



THE DIGITAL FINANCIAL SERVICES LANDSCAPE IN NIGERIA: ENABLING MARKET CONDITIONS FOR PAY-AS-YOU-GO SOLAR

Executive Summary

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I. THE ECONOMIC OPPORTUNITY OF NIGERIA'S ELECTRICITY CHALLENGE

I.1 THE HIDDEN OPPORTUNITY IN NIGERIA'S RACE TO UNIVERSAL ENERGY ACCESS

Nigeria has long been an economic heavyweight in sub-Saharan Africa. While the economy's growth has been relatively consistent over the past decade, the country continues to struggle with severe energy poverty. Despite the fact that the country's oil reserves have provided the economy's initial foundation, more than 75 million Nigerians currently live without reliable electricity access.

The existing electrical grid is unstable and fails to reach beyond the urban population, forcing Nigerian households to rely on small scale generators for primary or back-up power. The costs are staggering. Households and businesses spend almost \$14 billion a year on inefficient electricity generation that is often unreliable, noisy, polluting, and expensive (\$0.40/kWh or more)¹.

This represents an incredible business opportunity. The Nigerian off-grid energy sector is worth a projected \$9.2 billion a year, which could save Nigerian homes and businesses more than \$4.4 billion per year."².

The promising pay-as-you-go solar solutions that are delivering affordable electricity across East Africa have largely eluded Nigeria to date. Few rural Nigerians have mobile money accounts, restricting solar companies to cash sales and subsequently limited customer bases. This is largely due to stringent laws limiting digital financial services, which means that flexible payment plans are largely not feasible.

Without the basic infrastructure of streamlined digital payments, solar companies and other national industries are missing out on a critical market opportunity to contribute to Nigeria's growing economy and to the government's target of universal energy access. The International Monetary Fund estimates that a transition to digital payments, specifically mobile wallets, could save the Nigerian government between USD \$5 to \$9 billion annually, while greatly increasing financial inclusion³.

I.2 THE PROMISE OF PAYG SOLAR

The off-grid solar industry has been steadily gaining traction across sub-Saharan Africa, particularly through the sale of pay-as-you-go (PAYG) solar household systems. Startup energy enterprises, such as M-KOPA, PEG, BBOX, Mobisol, Off Grid: Electric and Lumos Global, have been quickly adopting innovative mobile payment solutions to reach a wider customer base than previously accessible through traditional sales and distribution models.

¹ GSMA (2016) *Assessing the Opportunity for Pay-as-you-go Solar in Nigeria*

² Rural Electrification Agency (2017) *The Off-Grid Opportunity in Nigeria: Upscaling mini grids for least cost and timely access to electricity*

³ IFC (2018) *Digital Access: The Future of Financial Inclusion in Africa*

The PAYG solar model is a strong example of the “second wave” of inclusive digital innovation across sub-Saharan Africa. Building off the success stories and best practices of mature East African mobile money deployments such as M-PESA’s sales in Kenya, pioneering solar companies have proven this model’s ability to reach last mile customers.

Solar household system sales have increased significantly across East and West Africa by continuously refining PAYG business models and securing partnerships with mobile network operators for mobile money integration, branding, marketing and distribution.

However, Nigeria’s digital financial services uptake has lagged in comparison, hindering the capacity of PAYG solar companies to deliver reliable, affordable energy services to rural, low-income households and businesses across the country. This represents an incredible market opportunity that has yet to be capitalized.

I.3 THE UNTAPPED POTENTIAL OF DIGITAL FINANCIAL SERVICES IN NIGERIA

Despite the extraordinarily high expenditures required to power daily life for households and businesses, PAYG solar companies lack the digital financial services (DFS) infrastructure they would need to effectively deliver more affordable electricity to Nigerian customers.

Regulatory limitations currently stifle solar companies seeking to scale in Nigeria through DFS integration. The Central Bank of Nigeria’s regulatory framework allows for two models of mobile financial services: bank-led and non-bank-led, but specifically excludes mobile network operators from providing mobile financial services directly to their customer base.

In this current regulatory environment, mobile network operators are only able to offer a mobile financial platform by hosting a third-party government-approved provider on their telecom infrastructure, but are unable to share in this revenue stream. Given these severe restrictions, MNOs have little incentive to invest in digital payment infrastructure, and customer adoption levels remain extremely low.

As a result, most authorized payment platforms serve only the banked Nigerian population in primarily urban areas, while agent networks provide limited coverage to rural areas, and no agent network provides nationwide coverage. This leaves PAYG solar companies with no digital financial services infrastructure with which to reach off-grid rural, unbanked customer bases.

I.4 A COMMITTED GOVERNMENT BUT A FRAGMENTED MARKETPLACE: BRIDGING THE GAP

The Nigerian Government, and the Rural Electrification Agency (REA) in particular, is strongly committed to providing universal access to reliable electricity power supply for rural communities.

One particularly relevant project is the Energizing Economies Program, launched through REA’s Special Projects and Renewables Department, which aims to power four large markets and

major economic centers in Nigeria with clean and stable electricity⁴. The initiative will provide off-grid solar power to traders and shop owners in Sabon Gari (Kano), Ariaria (Aba), Somolu Printing Community and Sura Shopping Complex (Lagos). This demonstrates REA's positive impact on off-grid economic marketplaces outside Abuja and Lagos urban centers. However, while the government tests new pilots, regulatory progress to support the DFS market remains stalled, and off-grid PAYG solar companies struggle to innovate "workaround solutions" in order to survive without a comprehensive DFS infrastructure from which to operate.

2. PAYG SOLAR AND FINANCIAL INCLUSION: A CRITICAL LINK

2.1 CASH PAYMENTS: SOON A RELIC OF THE PAST?

The expansion of digital financial services in emerging economies has altered the traditional payment model for service providers across industries, and in particular with low-income customers, by enabling small, regular digital payments to replace lump sum cash sales.

This transition from cash-based services has also allowed the creation of savings plans and credit profiles for previously unbanked customers, opening an ecosystem of related services. Previously inaccessible financial products such as small business loans and school fee payment plans allow families and businesses to escape the financial limitations of irregular income fluctuations common in agriculture-based rural communities, services now being offered by many PAYG solar companies.

One of the primary reasons for the large unbanked population across sub-Saharan Africa is geographical inaccessibility and poor, or nonexistent, infrastructure with many unbanked communities living in remote and rural areas. In Nigeria, over half the total population lives in rural areas, and only 39% of those living in rural communities have access to electricity. This, combined with restrictive regulations, the high cost of banking services and a lack of financial education, creates high barriers to traditional banking and other financial services for rural populations.

The mobile money industry has hoped to aid Nigeria in meeting its financial inclusion targets but has not yet gained significant traction nor contributed much to achieving the Central Bank of Nigeria's cashless or financial inclusion policies. Among citizens in the lowest income households (representing the bottom 40% of the nation's income range), only 2.37% currently have mobile money accounts.

The predominant use of cash creates several major challenges for utilities and energy service companies. Cash payments for energy service providers are cumbersome to collect (requiring a labor force deployed to rural communities and transport costs to collect), create cash flow problems for post-paid energy service providers, and are difficult to track, as there is no audit trail. This allows cash to be easily misappropriated throughout the energy supply chain and entails high costs for consumers in terms of the time and labor required to make payments.

⁴ Okafor C (2018) *FG Begins Off-Grid Electrification of Four Major Nigerian Markets*

2.2 THE POWER OF PAYG SOLAR TO DRIVE FINANCIAL INCLUSION

Stakeholders interviewed for this report share the belief that linking solar off-grid solutions with mobile money creates a path toward greater financial inclusion in Nigeria. However, PAYG solar is a deceptively complicated product. PAYG providers are unique in many ways and most have largely designed their own hardware and software. In most cases, PAYG solar providers manage their own sales, distribution, underwriting, financing, servicing and maintenance internally. This vertical integration brings with it a number of challenges, not least of which is the question of how to collect a large number of small payments on a monthly, weekly, or even daily basis.

PAYG solar exists to solve a problem in energy access, yet there is also a direct link to financial inclusion. PAYG solar is perhaps the most powerful example of what has become known as “digital finance plus.” Solar companies are now taking financial inclusion to a completely new level, providing a tangible service (access to energy) that requires customers to sign up for and start using e-money (mobile money and prepaid cards) or other electronic payment mechanisms associated with an underlying entry-level bank account.

A recent CGAP study estimates that between 15% to 30% of PAYG customers access mobile money for the first time through the purchase of a solar home system. One solar company reported that over 90% of their customers had never made a digital bill payment before they acquired PAYG solar.

It is also well accepted that the regular payment activity coming from PAYG clients improves the business case for mobile money providers. There are additional advantages and long-term benefits of PAYG solar linked to an electronic payment mechanism. Once the solar home system has been paid off, customers have a remotely securable piece of collateral in their possession. This asset can be, and often is, refinanced in order to secure additional loans. The robust 12 – 60 month payment history and usage history generated through an electronic and auditable means provides customers with valuable evidence of the ability to pay, thereby providing them with a credit history, which can be used when applying for additional loans.

2.3 DFS SUPPORTING PAYG MODELS TO SCALE

The very nature of the PAYG solar financed deal requires regular payments between the buyer and seller, and it is the nature of these interactions that determines the scalability and profitability of a given business model.

While the PAYG solar model does not depend solely on electronic payments (cash is an acceptable option), the efficiency (scalability), profitability (affordability) and accountability (transparency) of the business model are greatly enhanced when customers are able to pay remotely and electronically and do not need to visit a shop or agent to do so. Fixed shops or agents are more expensive to scale and harder to reach for rural customers than mobile wallet payments.

While low-income households living in rural and remote areas may not have previously seen the benefit of opening a mobile money account, their ability to make payments with mobile money for solar services has provided the impetus for having an account and actually using mobile money. Once a bank account is established, customers report using mobile money primarily to send money transfers, purchase airtime, and complete bill payments.

Meaningful financial inclusion involves not only access, but also the effective use of a suite of financial services products. Despite the complexity of the market, PAYG is a clear illustration of the opportunities and imperatives created by the shift to digital financial services.

At first glance, the solar industry has little to do with financial inclusion however, the expansion of reliable, affordable electricity in low resource communities demands alignment with an innovative financial services component. Without the “digital attributes” afforded by the mobile money infrastructure, companies would not likely be able to service this market as effectively.

3. THE DIGITAL FINANCIAL SERVICES ECOSYSTEM IN NIGERIA

One of the central questions this study aimed to examine was, “if the current regulatory framework in Nigeria was to transition to a telecom-led model, would this provide the sufficient foundation required to drive the PAYG off-grid solar market?” Research has found that while opening up the market to MNOs may aid in assisting the Central Bank of Nigeria to meet its financial inclusion targets over the long run, this is not the silver bullet that everyone is hoping it will be for the PAYG solar sector.

In Nigeria, the country faces a myriad of structural, technical and infrastructural problems that need to be resolved, including a fragmented digital financial services (DFS) ecosystem with numerous operators promoting proprietary systems; network complexity; a lack of interoperability (one mobile money operator to another); and poorly developed agent networks.

A confusing and often contradictory legal and regulatory framework in which mobile money is often equated with mobile banking, market participants are not equally treated, and mandatory requirements such as the Bank Verification Number (BVN) create adoption challenges. High service fees disproportionate to the income levels of under-banked and unbanked consumers and other barriers to access are basic issues requiring measured intervention before mobile network operators-led mobile money schemes are likely to have any real impact.

A more holistic approach to the enabling market conditions required to scale PAYG solar business models in Nigeria requires an understanding of the current gaps in Nigeria’s digital financial ecosystem beyond a lack of MNO participation. Figure 1 below represents key stakeholders and market actors required to promote a sustainable DFS market development trajectory. With respect to the payments system, this requires sufficient openness of the legal and regulatory environment combined with adaptable and innovative service providers.

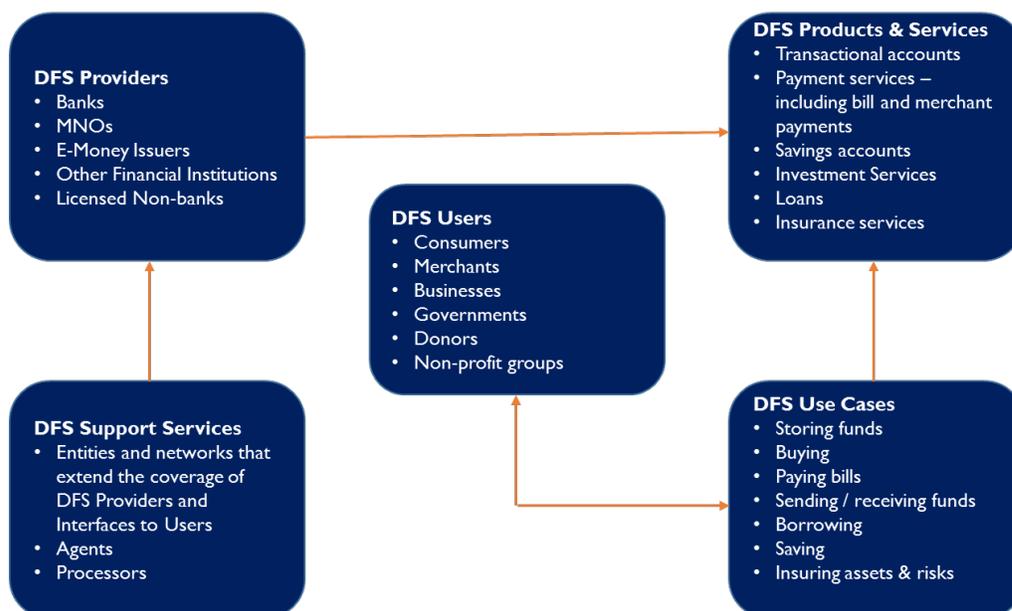


Figure 1: The Digital Financial Services (DFS) Ecosystem

A comprehensive DFS ecosystem consists of empowered users (consumers, businesses, government agencies, and non-profit groups) with a need for digital and interoperable financial products and services; accessible payment providers (banks, MNOs, e-Money issuers, and other licensed and non-licensed providers) who supply products and services through digital means; the financial and technical infrastructures required to complete transactions; and the governmental policies, laws and regulations that enable transactions to be completed in an accessible, affordable, and safe manner.

Most importantly, a strong DFS ecosystem promotes universal financial inclusion, which in Nigeria is also largely reliant on the stability and integrity of the National Payment System. The strength of this ecosystem is highly dependent on several critical components of Nigeria's enabling environment.

3.1 INFRASTRUCTURE READINESS: NIGERIA'S CRITICAL BUILDING BLOCKS FOR DFS SUCCESS

A lack of infrastructure readiness is one of the largest barriers to many companies operating in this market, due to the following challenges: available payment systems accessible to both company and consumer; voice and data communication networks to support financial messaging among providers and end users; identity systems (national IDs, sectoral IDS (financial industry identifiers, bank account numbers, and mobile numbers), or private sector IDs (WeChat or PayPal identifiers)); and reliable energy availability to power payment platforms and service providers.

The following sections highlight the key nuances underlying the critical requirements for infrastructure readiness in Nigeria's current DFS marketplace. For a deeper dive on these topics, please refer to the full report, "*The Digital Financial Services Landscape in Nigeria- Enabling Market Conditions for Pay-As-You-Go (PAYG) Solar Companies*".

3.1.1 NIGERIA'S NATIONAL PAYMENT SYSTEM

In order to operate and provide effective financial services, including transaction accounts, electronic payment mechanisms, and e-money schemes, certain financial infrastructure is required. This includes payment infrastructure as well as certain data sharing and information systems (credit reporting systems, collateral databases).

Additionally, institutional level infrastructure, such as a centralized account management system (core banking system) is required. Interbank systems for retail payments (automated clearinghouse for electronic fund transfers and/or check clearinghouses) and payment switches (typically for card transactions but increasingly for mobile money) make it possible to process a large number of payments in a fast, secure and cost-effective way.

A central clearinghouse/automated clearinghouse or switch provides the necessary "hub" for processing interbank transactions. This lifts the quality and efficiency of those transactions, and effectively expands the network access points (ATMs, Point of Sale (POS) terminals, mobile devices, agents and branches) for individual customers.

3.1.2 PARTICIPANTS IN THE NATIONAL PAYMENT SYSTEM

Although not currently legally enforceable, the Payment System Management Bill of 2017 provides good insight into the regulatory direction that the CBN is taking with respect to the future management, administration, operation, regulation and supervision of payment, clearing and settlement systems in Nigeria.

Although the bill has not yet been passed, in its effort to strengthen the oversight of the payments system, the CBN established the Payments System Policy and Oversight Office for effective monitoring of existing and planned payments system. The office currently performs monitoring and oversight functions of payment systems in Nigeria with particular reference to functions of switching companies, mobile payment operators (MPO), payment terminals service providers (PTSP), card scheme operators and payment terminal service aggregators (PTSA) and other payment service providers (Figure 3 in Appendix).

3.1.3 RETAIL PAYMENTS IN NIGERIA

The Government of Nigeria and the CBN have actively promoted several policies and used a number of mechanisms, including public information campaigns, point-of-sale guidelines, restrictions on cash-in-transit services, and substantial fees to disincentivize cash withdrawals and deposits, and the introduction of a National Electronic (e-ID) Card with payment capabilities to incentivize individuals and businesses to move away from cash and checks and to embrace electronic payments. Despite this, millions of Nigerians remain financially excluded and do not make use of any form of electronic payment mechanism.

3.1.3.1 BANK ACCOUNTS

Although basic bank accounts are the cornerstone for providing electronic payment services, many potential customers still remain financially excluded from this national system. Despite several banks offering innovative electronic payment services, Nigeria is still very much a cash-based society.

The Nigerian Inter-Bank Settlement System list only 96 million recorded bank accounts in Nigeria, only 65 million of which are active, signifying that less than 34% of the population actively transact through a bank account.

In rural areas, limited agent networks provide fragmented coverage, and no single national agent network exists to reach the unbanked consumers that off-grid PAYG solar companies currently target. It is now widely recognized that access to basic transactional accounts benefit account holders as well as the economy at-large.

Account holders can benefit from lower-cost, convenient money transfers protected by the safeguards that regulated systems offer. However, without the infrastructure for affordable access in place, uptake will remain low.

The introduction of Unstructured Supplementary Service Data (USSD), sometimes referred to as "Quick Codes" or "Feature codes", to the Nigerian banking system has made it much easier to transfer money and make payments. USSD codes allow anyone to make financial transactions without access to the Internet. Each bank in Nigeria has its own specific code that can be used by only their customers. However, it is a common misnomer that what has become known as "USSD banking" in Nigeria equates to mobile money transfer as USSD codes are typically linked to an underlying bank account from which the customer transacts. What "USSD banking" refers to is mobile banking, not mobile money (e-Money). Also, remembering each bank's code and sequence for each transaction type can be a challenge, especially for those who are unfamiliar with mobile phone technology.

3.1.3.2 ACH CREDITS, DEBITS, AND NIP INSTANT PAYMENTS

Perhaps a better indication of the success and growth of electronic payments in Nigeria is to compare the number of checks presented and processed with the volume of Electronic Funds Transfer (EFTs) processed through the Nigerian Interbank Settlement Systems (NIBSS). The number of payments processed through the NIBSS instant payment system has increased exponentially. When compared to the static volumes through NEFT, it is quite clear that the NIP system has met a need that was not being met by the various payment options available to citizens and business before the introduction of NIP.

3.1.3.3 E-BILL PAYMENTS

Recent data published on the Nigerian Interbank Settlement Systems (NIBSS) website show that between December 2015 and September 2017, although the value of e-Bill Pay transactions showed a positive upward trend, the volume of e-Bill Pay transactions has shown a very clear downward trend, with account usage not reflective of income spend. In September 2017, 61.66 thousand e-Bill Pay transactions were processed with a value of N 40.17 billion.

3.1.3.4 CARD PAYMENTS

There are currently four credit cards in Nigeria – Visa, MasterCard, American Express and Verve. All organizations offering payment-switching services must, by policy, connect to the Nigerian National Switch to ensure interoperability across different schemes. As noted by the CBN, the overwhelming use of cards in Nigeria is for ATM withdrawals and the strong growth in ATM transactions indicates a migration to the formal banking sector, even though the resulting payments may be cash. The use of cards is dominated by debit cards, as there is still a limited credit card culture in Nigeria.

ATM penetration in Nigeria is still very low, with only 17,398 ATMs having been deployed countrywide as of 2016. The value and volume of ATM transactions have shown a positive trend over the past six years. In May 2017 alone, nearly 66 million ATM transactions were made and N553.6 billion withdrawn. NIBSS data indicates that 112,847 POS devices were in the market in 2016. While the value and volume of PoS transactions has also shown a positive upward trend with 1,133,486 transactions being made in May 2017 with a value of N111.6 billion, the number and value of ATM transactions continues to dwarf POS transactions.

3.1.3.5 MOBILE MONEY

Expanding mobile telephone network coverage, increasing levels of mobile usage (prepaid and postpaid), and the rollout of innovative payment and mobile money transfer products in several African countries provide viable opportunities for financial inclusion.

Many institutions are piloting the use of prepaid payment cards and the mobile phone as a means of providing financial services to the previously financially excluded. While not a bank account in the traditional sense, mobile wallets and prepaid card products provide individuals with a safe electronic store of value and electronically initiated and accepted payment transactions and funds transfers.

In 2015, the CBN published both a Regulatory Framework for Mobile Money Services in Nigeria and Guidelines on Mobile Money Services. The Regulatory Framework makes provision for only two specific models, namely bank-led, or non-bank led (a corporate organization duly licensed by the CBN).

Mobile money was one of the major segments of the Nigeria e-payment ecosystem primed by the CBN to drive its financial inclusion vision, in which 80 percent of Nigerians will be

established in the national banking system by 2020. However, mobile money operators (MMOs) have had little success in supporting the country's financial inclusion targets. This is due to a lack of proper understanding of the conditions of their licenses, limited funds, poor infrastructure in rural areas, and limited customer access due to limited agent network rollouts⁵. Most of the licensed MMOs in Nigeria are believed to have remained inactive and many have yet to officially commence payment platform operations. Consequently, the CBN has recently taken the decision to raise the capital requirements for licenses from N500 million to N1 billion at the end of December 2017 and now to N2 billion, with a caveat that any operator that fails to meet the 1 July, 2018 deadline for the new capital requirements will have its licenses revoked, further reducing participation.

3.1.3.6 THE SHARED AGENT NETWORK EXPANSION FACILITIES

The Shared Agent Network Expansion Facilities (SANEF) is a joint initiative of the CBN, several deposit money banks, licensed mobile money operators (MMOs) and super agents, and seeks to establish a 500,000-strong agent network over the next few years to strengthen the current fragmented market. It also places higher target priorities on the geopolitical zones in Northern Nigeria where financial exclusion is predominant⁶.

According to the CBN, there were only 11,000 mobile money agents in 2017. When compared with other countries such as Ghana (140,000 agents) and Kenya (165,000) it is clear that Nigeria has nowhere near enough agents to make an agency banking/mobile money strategy successful for sufficient geographic coverage and customer servicing.

This new initiative aims to on-board 500,000 agents who will provide basic financial services, such as cash-in, cash-out, funds transfer, bill payments, airtime purchase, government disbursements as well as remote enrollment to an estimated 50 million Nigerians that are currently under-banked⁷.

3.1.3.7 INTEROPERABILITY CHALLENGES

Interoperability is the ability of an end-user dealing with one bank or financial services provider, such as an e-money issuer, to exchange a transaction with another end-user who is dealing with a different bank or financial services provider. Interoperability may be achieved either through participants all using the same system, or through inter-system networking agreements.

In Nigeria, interoperability has been mandated. MMOs are also required to connect to the National Central Switch (NCS) to ensure interoperability of all schemes in the system. Even the recently issued Guideline for Bill Payments (2017) seeks to promote the implementation of integrated bill payment systems that leverage the drive for interoperability and access to payment system infrastructure through all existing channels in the system.

Currently in Nigeria, the infrastructure supporting financial inclusion is highly fragmented, with numerous operators promoting proprietary branded DFS. Transaction exchanges between operators, although technically feasible, are rare. This gap limits adoption of DFS while

⁵ Agumagu, 2018 *Boosting Financial Inclusion via Recapitalization*

⁶ Taiwo and David-West, 2018

⁷ Komolafe, 2018

increasing network complexity. Stakeholders interviewed for the purposes of this research suggested that the regulators should prescribe a specific and open application programming interface (API) to be adopted by the various stakeholders within the DFS space. To achieve this, a memorandum of understanding (MoU) between the FSRCC and other stakeholders within the DFS space to adopt common standards should be drawn up.

3.1.4 VOICE AND DATA COMMUNICATION NETWORKS

Nigeria has struggled with poor network availability, service accessibility and voice quality over the years. The telecommunications sector has experienced stalled growth and constrained expansion capacity over the past decade due to low consumer purchasing power, a lack of access to foreign currency, and weak labor market conditions. Efforts have been made in recent years to modernize the telecom infrastructure available to mobile consumers, but service quality and coverage gaps due to poor power supply and infrastructure limitations still remain.

Competition among network operators has driven down costs for consumers, but has also resulted in serious network congestion and poor service quality. According to experts, the solution proposed at the time was to build more base stations. It was predicted that telecoms operators would have to invest in a total of 60,000 base stations to improve on the poor services currently being experienced. The telecoms companies were also advised to make additional investment in infrastructure such as cell sites to improve service quality for voice and data offerings. By June 2012, operators in the industry, including MTN, Globacom, Airtel, Etisalat and the CDMAAs that include Starcomms, Visafone and Multilinks only had 20,000 base stations serving over 100 million subscribers in Nigeria.

Stakeholder interviews conducted revealed that network coverage in rural areas remains a serious concern and an issue that drastically reduces the chances of success of advancing Nigeria's national financial inclusion targets. Additionally, research conducted by the Lagos Business School in 2017 found that extending financial inclusion to rural populations is being hampered by the high cost of roll out of telecommunications infrastructure expansion.

3.1.5 IDENTIFICATION SYSTEMS

The duplication of identity management schemes in Nigeria is a major problem. These schemes are the National Identity Number; Bank Verification Number; and SIM registration.

3.1.5.1 *National Identity Number*

In Nigeria, all financial institutions and all designated non-bank financial institutions are required to obtain a valid means of identification from existing and prospecting clients before the commencement of any business relationship.

The acceptable means of identification are a passport issued by the Nigerian Immigration Service, driver's license issued by the Federal Road Safety Commission, or National Identification Number issued by the National Identity Management Commission (NIMC).

However, voter cards and third-party identification documents are accepted for financial inclusion clients or products. This is a relaxed know-your-customer provision that allows a third party such as a clergyman, village or clan head, or headmaster, amongst others with acceptable means of identification to identify the socially disadvantaged person with no formal means of identification.

A recent report compiled by the National Money Laundering & Terrorist Financing Risk Assessment Forum highlights several of the problems including the NIMC's budgetary and funding constraints. Between 2012 and 2016, the NIMC only registered approximately 14,672,607 million Nigerians and issued 13,094,742 identification cards containing their National Identification Numbers.

Although the database is highly secured, reliable and easily accessible to the reporting entities and other competent authorities upon request, only about 5% of the Nigerian populace has been captured. The lack of generally accepted proof of formal identification required to comply with know-your-customer regulations has been a major drawback to the success of mobile money operations in Nigeria.⁸

The primary problems identified by the NRA Forum include unavailability of the data in the required format; improper record keeping; improper addressing of streets and houses; non-adherence to laid down town planning regulations; inadequacy of street names and house numbers; absence of updated records in cases of change of address, marital status and place of work; and difficulty in accessing records maintained by some of the independent sources. These gaps provide significant operational challenges for PAYG companies in the market.

3.1.5.2 Bank Verification Number

The Bank Verification Numbering (BVN) Policy was introduced by the CBN in 2014 to address the need for standard identification in the financial services sector. The national BVN policy aims at uniquely identifying bank account holders, and linking customer accounts through a unique identification number, the "BVN" and preventing misappropriation of funds by identity fraud. By linking customer information, the CBN has implemented a system, which stores transactions and customer information, and helps in detecting identity abuse, money laundering and other anomalies.

A customer can only enroll once and their BVN is then linked to all their bank accounts across Nigerian banks. The BVN policy does not technically have the backing or force of any law. There is no known piece of active legislation or one currently under consideration at the National Assembly that incorporates the BVN policy. The CBN is, however, statutorily permitted by Section 51 of its establishment statute to "make and alter rules and regulations," and Section 55 the Banks and Other Financial Institutions Act as was amended in 2002 to "make regulations ... to give full effect to the objects and objectives" of those laws. The absence of any substantive legislation on the BVN policy means that there is no law that spells out a punishment or penalty for not linking a bank account to a BVN, according to S36(12) of the Constitution.

4. CREATING AN ENABLING PAYG ENVIRONMENT

4.1 BUILDING THE LEGAL GROUNDWORK FOR A THRIVING DFS MARKET

It is quite clear that the CBN is committed to ensuring that a sound regulatory framework is in place for the National Payment System. However, most current provisions are found in

⁸ EFINA, 2014

guidelines, regulatory frameworks and circulars and have not been consolidated into legally-binding regulation.

While the intrinsic opportunities for DFS are clear, the market is still lacking clear, enforceable regulation around consumer protections, agent and super-agent operations, direct debit schemes and bill payments, and other mobile money provisions.

Nigeria has yet to enact the Payment System Management Bill (PSMB) of 2017. In the absence of an enforceable NPS Act, the CBN has extensively utilized the powers conferred by the Central Bank of Nigeria Act 2007 to prescribe rules and regulations for the efficient operation of all clearing and settlement systems to issue circulars, guidelines, regulatory frameworks and policy documents. The CBN has also issued numerous circulars to banks, MMOs and participants in the NPS. There are also two other important bills pending, the Electronic Transaction Bill and the Competition and Consumer Protection Bill. However, until an enforceable NPS Act is passed, quite a few legal loopholes exist, creating vulnerabilities for both companies and consumers alike.

4.2 UNSTABLE LEGAL FOOTING HINDERS PROGRESS FOR DFS

The Central Bank of Nigeria Act of 2007 states that one of the principal objects of the Bank is to promote a sound financial system in Nigeria. Specifically with respect to the National Payment System (NPS), the Act mandates the Bank to promote and facilitate the development of efficient and effective systems for the settlement of transactions, including the development of electronic payment systems.

In the absence of a National Payment System Act, the CBN Act has been extensively used to regulate the NPS, but until the Payment System Management Bill of 2017 is enacted, Nigeria is left exposed with no legally enforceable law in place to protect both companies and consumers against insolvency. This opens consumers and companies up to incur collateral security risks, dispute settlement finality and irrevocability, and business risks associated with unclear limitations on Central Bank oversight and supervision of the National Payment System.

Some of these provisions are contained in settlement system and Automated Clearing House Rules, Terms and Conditions and Policies and Procedures, Guidelines and Frameworks. It is preferable that these provisions are set into law, and not merely represented in bilateral agreements or other legally unenforceable documents.

The so-called “new generation” laws and regulations covering electronic money and payment services are also lacking in Nigeria. While some provisions are found in guidelines and regulatory frameworks, the actual legal enforceability of these instruments is unclear. While these guidelines and frameworks contain general principles, they require more detail and specific provisions as formalized legislation to meet in the e-Money Directive and the European Payment Services Directive (PSD2) standards. As set out below, the Nigerian Mobile Money Regulatory Framework of 2015 falls short in several vital respects including creating a level playing field, defining electronic money, consumer protection principles, account ownership stipulations, dispute resolution guidelines, etc. Another area of concern is that Nigeria has not yet promulgated a separate Electronic Communications and Transmissions Act; however, the Electronic Transactions Bill is pending.

4.3 CURRENT POLICY FRAMEWORKS FOR MOBILE MONEY

As the Payment System Management Bill has yet to be passed, the CBN makes extensive use of the powers conferred under the CBN Act 2007 to promote a sound financial system in Nigeria,

issue guidelines and facilitate the development of an efficient and effective payments system in Nigeria to issue regulations. To date, the CBN has issued the following regulations and regulatory frameworks:

- Regulatory Framework for the Use of Unstructured Supplementary Service Data (USSD) for Financial Services in Nigeria, 2018;
- Exposure Draft Regulatory Framework for Bank Verification Number (BVN) Operations and Watch List for the Nigerian Financial, 2017;
- Consumer Protection Framework (CPF), 2016;
- Regulatory Framework for Mobile Money Services in Nigeria, 2015;
- Regulatory Framework for Licensing Super Agents in Nigeria, 2015;
- Framework for the Regulation and Supervision of Domestic Systemically Important Banks (SIBs) in Nigeria, 2014;
- E-Payment Dispute Arbitration Framework, 2013;
- New Settlement Framework (for Cheque Clearing), 2004.

As the Regulatory Framework for Mobile Money Services and the Consumer Protection Framework are particularly relevant to the PAYG Solar market, these two frameworks are discussed below.

4.3.1 THE REGULATORY FRAMEWORK FOR MOBILE MONEY SERVICES IN NIGERIA

The Regulatory Framework for Mobile Money in Nigeria was issued by the CBN in 2015. This framework contains 16 regulations (referred to as “sections”) aimed at creating “an enabling environment for the orderly introduction and management of mobile payment services in Nigeria. The framework defines the regulatory environment as a policy path towards achieving availability, acceptance and usage of mobile payment services.”

Despite the stated goals of the CBN in creating a level playing field, section I of the framework makes it quite clear that MNOs are still prohibited from participating directly in the mobile money space as while “the CBN recognizes the importance of Mobile Network Operator (MNOs) in the operations of mobile money and appreciates the criticality of the infrastructure they provide, the telecom-led model (where the lead initiator is an MNO) shall not be operational in Nigeria.”

The CBN justifies the exclusion of MNOs on the basis that, “its exclusion will enable the CBN to have full control of monetary policy operations, minimize risks and ensure that the offering of financial services are driven by organizations that have been licensed by CBN to do so.” As discussed previously, several regulatory measures could be put in place to ensure that the provision of mobile money services by MNOs poses as little risk as possible. It therefore appears that the continued exclusion of MNOs is driven by factors beyond risk management, such as anti-monopoly concerns.

Framework Objectives:

1. Providing an enabling environment for the adoption of mobile payment services in reducing cash dominance in the Nigeria economy.
2. Ensuring a structured and orderly development of mobile payment services in Nigeria, with clear definition of various participants and their expected roles and responsibilities.
3. Specifying the minimum technical and business requirements for the various participants in the mobile money services industry in Nigeria.
4. Providing the basis for broad guidelines for the implementation of processes and flow of mobile payment transactions, from initiation to completion.
5. Promoting safety and effectiveness of mobile money services and thereby enhancing user confidence in the services.

Framework Participants:

- *Regulators:* Listed as both the Central Bank of Nigeria (CBN) and the Nigerian Communications Commission (NCC). This shared regulatory responsibility creates uncertainty, especially around governance of recent PAYG solar company and telecom partnership agreements.
- *Mobile Money Operators:* Mobile Money Operators are required to connect to the National Central Switch (NCS) for the purpose of ensuring interoperability of all schemes in the system. A scheme operator can be either a bank or a licensed corporate organization.
- *Infrastructure Providers:* These are organizations providing infrastructure that enable switching, processing and settlement facilities for mobile money services. Settlement here refers to Inter-Scheme Settlement.
 - *Telecommunications:* Telecommunication companies play the important role of providing the infrastructure to drive the exchange of messages for mobile payments.
 - *Inter-Scheme Settlement:* The role of Inter-Scheme Settlement Provider shall be to provide net positions of transactions across schemes to the inter-bank settlement system to affect the finality of payment for services consummated across two different Schemes by various participants.
- *Other Service Providers:* It is encouraging to note that the CBN recognizes that, with the evolution of the mobile money system, spin-off services would be identified by MMOs which can be outsourced to entities with specialized skills and resources to support such services in a more efficient and effective manner.
- *Mobile Money Agents:* The framework specifically states that the activities of Mobile Money Agents are to be guided by the provisions of the Guidelines on Agent Banking and Agent Banking Relationship in Nigeria. This appears to be another anomaly, as the provision of mobile money services is neither a banking activity (deposit taking) nor solely restricted to banks.

Key aspects of this framework relevant to PAYG solar companies, especially around consumer protection:

- **Mobile Money Scenarios:** Three methods are listed through which mobile money can be carried out in Nigeria: 1) bank account-based, 2) card account-based, and 3) stored value (e-wallet) account-based. However, it is unclear if the only card scenario which should be included is a prepaid card and not a debit and credit card, which greatly affects a PAYG solar business model.
- **Settlement:** As per section 9, the settlement finality for mobile money shall leverage the NIBSS Infrastructure and the CBN Inter-Bank Funds Transfer System (CIFTS). The Infrastructure shall facilitate instant payment to the end users and settlement of the Scheme providers on a T+1 cycle for the mobile money system.
- **Scheme Dispute Resolution:** NIBSS is required to provide the dispute resolution platform for the mobile payment systems for the use of participants in resolving inter scheme transaction disputes. It is stated that the dispute resolution process will “be aligned with the global best practices for arbitration”, leaving the payment provider with unclear arbitration terms as they currently stand.
- **Risk Management:** Risk management and protection is also unclearly defined in the current framework. It is simply stated that, “The MMOs must ensure that risk mitigation techniques are in place to minimize operational, liquidity, technical, fraud, financial and money laundering risks. The mobile payment system should not be susceptible to sustained operational failures as a result of system outages. A risk compliance officer must be assigned by the MMOs, to provide internal risk management oversight. The CBN will review the risk management program, including all of the controls that are in

- place to manage the risks on a periodic basis.” This lack of detail creates the risk of potential loopholes for predatory lenders and platform providers.
- **Know-Your-Customer and Customer Due Diligence (CDD) Requirements:** All MMOs are required to comply with the provisions of the “Three-Tiered Know-Your-Customer Requirements.” While important to highlight, the daily enforcement of “know-your-customer” regulations is largely unenforced at the agent network level, in which commission-based agent models run the risk of pushing customers to purchase above their means and income levels.
 - **Anti-Money Laundering Regulation:** In addition to the provisions of the requirements prescribed in the know-your-customer guidelines, “the CBN Anti-Money Laundering provisions shall also apply to mobile money service. The regulatory authorities reserve the right to change the criteria for suspicious transactions reporting in respect of mobile money as it deemed fit. Such amendments shall be communicated by appropriate channels to the mobile money operators and other stakeholders.” The language currently utilized around anti-money practices is laudable, however a checks-and-balance system needs to be in place similar to commercial banking practices. Without stringent alert systems operating, a third-party actor could misuse a payment platform for illicit purposes while mobile money regulations are still in their infancy.
 - **Consumer Protection and Dispute Resolution:** The framework simply states that in order “to build confidence in the mobile money system, a dispute resolution mechanism needs to be put in place”. A robust code of conduct for all DFS providers needs to be established and enforced by the CBN and NCC, otherwise PAYG solar companies engaging platforms for their customer service and payment transactions could unknowingly put their customer base at risk.

4.3.2 THE CONSUMER PROTECTION FRAMEWORK

In recognition of some of the current deficiencies, CBN introduced a Consumer Protection Framework (CPF) in 2016, in exercise of its powers under the CBN Act. International principles outlined by the G20 High-level Principles, the World Bank Good Practices and European Union Four Pillars of Consumer Protection are reflected in the framework. Through nine consumer protection principles, the CPF outlines the role and responsibility of the CBN in ensuring financial institution compliance and grants wide-ranging powers to CBN to punish offenders. However, specific mechanisms on how the CBN will exercise these powers to protect consumers, beyond its customary practices and other regulatory objectives are yet to be properly documented and publicized.

Consumer protection in Nigeria is a particular cause for concern. The Competition and Consumer Protection Bill has yet to be passed and the CBN’s Consumer Protection Framework, 2016 while covering several international best practice principles provides very little substance in terms of substantive provisions, leaving an effective consumer protection void. It is critical that vulnerable consumers at the base of the pyramid are protected when accessing financial services and entering into finance deals for products such as PAYG SHS. DFS providers need to establish transparent, respectful and prudent financial services, and due to a global push in recent years to protect consumers from unscrupulous lenders, several client protection principles in the PAYG market have started to emerge⁹. These principles, the 2018 Consumer

Protection Code of Conduct¹⁰, developed by GOGLA and industry market leaders, include: (1) affordability (avoid over-indebtedness); (2) fair and transparent pricing and sales; (3) data privacy; and (4) product and service quality and durability, truth-in-advertising, after-sales service, warranty protection, and proactive end-of-life management. This stringent approach is still lacking at the digital payments level, leaving customers vulnerable to misuse by predatory payment providers.

5. NEXT STEPS: PROMOTING A SUSTAINABLE PATH TO UNIVERSAL ENERGY ACCESS AND FINANCIAL INCLUSION IN NIGERIA

5.1 THE ECONOMIC BENEFITS OF DFS IN NIGERIA: BEYOND PAYG SOLAR

Above and beyond the clear benefits to the PAYG solar sector, further adoption of digital financial services could increase Nigeria's GDP by as much as 12.4% by 2025 through increases in productivity, investment, and labor. This conservative estimate represents a significant opportunity, as recent estimates demonstrate that over 95% of daily transactions in Nigeria are conducted in cash.

Nigeria recently commenced the process of transitioning to a cashless economy by January 1, 2021, with an initial DFS pilot in Lagos state. The aim of the policy is to reduce the amount of physical cash circulating in the economy, and encourage more electronic-based transactions, such as payments for goods, services, remittances, etc.

Digital financial inclusion will help to achieve this cashless vision, while underpinning advancements across agriculture, energy, health, and education, and speed Nigeria's achievement of the UN's Sustainable Development Goals.

This represents an initial first step towards establishing a national digital infrastructure and a dynamic financial services market, providing affordable, accessible financial products promoting financial inclusion for all Nigerians. In order to achieve this vision, new market entrants such as payment platform providers, financial institutions, technology companies, and innovators must be legally empowered to partner as well as compete with incumbent financial institutions. Until then, a fragmented DFS market will struggle to support the nation's objective of universal energy access and financial inclusion, representing a missed economic opportunity for Nigeria's future.

5.2 KEY RECOMMENDATIONS TO ADVANCE THE DFS MARKETPLACE FOR PAYG SOLAR

The high-level recommendations outlined below, and described in greater detail in the full report, are suggestions to foster an environment conducive to debate and discussion.

The PAYG solar sector in Nigeria is operating in a highly complex market, which requires the interaction and agreement of multiple stakeholders at the confluence of clean energy provision,

¹⁰ GOGLA (2018) *Consumer Protection Code of Conduct*

financial inclusion, consumer protection and the stability and soundness of the National Payment System in Nigeria.

1. **Promoting a Holistic, Legally-Binding Regulatory Framework:** Engage with the CBN and NCC on reviewing the current legal and regulatory framework, including numerous guidelines, frameworks, and circulars but limited enforceable laws, against international best practice and how best to consolidate these into 3-4 enforceable laws with supporting regulations.

Several African countries have moved away from regulating on a technology specific level (mobile money-specific regulations) and have moved towards a National Payment Systems Act (integrating e-Money and Payment Services regulation with the Payment System Management Bill of 2017). The existence of numerous guidelines and regulatory frameworks issued by two different regulators (CBN and NCC) not only causes confusion in the market, but erodes the legitimacy of each framework and guideline issued. A full review should be conducted, contradictory provisions identified, and a streamlined legal and regulatory framework proposed.

2. **Robust Consumer Protection:** Leverage the work being undertaken by the Smart Campaign and other government consumer protection initiatives to research and design an appropriate consumer protection framework for off grid solar in Nigeria. This should cover both the quality of the SHS, the financial terms by lenders and the standard consumer protection terms related to electronic payments. This initiative could be used to drive the need for change and spur the move toward responsible financing and consumer protection.
3. **A Customer-Centric National Agent Network:** Engage with the stakeholders involved in the CBN's Shared Agent Network Expansion Facilities initiative in order to provide additive funding and technical support. This initiative could represent an ideal opportunity to test a multiple payment service provider strategy for PAYG solar and identify optimal distribution and payment mechanisms from a practical, technical, policy, legal and regulatory perspective. Stakeholders such as Mastercard, for example, currently piloting a QR code solution pilot in Uganda, could have key lessons from other country markets to support this testing phase.
4. **Promoting Interoperability:** Engage with industry stakeholders including CBN, NCC, NIBSS, Interswitch and other current NPS participants and service providers to support any initiative required to ensure that all payment platforms in Nigeria are interoperable and that payments can be made from bank account to MMO and from MMOs to MMOs. While opening up the market to telecom may aid in assisting the CBN to meet its financial inclusion targets over the long run, this is not a silver bullet and the market will require a diverse DFS provider network.
5. **Maximizing Government Energy Access Pilots:** Engage the Rural Electrification Agency and current payment service providers to maximize the Energizing Economies Program - and future government pilots - as practical test cases demonstrating ideal legal and regulatory requirements, consumer protection provisions, and optimal business and financing models. Building upon the work that has already been done by the Nigerian Government, these pilots could prove ideal "mini regulatory sandboxes" to test innovation and promote advantageous legislation.

5.3 FORGING AHEAD: THE ROLE OF INDUSTRY AND INDUSTRY ADVOCATES TO PROMOTE DFS TO ACCELERATE PAYG SOLAR

USAID has commissioned a full report that provides a deeper dive into the digital financial services industry in Nigeria, outlining the requirements for digital infrastructure readiness and the nuances behind current regulatory restrictions hindering this industry's growth. Please see

“The Digital Financial Services Landscape in Nigeria- Enabling Market Conditions for Pay-As-You-Go (PAYG) Solar Companies” for further details.



APPENDIX

FIGURE 2: CURRENT NATIONAL PAYMENT SYSTEM PROVIDERS (JUNE 2018)

RTGS	Central Bank of Nigeria Inter-bank Fund Transfer - CIFT						
Clearing House	Nigeria Inter-Bank Clearing & Settlement System						
Switches (Commercial License)¹¹	ARCA Networks Limited	Chams Switch Limited	E-Revenue Gateway (ERG) Limited	ETranzact International Plc			
	Interswitch Nigeria Limited	Unified Payments Services Limited	Xpress Payments Solutions Limited				
Payments Solution Service Provider (PSSP) with a Commercial License¹²	ETranzact International Plc.	Flutterwave Technology Solutions Service	Infiniti Segment Limited	Interswitch Nigeria Limited	Parkway Projects Limited	Payattitude Limited	
	PayU Payments Nigeria Limited	SystemsSpecs Limited	Unified Payments Services Limited	Upperlink Limited	Venture Gardens Nigeria Limited	Xpress Payments Solutions Limited	Cellulant Nigeria Limited
Payment Terminal Service Providers (PTSP) Licensed¹³	Brinq Africa Payment Solutions Ltd	Citiserive Limited	Computer Warehouse Group	Easy Fuel Limited	ETop Nigeria Limited		
	Grand Towers Plc.	Global Accelerex Limited	Globasure Technologies Ltd	Interswitch Limited	Intellin Solutions Limited		
	Netop Business Systems Limited	Netplus Strategy & Sales Advisory Ltd	Paymaster Limited	Transaction Payment Solution (TPS) Limited	Unified Payments Services Limited		
	Fidesic Nigeria Limited	ITex Integrated Services Limited	Xpress Payments Solutions Limited	Wi-pay Technologies Limited			
Card Schemes	American Express	MasterCard International	Visa International	Verve International			
Third Party Processors (TPP)	Emerging Markets Payments (EMP)	ETranzact International Plc.	Unified Payment Service Limited	Xpress Payment Solutions Limited			

11 Bema Seamless International Limited and CoralPay Limited have Approval in Principle (AIP).

12 ARCA Networks Limited, CoralPay Limited, e-Purse Systems Limited, Electronic Settlement Limited (ESL), Netplus Strategy & Sales Advisory Ltd, Paystack Payments Limited and Saana Corporate Investment Management Ltd have Approval in Principle (AIP).

13 3Gee Pay Limited, ARCA Networks Limited, Aurora Wireless Limited, BizzDesk Global Solutions Limited, e-Payment Plus Limited, Funds and Electronics Transfer Solution (FETS) Limited, Soti Investment Ltd and Swiftlink NZ Global Services Limited have Approval in Principle (AIP).

Commercial License	West Africa Limited				
Mobile Money Operator Bank Led (Commercial License)¹⁴	Access Bank Plc.	Ecobank Nigeria	FCMB Limited	Fidelity Bank Plc.	First Monie
	Fortis Mobile Money	GTB Mobile Money	Stanbic IBTC Nigeria	Sterling Bank Plc.	Zenith Bank Plc.
Mobile Network Operators Non Bank Led (Commercial License)¹⁵	Cellulant Nigeria Limited	Chams Mobile	Contec Global Infotech Limited	Eartholeum Networks	ETranzact International Plc.
	Funds & Electronics Transfer Solution (FETS)	Hedonmark Management Services Limited	MKudi Limited	Pagatech	Parkway Projects Limited
	PayCom Nigeria Limited	Teasy International Company Ltd	Virtual Terminal (VT) Network Limited	Visual ICT Limited	Zinternet Nigeria Limited
Super Agents¹⁶	Capricorn Digital Limited	Innovatives Limited	Interswitch Financial Inclusion services (IFIS) Limited		

14 Diamond Bank Plc., Sun Trust Bank Nigeria Ltd, Union Bank Limited and FCMB have Approval in Principle (AIP).

15 Aurora Wireless Ltd, .Intellifin Solution Limited, MoneyBox Africa Limited and Wi-Pay Technologies Limited have Approval in Principle (AIP).

16 3-Line Card Management Limited and Inlaks Computer Limited have Approval in Principle (AIP).

ACRONYMS

AIP	Approval in Principle
AML/CFT	Anti-Money Laundering and Countering Financing of Terrorism
ATM	Automated Teller Machine
BVN	Bank Verification Number
CBN	Central Bank of Nigeria
CDMA	Code Division Multiple Access
CEO	Chief Executive Officer
CGAP	Consultative Group to Assist the Poor
DFS	Digital Financial Services
DMB	Deposit Money Banks
EEP	Energizing Economies Program
EFT	Electronic Funds Transfer
EFlnA	Enhancing Financial Innovation & Access
FRSC	Federal Road Safety Commission
FSRCC	Financial Services Regulation Coordinating Committee
GOGLA	Global Off-Grid Lighting Association
GSMA	<i>Groupe Spéciale</i> Mobile Association
GSM	Global System for Mobile Communications
IFIS	Inter-switch Financial Inclusion Services Limited
KYC	Know Your Customer
LPFM	Leadership in Public Financial Management
M2M	Machine-to-Machine
MMO	Mobile Money Operator
MNO	Mobile Network Operator
N	Nigerian Naira
NCC	Nigerian Communications Commission
NCS	Nigeria Central Switch
NEFT	NIBSS Electronic Funds Transfer
NIBSS	Nigerian Inter-Bank Settlement System
NIMC	National Identity Management Commission
NIN	National Identity Number
NIP	NIBSS Instant Payments
NPS	National Payment System
PAYG	Pay-as-you-go
PIN	Personal Identification Number
POS	Point of Sale
PSP	Payment Service Provider
PTSA	Payment Terminal Service Aggregator
PTSP	Payment Terminal Service Provider
PSD2	European Payment Services Directive
QR	Quick Response
REA	Rural Electrification Agency
RTGS	Real Time Gross Settlement
SEC	Securities and Exchange Commission
SHS	Solar Home System
SIM	Subscriber Identity Module
SMS	Short Message Service
SP&R	Special Projects and Renewables Department (RIA)
USAID	United States Agency for International Development
USSD	Unstructured Supplement Service Data
USD	United States Dollar
VAS	Value Added Service

REFERENCES

1. Adelman D (2015) *Actor-Based Incentives for the Restriction of Mobile Payments in Developing Countries*
2. Agumagu J (2018) *Mobile Money: Boosting Financial Inclusion via Recapitalisation*
3. Aker, J, Boumniel R, McClelland A, and Tierney T (2016) *Payment Mechanisms and Anti-Poverty Programs: Evidence from a Mobile Money Cash Transfer Experiment in Niger*
4. Alstone P, Gershenson D, Turman-Bryant N, Kammen D and Jacobson A (2015) *Off-Grid Power and Connectivity Pay-as-you-go Financing and Digital Supply Chains for Pico-Solar*
5. Bank for International Settlements and International Organization of Securities Commissions (2012) *Principles for Financial Market Infrastructures. The Principles for Financial Market Infrastructures (PFMI)*
6. Better than Cash Alliance (2015a) *Nigeria's "Cashless" Policy*
7. Better than Cash Alliance (2015b) *Nigeria Country Diagnostic*
8. Better than Cash Alliance and UNCDF (2017) *The Fight for Light: Improving Energy Access through Digital Payments*
9. CGAP (2014) *Access to Energy via Digital Finance: Overview of Models and Prospects for Innovation*
10. Chinwendu Udogu J (2017) *Mobile Money: Banks, Telcos Fight Dirty in Nigeria*
11. CGAP (2017) *Exploring Opportunities for PAYG Solar as a Driver of Financial Inclusion*
12. Deloitte (Undated) *Real-time Payments are Changing the Reality of Payments*
13. EFINA (2011) *EFInA Quarterly Review (Jul-Sep 2011)*
14. EFINA (2012) *EFInA Quarterly Review (Apr-Jun 2012)*
15. Elias N (2013) *Time to let loose? Why Lawmakers Should Ease Up on Mobile Banking Rules*
16. Komolafe B (2018) *Financial Inclusion: CBN, Banks Target 60m Nigerians with 500,000 Agents' Network*
17. *The Economist* (2013) *Airtime Is Money*
18. ETH Zurich et al. (2017) *The Economic Impact of Solar Lighting: Results from a Randomised Field Experiment in Rural Kenya*
19. Global Off-Grid Lighting Association (2017) *Providing Energy Access Through Off-Grid Solar: Guidance for Governments*
20. GOGLA (2018) *Building Customer-Centric Businesses: A Pro-Active Approach towards Consumer Protection in the Off-Grid Solar Industry*
21. GSMA (2017) *Easypaisa: A Mobile Operator-led Solar PAYG Model for Pakistan*
22. GSMA Mobile for Development Utilities Programme (2016) *Assessing the Opportunity for Pay-as-you-go Solar in Nigeria*
23. GSMA (2018) *The Mobile Economy 2018*
24. GSMA (2013) *Sustainable Energy & Water Access through M2M Connectivity*
25. GSMA (2016) *Mobile for Development Utilities Lumos: Pay-as-you-go solar in Nigeria with MTN*
26. IFC (2018)
27. IRENA (2016) *Renewable Energy and Jobs*
28. ITU (2016) *The Digital Financial Services Ecosystem*
29. Kiyonga D and Mewsigwa A (2015) *Mobile Money Fraud: Witnesses Pin Former Bosses, Mwami Exonerated*
30. Lagos Business School (2017) *Digital Financial Services in Nigeria: State of the Market Report 2017*
31. Llewellyn-Jones L (2016) *Why Mobile Money Transformed Kenya, but Failed to Take off in Nigeria*
32. Mark O (2014) *Solar Lamp Top-Ups on M-Pesa Pay Bill Jump to 10,000 Per Day*
33. Mondato (2014) *The Risks and Rewards of Airtime as Currency*
34. Mloi S (2018) *Using QR Payment Technology for Pay-as-you-go Solar Power in Uganda*
35. Nique M and Arab F (2013) *Sustainable Energy & Water Access through M2M Connectivity*
36. NRA Forum (2016) *Report of Nigeria National Risk Assessment on Money Laundering and Terrorism Financing 2016*
37. Ogunipe S (2017) *Nigerian Govt takes Ownership of Funds held in Bank Accounts not Linked to BVNs*
38. Okafor C (2018) *FG Begins Off-Grid Electrification of Four Major Nigerian Markets*
39. Rural Electrification Agency (REA) (2017) *The Off-Grid Opportunity in Nigeria – Upscaling Minigrids for Least Cost and Timely Access to Electricity*
40. Suri T and Jack W (2016) *The Long-Run Poverty and Gender Impacts of Mobile Money*
41. Taiwo I and David-West O (2018) *Building Nigeria's Agent Network: The Journey Begins*
42. UNEP (2014) *Light and Livelihood: A Bright Outlook for Employment in the Transition from Fuel-Based Lighting to Electrical Alternatives*
43. Waldron D and Faz X (2016) *Digitally Financed Energy: How Off-Grid Solar Providers Leverage Digital Payments and Drive Financial Inclusion*
44. World Bank (2017a) *State of Electricity Access*
45. World Bank (2017b) *Tanzania Economic Update: Money within Reach – Extending Financial Inclusion in Tanzania*
46. World Bank (2018) *The Global Findex Database Measuring Financial Inclusion and the Fintech Revolution 2017*
47. Zollmann J, Waldron D, Sotiriou A, and Gachoka A (2017) *Escaping Darkness Understanding Consumer Value in PAYGo Solar*