credit. Lumos customers pay for a time period of electricity by sending a mobile command through their phones. Six hours of charging provides the customer with electricity to power appliances (e.g. 4 hours of power for a small TV, 10 hours for a radio), light and phone charging.^a The company services solar units for five years until the system is fully paid off and the property of the customer. By partnering with a mobile provider with significant penetration in the market (MTN has 66 million subscribers)^b, Lumos has bypassed financial access barriers that exist throughout the country.

Such financial innovations create a complex regulatory landscape. Lumos is registered as a ‘value added service’ provider with the Nigerian Communication Commission, which allows for regulation of the services provided.^c Customer due diligence that might otherwise be conducted by banks is delegated to the mobile operator while concerns of consumer protection and anti-money laundering may not be fully addressed through existing regulatory frameworks.

(a) <https://www.lumos-global.com/faqs/>

(b) <https://www.ncc.gov.ng/stakeholder/statistics-reports/industry-overview#view-graphs-tables-2>

(c) GSMA (2016) Mobile for Development Utilities – Lumos: Pay-as-you-go solar in Nigeria with MTN

30 Consultant team interview with PAYG company representative 01 March 2019

31 Consultant team interview with development partner representative 20 February 2019 and government representative 18 February

32 Consultant team interviews with PAYG company representative 05 March 2019 and impact investor 13 March 2019

BOX 2: PAYGo COMPANIES HAVE TEAMED UP WITH FINANCIAL INSTITUTIONS TO REACH CUSTOMERS THROUGH EXISTING NETWORKS

PAYG companies are also tapping into existing agent networks (e.g. from existing financial markets) to market their products, reducing the agent development time required to launch in the market. A recently announced partnership between PAYGo company Azuri and First Bank of Nigeria will leverage FirstBank's proprietary 16,000 agent network to sell solar home TV products as a PAYG service.^a

Partnerships between financial institutions and PAYGo providers can also provide an answer to barriers created by low financial access amongst potential consumers. Zola Electric recently announced a partnership with Sterling Bank to distribute loan-financed SHSs in Nigeria, citing the complex energy market at the impetus for a new business model.^b

While partnerships with financial institutions allow PAYGo companies to operate within the existing regulatory structures, this approach does little to expand energy access to disconnected rural populations who are more likely to be unbanked than wealthier communities.

(a) <https://www.azuri-technologies.com/azuri-and-firstbank-nigeria-partner-financial-inclusion/>

(b) <https://guardian.ng/energy/zola-sterling-bank-seal-pact-to-bridge-energy-gap-in-nigeria/>

New regulations allowing mobile network operators (MNOs) to offer banking services can facilitate development of mobile money platforms to support the PAYGo business model.

Banks have been the main providers of mobile money platforms to date, leading to a system of small, noncompatible platforms and leaving unbanked consumers unable to use mobile money to access PAYGo products.

The Central Bank has recently authorised MNOs to offer limited banking services,³³ which is expected to result in large scale use of mobile money over the next two years.³⁴ As the mobile money market evolves, ensuring interoperability between payment systems will be key to develop scalable markets at the national level.

33 <https://www.cbn.gov.ng/Out/2018/FPRD/OCTOBER%202018%20EXPOSURE%20PAYMENT%20BANK.pdf>

34 Consultant team interview with PAYG company representative 01 March 2019

3 PROSPECTS AND RECOMMENDATIONS FOR PAYGo MARKET DEVELOPMENT

There is a large potential market of at least 160 million people who currently have no or an unreliable grid connection and who will continue to demand energy services as they move up the energy ladder.³⁵ Current product penetration

has reached only 4% of the total potential market in 2017,³⁶ reflecting a large population of relatively affluent consumers who currently suffer from unreliable or no grid access. As customers continue to move up the energy ladder, the addressable market is likely to expand. Sales of smaller products bring customers onto the energy ladder, facilitating their access to higher value products over time.³⁷ Over 80% of sales of OGS products to date in West Africa have been small Pico-PV products,³⁸ and these customers may demand larger products as incomes increase and they progress to a higher tier of energy access. Globally, market forecasts suggest a steady overall annual sales growth of 25% to 2022, and 87% for solar home systems, which are often delivered via PAYGo business models.³⁹

As the PAYGo market develops, there are two large market segments that require different strategies for development. First, extending OGS technologies to rural off-grid communities will require development of alternative payment systems, either through mobile or other agent-based networks, including networks accessible to unbanked populations. Second, existing urban and peri-urban markets require an improved ease of doing business in the sector, including increased supply and improved capacity to access finance to scale. In addition to innovating around delivery models, Nigeria is well-placed to incubate new PAYGo technologies such as multi-household solar home systems and under-grid mini grids to support areas served by unreliable grid connections.⁴⁰

PAYGo has the potential to unlock this expanding addressable market, if a few barriers are addressed. Much of the regulatory infrastructure

needed for the PAYGo market to succeed is tied to overall private sector development. The creation of a digital payment infrastructure, which entails credit reporting systems, collateral databases, a centralised account management system, clearinghouses for interbank transfers or ‘payment switches’, and an open application programme interface (API) for development of digital financial services to promote interoperability and transfers between providers have all been identified as key interventions for market development.⁴¹

Nigeria stands out in having a relatively weak enabling environment for PAYGo technologies. An expansion of the PAYGo market can deliver against many stated government objectives, including energy access, financial inclusion and broader economic growth. Steps for the public sector to improve enabling environment for PAYGo and OGS businesses include:

- offer fiscal incentives for solar energy providers – tariffs on solar panels have recently been increased through a reclassification to 10% plus 5% Value added tax, in addition to existing duties on solar powered generators (5%) and batteries (20%);⁴² the off-grid industry association (GOGLA) has identified fiscal incentives as one of the most effective ways for government to support the growth of solar energy to accelerate energy access;⁴³
- at market entry end, improve demographic data through the national census with sub-regional population and economic data to aid business strategy development;

35 Nigeria's potential market is 8% of the total global potential market of 434 million households, Dalberg Advisors & Lighting Global (2018), ‘Off-Grid Solar Market Trends Report 2018’. With an average household size of 4.6 people, this translates into a potential market of over 160 million people (UN Department of Economic and Social Affairs (2017), ‘United Nations Household Size and Composition Around the World 2017’). To estimate the number of addressable households, the potential market should be discounted for affordability and reachability constraints. The ability and willingness to purchase an OGS device is determined by various factors, including device prices, expenditure on fuels and household appliances, the portion of income that could be diverted to OGS devices and availability of consumer finance.

36 Dalberg Advisors & Lighting Global (2018), ‘Off-Grid Solar Market Trends Report 2018’

37 Harrison, Scott and Hogarth (2016), ‘Accelerating access to electricity in Africa with off-grid solar: The impact of solar household solutions’

38 GOGLA (2017), ‘Global Off-Grid Solar Market Report Semi-Annual Sales and Impact Data: July - December 2017’

39 Dalberg Advisors & Lighting Global (2018), ‘Off-Grid Solar Market Trends Report 2018’

40 Consultant team interview with impact investor on 13 March 2019

41 US AID (2018), ‘The digital financial services landscape in Nigeria: enabling market conditions for pay-as-you-go solar’

42 IFC (forthcoming), ‘Nigeria Off-Grid Market Entry Toolkit’

43 Dalberg Advisors & Lighting Global (2018), ‘Off-Grid Solar Market Trends Report 2018’

- improve access to finance – DFI support to commercial banks to provide local currency loans earmarked for OGS SMEs, build capacity amongst PAYG providers to raise funds through special purpose/investment vehicles tied to customer payments to extend working capital and move medium-term debt off of balance sheets; and
- promote entrepreneurial approaches to the market through regulation that aims to encourage innovation while extending protections to consumers, e.g. through regulations allowing for an interoperable mobile money network and quality assurance standards for OGS equipment and agent networks.

The private sector and donor community can support and lead on these areas by focusing efforts to:

- provide for security and consumer protection in airtime credit model (e.g. through adoption of Smart Campaign Client Protection Principles)⁴⁴; and
- partner with financial institutions and mobile money platform developers to extend accessible finance for OGS through both technological and network innovation (as highlighted in the case studies discussed in Boxes 1 and 2).

⁴⁴ <http://smartcampaign.org/certification/4-demonstrate%20>



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