



LiteDey System Solution

Lease-to-own business model specifically targeting MSMEs in peri-urban and urban areas

The LiteDey System Solution is a standalone solar system which is being rolled out at scale across Nigeria since 2021 via a Lease-to-Own (LTO) business model. The LiteDey concept mainly targets Micro, Small and Medium Enterprises (MSMEs) in rural and peri-urban areas with unreliable power supply. This case study identifies the key success factors and lessons learnt during the development and scale-up of the concept, with a particular focus on the approach to designing the business and financing model.



Figure 1.
Installation of
LiteDey system
(Source: CREEDS)

General information

Project name	LiteDey System
Developer	CREEDS www.creedsenergy.com
Location	FCT, Plateau, Rivers, Cross Rivers, Kano (Nigeria)
Focus dimension	Design of business and financing model
Type of action	Electrification intervention
Financing sources	Equity, grants, loans
Technology	Standalone solar PV

Introduction

The LiteDey System Solution was developed by [CREEDS](#), a Nigerian solar energy solutions provider established in 2012. LiteDey and its associated LTO model were piloted in Mpape (FCT) over 2017-2018. During this pilot phase, a local commercial bank (Sterling Bank) supported the consumer financing. In 2019, CREEDS accessed further blended financing from USADF and All On, and expanded the scope of the LiteDey pilot to 100 MSMEs in Plateau and Rivers State. Through a collaboration between CREEDS, and the [Access to Energy Institute](#) (A2EI), further research and development was done to enable data-driven product design. The initial tests began in 2019 with the installation of over 150 smart flow meters on small-sized gasoline generators in different locations. The data collected helped to build reliable evidence on generator usage patterns across MSMEs. These data were then complemented with qualitative household interviews and led to the design of several prototypes of solar generators.

Based on its experiences, CREEDS developed a business model and approach for upscaling the LiteDey Solutions concept. In May 2021, the [Rural Electrification Agency](#) (REA) awarded CREEDS the Output-Based Fund agreement under the Standalone Solar Homes System component of Nigeria Electrification Project (NEP). Within this agreement, CREEDS aims to deploy 3,600 SHS units across Nigeria by end of 2023.

At the time of writing, 1,326 units of the LiteDey package are available in around 20 hubs across 11 states. Typical customers are small shops, barbers, small restaurants, pharmacies, money agents and phone charging stands. Re-payment rates are standing at 80% and only one theft was recorded. The project aims for a deployment rate of a minimum of 150 systems per month.



Figure 2. LiteDey System powering a local barber shop in Makurdi, Benue State (Source: CREEDS)

Technology and operational model

The LiteDey Solution is provided as a complete system costing NGN 800,000 (2023 prices) per unit and comprising two 400W solar panels, a 1000W inverter and 1200Wh/2400wh batteries.

The LiteDey System Solution units are manufactured by A2EI. Initially designed as a 3 kVA system, experience showed that this was suited to larger enterprises and a smaller more suitable version, the 1 kVA system, was introduced for micro-enterprises.

Batteries are a key element of the system and their design builds on previous experience in the standalone solar market. They have an average lifespan of 5 years and use a lead-carbon technology, which increases their reliability.

Key components of the system include remote monitoring. However, important lessons have been learnt regarding the availability of parts and components locally. Supply chain disruptions during

the pandemic led to some delays and to the refinement of the operational model so that it can ensure a quick turnaround in case of maintenance issues.

LiteDey's operational model consists of physical service support and maintenance hubs close to the target locations. In specific hubs with many customers, there is a manager on location and local technicians, while the head office provides backend support for functions such as business development and engineering.

The few replacements and maintenance needs of installed systems have mainly been centred on the inverter; no battery has been replaced. These inverters were affected by external factors such as lighting strikes, low-input grid voltage and short circuit faults from the customer appliances.



Figure 3. Testing and commissioning of system
(Source: CREEDS)

Business model design

LiteDey customers are mostly MSMEs and households. They have the option of outright purchase in order to own the system, or of lease-to-own repayments for up to 26 months. The outright purchase price is NGN 800,000 and the total LTO price NGN 1,018,000. The latter is broken down into a 10% down payment and weekly payments of around USD 8. The prices include a 30% margin in case of outright purchase and an 80% margin in case of the LTO. Customers are guaranteed two years of free maintenance.

Customer payments are enabled via the A2EI PAYG application and PAGA USSD payment system, while the customer management platform and dashboard for backend analytics is provided by [Solaris PayGOps](#). The system allows CREEDS to switch the unit on or off remotely in the event of non-payment. Under the customer contract, after a maximum of four weeks of non-payments, the system is retrieved and reassigned to new customers at a discounted price. At the time of writing, CREEDS has only had to retrieve three systems which were then deployed to other customers.

CREEDS received technical assistance support from [PowerAfrica](#), [CrossBoundary](#) and the [Private Financing Advisory Network](#) (PFAN) to develop its business and financing model. [The Business Model Canvas](#) was used to describe and visualize the rationale for how LiteDey creates, delivers and captures value.

Financing model

LiteDey's financial model builds on a sound technical concept and business model, both of which had been extensively tested prior to approaching financiers. CREEDS, like other developers in the Nigerian market, invested significant time and resources in making sure all the requirements for REA's NEP financing were met. This included ensuring the systems met International Electrotechnical Commission (IEC) standards, as well as other regulatory requirements, audited accounts and extensive details on the business and financial plan. A2EI, the systems' developers, also submitted the required technical specifications and information regarding their systems to the NEP. It took CREEDS approximately six months to prepare all requirements for the application.

The performance-based grant that REA awarded CREEDS in May 2021 supports the roll out of the systems over a 2-year period. It also serves as a de-risking tool that allows CREEDS to leverage further financial resources for future scale up. Based on CREEDS' track-record, other partnerships and financing sources and impact investors for both debt and equity are currently under consideration.

Incorporating remote sensing systems into the design is central to the model and to raising finance. Data analytics on payments and customer location are a basis for creditworthiness assessments by financiers such as [Nithio](#) (in partnership with Solaris).

Key figures

- | | |
|-----------------------|---|
| 2019-2021 | <ul style="list-style-type: none"> • 440 systems rolled out in households and MSMEs • 335 kWp total installed solar PV capacity • 76% average weekly repayment rate, 2% default rate • USD 192,000 equivalent energy expenditure on fuel generators saved |
| 2021-2022 | <ul style="list-style-type: none"> • 667 systems rolled out • 533 kWp total installed capacity |
| 2022-2023 | <ul style="list-style-type: none"> • 219 systems rolled out in • 175 kWp total installed capacity • Over 1MW installed in total |
| Future outlook | <ul style="list-style-type: none"> • Installation of 3,600 units by end of 2023 • Goal to install 250 systems monthly |

LiteDey's customer payments are in local currency whereas payments to suppliers and from financiers are in USD. The LiteDey business plan and financing model therefore needs to manage currency risks. This includes carrying out regular sensitivity analysis and engaging closely with customers. In recent times, customers are experiencing an increase in costs of grid electricity and other costs as a result of inflation and fuel subsidy removal.

Social and environmental impacts

A key aspect of the LiteDey model is that it specifically targets the productive users – MSMEs. Customers see a reduction in their energy expenditure and are able to put money back into their business, increasing hours of business operation and/or increasing income. There is some evidence of customers undertaking new investments into productive use appliances, but this is not widespread and is not the focus of the LiteDey model. CREEDS raises awareness among its customers around energy efficient applications, as this is crucial for the system's reliability and longevity.

A comparative analysis from field experiences shows that in 2018 and 2019 the energy spent by MSMEs who used the LiteDey system fell by 30% per year compared to the previous use of fuel generators. The businesses spent up to NGN 1,000 daily on fuelling generators and only NGN 733 daily for the use and repayment of the solar systems (2019 prices).

Many customers have experienced a large reduction on their energy expenses for running their businesses, despite continuous increases in fuel cost. The system has also empowered women operating cottage businesses by providing affordable and clean energy, allowing them to run their businesses from their homes.

Replicability

Nigeria has around 41.5 million MSMEs, accounting for more than 76% of total jobs and around 50% of the total GDP in the country (PwC, 2020). However, due to poor grid access, 11 million small gasoline generators (0–4 kVA) are being used to power MSMEs, in addition to another 11 million for households. The market and demand for small generators is expected to increase at a rate of 3%

Customer Testimonials

What Mpape customers using Litedey said after 18 months of use:

Pascal Chinedu, who sells clothing, shoes and handbags: *"Solar is nice. It is good to go for. I encourage people to try this. It is good, it will save you cost."*

Emmanuel Odeh, who owns a barbershop: *"I prefer using solar because it makes my work so easy and faster. It's not something that will stress me. It doesn't make noise. Once the sun is out, you start using it perfectly."*

yearly. This points to both the need and high potential for replacing small generators with solar solutions. With effective implementation, solar systems can tap into a USD 12 billion-a-year market in Nigeria (A2EI and Dalberg, 2019).

The replicability of the LiteDey model hinges on the continued price drops for solar and battery technologies, rising confidence of market players and improvements in the enabling policy and regulatory environment.



Figure 4. LiteDey System powering a clothes retail shop
(Source: CREEDS)

Lessons learnt

- An extensive design and testing phase was central to the development of a sustainable model that meets the needs of the users.
- During testing key lessons were learnt on the technical design (sizing, storage, remote sensing capabilities), maintenance (in particular, risks to availability of components), financing (in particular, currency exchange risks) and design of payments, collections and operational model (e.g., balancing the costs and benefits of physical support services).
- There has been an effect of subsidies and their removal on the system's end-user prices.
- Key success factors include CREEDS' local presence and understanding of the user needs as well and long-standing partnerships and collaborations, such as with A2EI.

Further resources

- Watch the video <https://www.facebook.com/CreedsEnergyLimited/videos/2942047899348987/> for the “Solar Killed the Generator Star” Project with testimonials from the testing in Wuse market in Abuja in 2018.
- CREEDS www.creeds.com
- A2EI www.a2ei.org
- The Business Model Canvas Template www.strategyzer.com/canvas
- Solaris Offgrid www.solarisoffgrid.com
- PaygOps Software www.paygops.com

Bibliography

- A2EI and Dalberg. (2019). Putting an End to Nigeria’s Generator Crisis: The Path Forward. <https://a2ei.org/news/new-report-on-replacing-fossil-fuel-generator>
- CREEDS Energy. (2021). Solar Power Naija – Nigeria Sovereign Investment Authority Presentation. Unpublished.
- PwC. (2020). PwC MSME Survey 2020 Nigeria report. <https://www.pwc.com/ng/en/assets/pdf/pwc-msme-survey-2020-final.pdf>
- REA. (2021). REA Signs 5th OBF Grant Agreement With Six (6) SHS Companies. <https://rea.gov.ng/rea-signs-5th-obf-grant-agreement-six-6-shs-companies/>



Find more information and case studies on the Nigeria Off-grid Solar Knowledge Hub:

https://energypedia.info/wiki/Nigeria_Off-Grid_Solar_Knowledge_Hub

SPONSORED BY THE



Federal Ministry
of Education
and Research