



**USAID**  
FROM THE AMERICAN PEOPLE



# ACCELERATING ACCESS TO LOCAL CURRENCY DEBT FINANCE FOR SOLAR HOME SYSTEM BUSINESSES IN UGANDA

NOVEMBER 2019

# TABLE OF CONTENTS

EXECUTIVE SUMMARY I

THE MARKET FOR SOLAR HOME SYSTEMS IN UGANDA 3

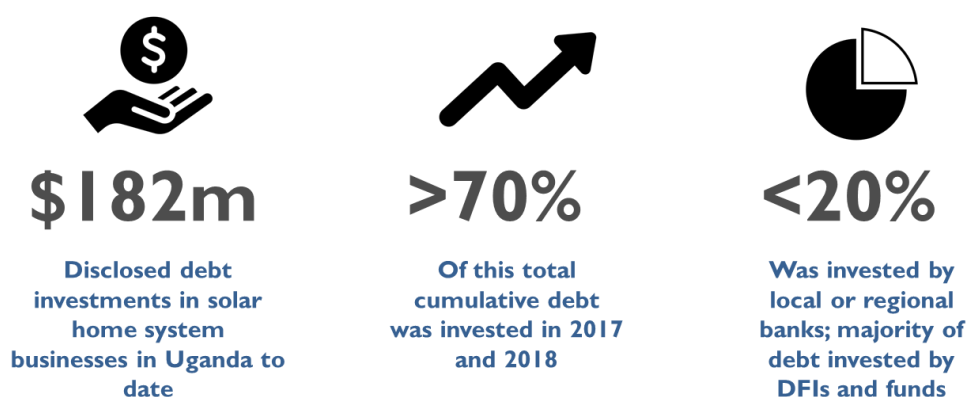
OVERVIEW OF DEBT FINANCING STRUCTURES AND GLOBAL INITIATIVES FOR ACCELERATING LOCAL CURRENCY DEBT 9

LOCAL CURRENCY DEBT FINANCING FOR SOLAR HOME SYSTEMS IN UGANDA 14

RECOMMENDATIONS FOR BUILDING A SUSTAINABLE LOCAL CURRENCY DEBT ECOSYSTEM FOR THE SOLAR HOME SYSTEM SECTOR IN UGANDA 20

## EXECUTIVE SUMMARY

To achieve universal energy access in Uganda by 2030, an estimated 670,000 households a year will need to be provided with reliable and modern sources of energy. This will not be viable through grid expansion alone due to the high cost of connection in sparsely populated rural areas and the low ability to pay of most of the population. Off-grid solar businesses have demonstrated the capacity and willingness to help plug this energy access gap through the provision of solar home system products with the capacity to power lights, small appliances and charge mobile phones. Although sales have grown rapidly, driven primarily by pay-as-you-go (PAYGO) consumer financing innovations, the ~350,000 systems purchased to date represent only 6% of the potential market. It is estimated that \$1.3 billion of equity and debt investments in solar home systems companies in Uganda will be required to achieve universal energy access by 2030.



Solar home system companies require this scale of investment to build extensive sales and distribution networks in often hard to reach rural areas, as well as to finance working capital for inventory and receivables. Companies offering systems on credit have particularly long working capital cycles and cannot finance expansions through cashflows from operations during the scaling phase. In addition to this external funding in hard currency (e.g. USD or EUR) exposes firms to significant foreign exchange risk as credit sales are made in local currency. Reducing this risk and ensuring the long-term sustainability of the sector will require increased investment in local currency denominated debt.

To date, solar home system businesses operating in Uganda have raised USD 182 million in debt financing. However, UOMA estimates that over 95% of this debt investment has gone to established, “first generation” businesses. This is problematic as “second generation” businesses focused on distributing solar home systems to previously unserved areas have struggled to raise capital to scale. Furthermore, regional and local banks have invested less than 20% of debt financing to the sector in Uganda, with the majority of financing coming from DFIs, impact investors and other funds. While some of the debt invested by DFIs and investment funds have been in local currency equivalent facilities, the majority has been invested in hard currency and exposes businesses to FX risk as they scale.

To ensure long term sustainability of the sector in Uganda, local currency debt financing will need to come primarily from local and regional banks. Significant risk sharing and technical assistance support will be required from development partners, DFIs, impact investors and funds, and government to get to this stage. Furthermore, DFIs and funds will need to increase the level of debt invested in local currency funds in order to bridge the gap in the market in the interim and “crowd in” local banks.

	Current state	Local debt scale up	Sector sustainability
Key lenders	<ul style="list-style-type: none"> <li>• Development finance institutions (DFIs)</li> <li>• Impact investors and specialist funds</li> <li>• &lt;20% local banks</li> </ul>	<ul style="list-style-type: none"> <li>• DFIs and funds invest more in local currency</li> <li>• Increase in total and proportional local bank investment</li> </ul>	<ul style="list-style-type: none"> <li>• Local and regional banks &gt;75% of investment</li> <li>• DFIs and funds invest in innovative models</li> </ul>
Types of facilities	<ul style="list-style-type: none"> <li>• On balance sheet</li> <li>• Few pilot SPVs</li> <li>• Low uptake of guarantees and lines of credit</li> </ul>	<ul style="list-style-type: none"> <li>• DFIs and funds pilot tiered capital facilities with local banks</li> <li>• Embedded TA</li> <li>• Risk-sharing mechanisms utilized</li> </ul>	<ul style="list-style-type: none"> <li>• Local and regional banks lead on and off-balance sheet lending</li> <li>• Phase out of risk-sharing mechanisms</li> </ul>
Sector outcomes	<ul style="list-style-type: none"> <li>• Limited local currency debt; SHS businesses exposed to FX risk</li> <li>• 2<sup>nd</sup> generation businesses struggle to access debt finance</li> </ul>	<ul style="list-style-type: none"> <li>• Local banks “crowded-in” and shift perception of risk</li> <li>• 2<sup>nd</sup> generation businesses begin to scale</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable local currency debt ecosystem for SHS</li> <li>• Multiple SHS deployments at scale contribute to SDG 7</li> </ul>

The objective of this white paper is to identify strategies for increasing access to local currency debt financing for solar home system (SHS) businesses in Uganda, to enable scaling of the sector and contribution towards universal energy access. We outline the need for local currency debt financing, highlight lessons learned from past and present deals and facilities globally and in Uganda, and provide recommendations for development partners, DFIs, local financial institutions and government on increasing access to local debt for SHS businesses in Uganda.

### SOME KEY STRATEGIES AND RECOMMENDATIONS FOR INCREASING LOCAL CURRENCY DEBT FINANCING TO THE SOLAR HOME SYSTEM SECTOR IN UGANDA INCLUDE:

1. Improve ongoing technical assistance support provided by existing guarantee facilities to increase utilization and likelihood of continued lending after risk-sharing support ends
2. Ensure guarantee facilities can be “drawn up” to match working capital needs of solar home system companies, and provide coverage and duration required to sufficiently shift risk perception among local and regional banks
3. Ensure lines of credit do not limit banks’ ability to invest in SHS companies on the basis of business stage, historical financial performance, or product certification
4. Pilot the use of first-loss capital from DFIs, impact investors and foundations in tiered capital facilities to “crowd-in” local bank investment in solar home system companies
5. Deploy local currency debt in second generation companies at smaller ticket sizes effectively by capitalizing local funds with lower transaction costs
6. Minimize cost implications of currency hedging for investees by benchmarking with local banks and making investments across a range of markets
7. Provide embedded technical assistance to financial institutions to build internal capacity to lend to the sector and industry coordination to support pipeline development
8. Support the development and adoption of standardized performance metrics and benchmarks for the solar home system and PAYGO solar industry

# THE MARKET FOR SOLAR HOME SYSTEMS IN UGANDA

## ACHIEVING UNIVERSAL ENERGY ACCESS IN UGANDA

Universal access to affordable, reliable, sustainable and modern energy for all by 2030 was adopted as Sustainable Development Goal 7 (SDG7) by UN Member States in 2015. This was in part due to the importance of energy as an enabler for achieving other sustainable development goals, such as achieving sustainable industrialization, as well as member states recognizing access to energy as a basic human right that improves many aspects of daily life.<sup>1,2</sup> Achieving SDG7 will be a significant challenge – approximately 1 billion people globally did not have access to electricity in 2017, with 600m of them living in rural sub-Saharan Africa.<sup>3</sup>

Uganda has made considerable progress in closing the electricity access gap in recent years, with the percentage of the total population with access to energy increasing from 16% in 2012 to 27% in 2016.<sup>4</sup> According to current projections, however, Uganda needs an average of 670,000 new connections per year to achieve universal access by 2030. This is significantly above the current average of 100,000 new connections per year.<sup>5</sup> It is therefore projected there will be a ~30% shortfall in connections in 2030.<sup>6</sup>

Achieving universal energy access in Uganda by 2030 will not be viable through grid expansion alone due to the high cost of connection in sparsely populated rural areas and the low ability to pay of the population – approximately 34% of rural population and 11% of urban population survive on less than a dollar a day.<sup>7,8</sup> As such, there is need to explore other cost efficient off-grid solutions to bridge the energy access gap.

Over the past decade, the private sector has increasingly played an active role in providing unelectrified households in Uganda. Solar home systems in particular have demonstrated their ability to provide off-grid Ugandan households with a reliable and modern energy source to light their homes and power small appliances, particularly when coupled with a pay-as-you-go (PAYG) consumer financing product. While the ~350,000 solar home systems that have been sold in Uganda to-date demonstrates significant progress, this represents less than 6% of off-grid households.<sup>9,10,11</sup> The sector will need to scale rapidly to bridge the energy access gap in Uganda and support universal access by 2030, which in turn requires substantial investment – in particular debt financing denominated in local currency – to enable the sector to scale sustainably and manage risk effectively. The objective of this white paper is to identify strategies for increasing access to local currency debt financing for solar home system (SHS) businesses across the country. It will outline the need for local currency debt financing, highlight lessons learned from past and present deals and facilities globally and in Uganda, and provide recommendations for development partners, DFIs, local financial institutions and government on increasing local currency debt investment to SHS businesses in Uganda.

## THE SOLAR HOME SYSTEM LANDSCAPE IN UGANDA

### TYPES OF SOLAR HOME SYSTEMS

Off-grid solar companies operating both in Uganda and globally have a wide range of household and institutional solar products serving a variety of energy needs. However, this report will focus on the two main types of solar home system technologies which have the potential to extend reliable energy access to Uganda's currently unserved populations:

- **Plug and play systems:** This refers to all-in-one packaged kits of 11 to 50 W which typically power several lights, offer mobile phone charging capacity, and power small household appliances such as radios, small TVs and refrigerators. These systems enable full Tier I or higher electricity access (see appendix I) for households.<sup>12</sup>

- **Component-based systems:** This refers to systems whose constituent parts such as Photovoltaic (PV) panels, batteries, lights and appliances are compiled independently and can therefore be tailored to a household's specific needs. These systems are typically over 11 W, and larger systems can power appliances of over 100 W. While often less expensive on a per watt basis than plug and play systems, these systems are not yet covered by global standards (e.g. Lighting Global).<sup>13</sup>

We anticipate that the continued growth of the solar home system sector in Uganda will be driven largely by the distribution of plug and play systems due to the continuous reduction in cost and scalability of the technology, although component-based systems will continue to play a role where households and institutions have very specific system needs.

## DRIVERS OF SOLAR HOME SYSTEM UPTAKE

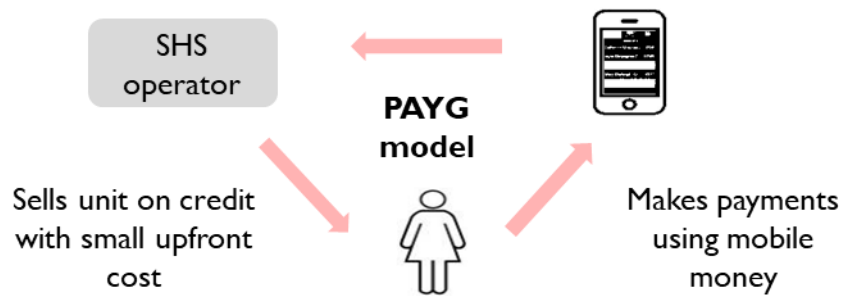
The rapid growth in solar home system sales globally and in Uganda has been driven by three key factors:

**Reduction in costs of solar technology and improved appliance efficiency:** Affordability is a key barrier to energy access – more than a third of Uganda's population survives on less than USD 1.9 per day.<sup>14</sup> However, due to reductions in technology costs the prices of solar home systems have consistently dropped, with prices of PV panels, LED lights and batteries declining by over 70% between 2010 and 2016.<sup>15</sup> In addition to this, solar appliances such as TVs, pumps and refrigerators have improved significantly in terms of wattage required, enabling them to run efficiently on lower capacity solar home systems. This trend is projected to continue. For example, the power rating of televisions is projected to drop from 12 to 10 W by 2020. Together improved efficiency and reduced costs of technology have contributed greatly to the growth in solar home system penetration.<sup>16</sup>

**Rapid growth in mobile phone and mobile money penetration:** In 2017, at least 41% of Ugandans owned a mobile phone – this equates to 17 million unique subscribers.<sup>17</sup> In Uganda, mobile money uptake grew rapidly between 2009 and 2015, with subscriber numbers increasing from 600,000 to 21 million.<sup>18</sup> Together, this rapid adoption of mobile phones and mobile money has improved connectivity and access to finance for low-income, rural populations. Most of the Ugandan population living without access to grid power are in hard to reach rural areas, but connectivity through mobile phones has allowed solar home system businesses to efficiently collect payments for customers who have purchased systems on credit through mobile money, thereby eliminating the cost of collection.

**Innovations in consumer financing:** Despite reductions in technology costs, smaller plug and play solar home systems are typically priced between US\$100-300 – significantly more than most low-income Ugandan households can pay for upfront. Consumer financing, therefore, has played a critical factor in increasing access to solar home systems for many of these households. While traditional credit agreements offered by banks, MFIs and businesses have contributed, it is the pay-as-you-go (PAYG) innovation which has been the driver of sales. Under the model, customers make a small upfront payment (typically 10-20% of system price) followed by a series of regular daily or weekly instalments via mobile money over a 6-36 month period. The systems sold by PAYG companies typically have inbuilt technology which enables them to be switched off if payments have not been made for a specific period, reducing or removing the need for detailed credit assessments and collateral.<sup>19</sup>

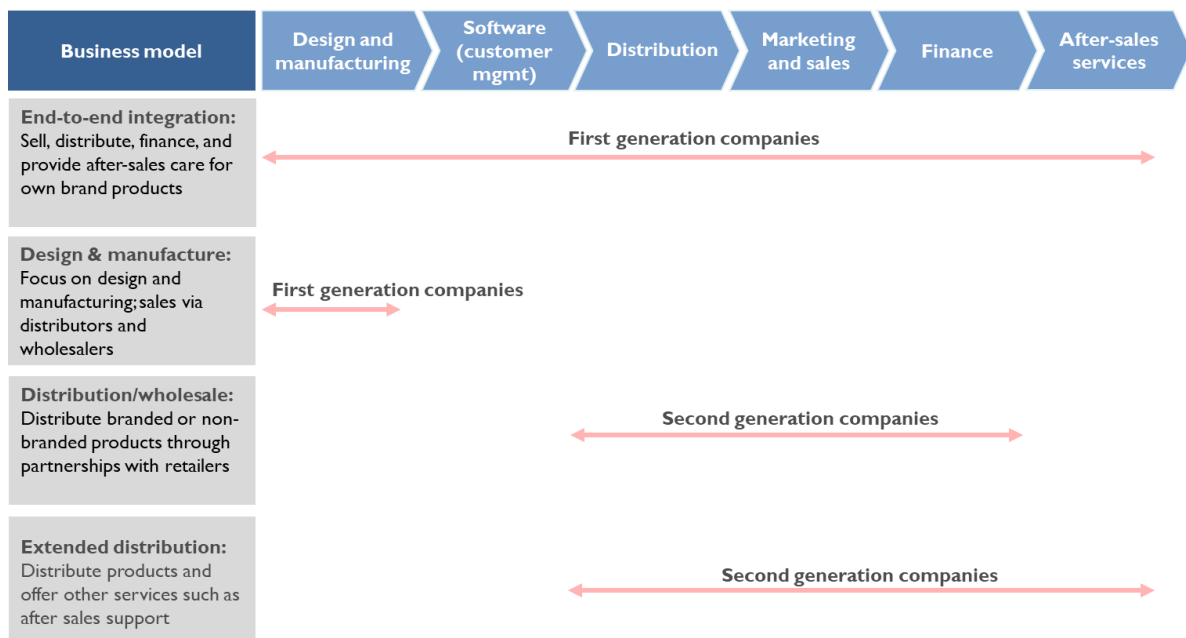
The combination of these factors has driven rapid uptake of solar home systems across Uganda and the rest of East Africa in recent years. As the sector has grown a number of different business models have emerged to meet this customer demand.



**Figure 1:** PAYG consumer financing model

## THE EVOLUTION OF SOLAR HOME SYSTEM BUSINESSES

Over the last 15 years over 200 private companies have emerged providing stand-alone solar services in Uganda, although fewer than 10 have sold solar home systems at scale (e.g. >10,000 units).<sup>20</sup> Business models vary, with companies engaging at different stages along the solar home system value chain (see Figure 2 below).



**Figure 2:** Solar home system business models

Although not strict business model definitions, this paper (in line with other research on the sector) utilizes the following two categorizations of solar home system businesses:

- FIRST GENERATION:** This term is used to broadly define solar home system businesses which were “first-movers” in their countries or regions of operation and were founded when the sector was nascent. These businesses were forced to engage across all stages of the value chain – from product design and manufacturing to distribution and financing activities – as the support ecosystem for the sector was non-existent or limited at the time.<sup>21</sup> Today, there are several vertically integrated first-generation solar home system businesses operating in Uganda which have achieved substantial sales (e.g. <20,000 units) and raised multiple rounds of debt financing. It is also worth noting that some multinational first-generation businesses which design and manufacture solar home systems have chosen to

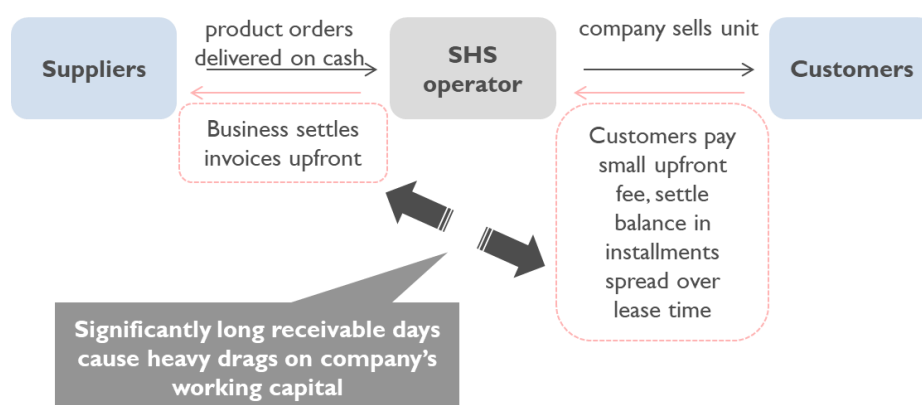
enter the Ugandan market through partnerships with distributors, rather than investing in these networks in country themselves.

- SECOND GENERATION:** As the first generation of solar home system companies scaled, new businesses emerged with a focus on untapped markets, which these larger players had not yet reached. These companies are often locally owned, and typically focused on specific components of the solar home system value chain. For example, the majority act as distributors or wholesalers of solar home systems manufactured by other companies. Some focus purely on sales and distribution, while others also extend credit (via PAYG or traditional credit agreements) and provide after-sales services.<sup>22,23</sup> Second generation businesses in Uganda, and across the globe, have the advantage of leveraging technological, financial and operational innovations developed by first generation businesses.

### FINANCING SOLAR HOME SYSTEM BUSINESSES

Solar home system companies, particularly those offering consumer financing (e.g. PAYG), operate working capital-intensive business models which require substantial capital to scale. As shown in Figure 4 below, financing large inventories of solar home systems upfront in cash with receivables periods of up to 36 months can cause significant drags on working capital cycles.

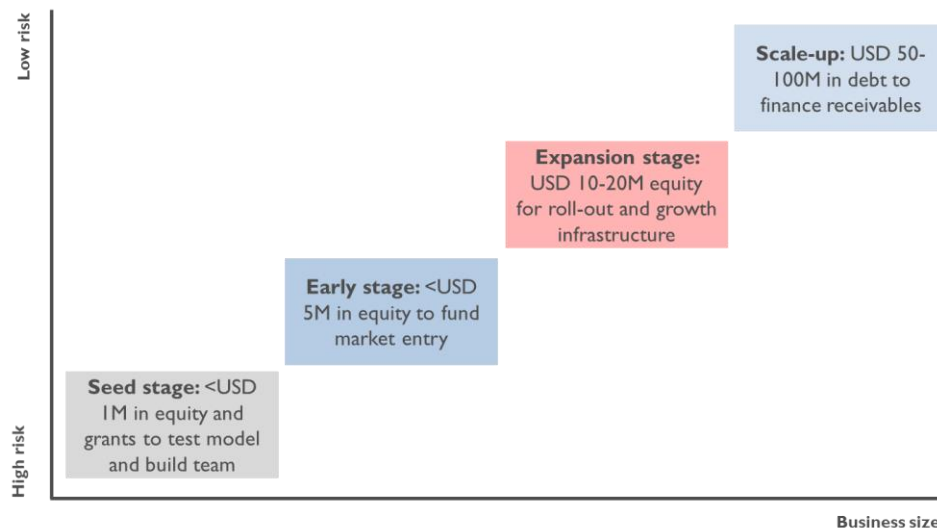
Companies also require substantial investment to build extensive sales and distribution networks, in particular many second-generation businesses looking to target more remote rural populations. For many new businesses, this expansion cannot be met by cashflows from operations and therefore there is a need for external financing to scale into new regions.<sup>24,25</sup>



**Figure 3:** Illustration of long working capital cycle of solar home system operator

Solar home system operators' financing needs vary at different stages in the business cycle, with a clear correlation between the size of investment required and a company's stage of growth. Businesses typically finance themselves through grants and equity prior to the scale up stage, raising debt financing when their model has been proven and they look to scale their inventories (see Figure 4 below).<sup>26</sup>





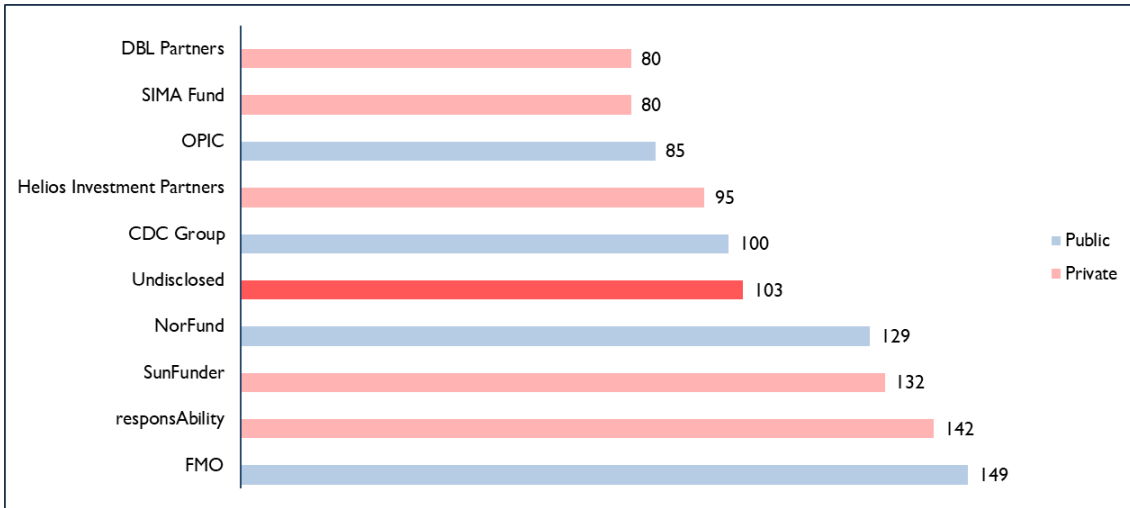
**Figure 4:** Financing needs across the solar home system business cycle

### INVESTMENTS IN THE SOLAR HOME SYSTEM SECTOR TO DATE

Between 2010 and 2018, solar home system businesses globally received approximately USD 1.3 billion in funding, with over 90% going to companies operating PAYG financing models and 40% invested to businesses operating in East Africa.<sup>27</sup> This funding was largely equity up until 2017, when for the first time there was equal ratio of debt and equity investment.<sup>28,29</sup> This shift towards deployment of debt capital, if sustained, is indicative of the increased maturity of the sector.

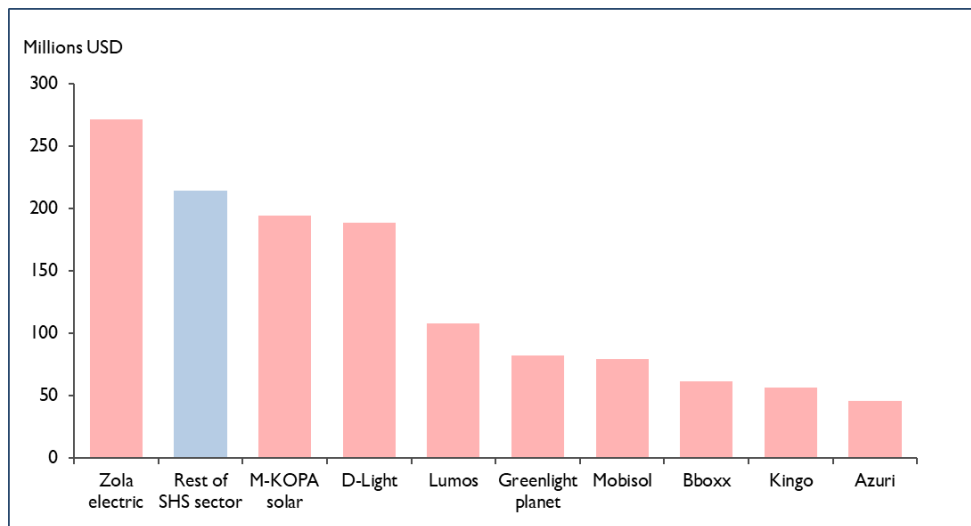
Historically, development finance institutions (DFIs) and specialized private funds have played a key role in providing financing to off-grid solar businesses. Figure 7 shows investment into the off-grid solar sector by each of the top 10 investors.<sup>30</sup> It should be noted that while this includes investment into pico lantern and other off-grid solar companies, ~80% of the total investment into the off-grid solar sector has been to solar home system businesses.

The dominance of international investors highlights a key issue faced by solar home system businesses across Uganda and East Africa – exposure to foreign exchange risk. PAYG businesses in particular have large amounts of receivables on their balance sheets in local currency while raising substantial financing in hard currency. Reducing this risk will require increased investment in local currency denominated debt, either from local and regional banks or through international investors becoming willing to lend via local currency facilities.



**Figure 5: Top 10 investors in the global off-grid solar sector by value (USD M) from 2010-2018<sup>31</sup>**

Another key issue is that a substantial proportion of total investment globally has gone to established first generation businesses. The top 10 solar home system operators received ~USD 1.1 billion between 2010 and 2018, accounting for 67% of the investment into the sector to-date.<sup>32</sup> Meanwhile many second generation companies have reported finding it challenging to raise capital from investors, who prefer to place capital in proven and lower-risk businesses.



**Figure 6: SHS companies by investment received globally, cumulative to year-end 2018**

This is problematic for the maturation of the sector, as reaching unserved off-grid populations will require many companies who are willing to operate in challenging “last-mile” areas to achieve scale. For these 2<sup>nd</sup> generation companies to expand sustainably into difficult to reach areas, it is critical for them to invest in the expansion of their sales and distribution networks and meet their working capital needs while effectively managing FX risk. They therefore need to have access to some local currency denominated debt or face expensive hedging costs. The following chapter will explore debt financing structures and initiatives utilized globally to catalyze local currency debt investment into solar home system businesses, identifying potential lessons for the sector in Uganda.

## OVERVIEW OF DEBT FINANCING STRUCTURES AND GLOBAL INITIATIVES FOR ACCELERATING LOCAL CURRENCY DEBT

Research by Catalyst Off-Grid Advisors and Shell Foundation estimates that approximately USD 500 million in equity and USD 800 million in debt will need to be invested in first and second-generation solar home system businesses in Uganda to achieve SDG 7.<sup>33</sup> For the long-term sustainability of the sector, there is a need for local banks and financial institutions to recognize this opportunity and play a central role in providing local currency debt financing which reduces the foreign exchange (FX) risk faced by businesses.

In the interim, development partners and DFIs have a critical role to play bridging the gap by demonstrating the commercial viability of investing in the sector, sharing risk, and supporting local banks to identify pipeline opportunities. This chapter reviews the most common structures used to provide debt finance to solar home system companies and global initiatives to catalyze local currency lending from domestic and regional banks into the sector and other comparable sectors focused on serving low-income consumers. Building upon lessons learned in these initiatives will be important to ensure that the solar home system sector in Uganda receives the financing it needs to scale effectively over the coming years.

### REVIEW OF DEBT FINANCING STRUCTURES AND INSTRUMENTS

Solar home system businesses require financing to cover three key activities – working capital, capital expenditures (capex) and overhead costs. Daily operations such as purchasing inventory and funding receivables (particularly for PAYG companies) account for the bulk of these costs once the business is in the scale-up phase, although capex spending can be significant as businesses launch their products and diversify into new regions.<sup>34</sup> Given the revolving nature of the working capital needs of PAYG companies and the fact that companies at this stage of growth have typically issued substantial equity and are seeking to balance their capital structures, debt is typically the most appropriate instrument to finance inventory and receivables. The three main debt financing structures have been utilized to lend to solar home system companies to date:

#### UNSECURED LOANS

These are a form of financing in which a business can have access to a loan without collateral. The financier relies wholly on the creditworthiness (e.g. credit history and ability to service debt with future cashflows) of the business to determine the terms of the financing. This structure is best suited to businesses with a track record of cashflows and profitability.<sup>35</sup> Many second-generation businesses, therefore, find it hard to access this form of financing because they lack the prerequisite historical financials. Examples of unsecured loan products include overdrafts, term loans, loans with warrants, convertible loans, and loans that share a percentage of profit in addition to interest expense.<sup>36</sup>

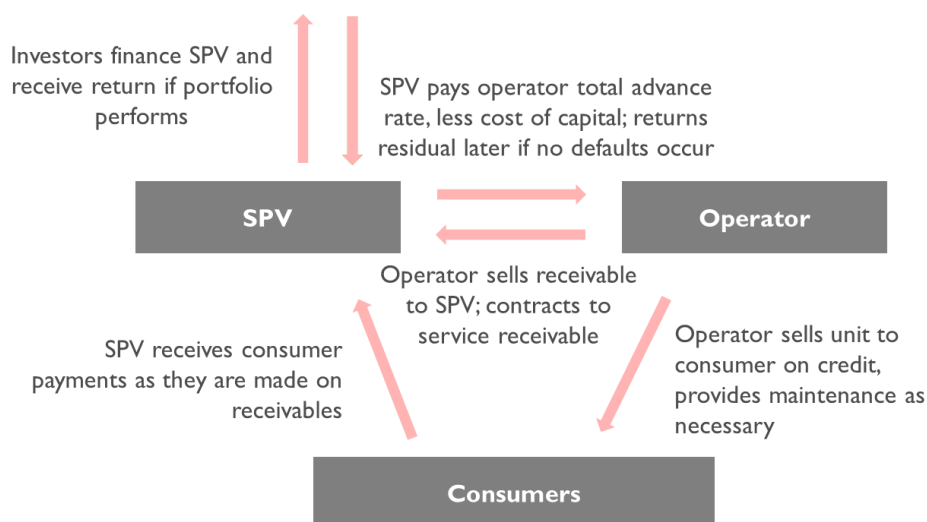
#### SECURED LOANS

These are a form of asset-based lending in which the lender relies on assets the solar home system business owns, such as receivables and inventory, as collateral to secure the loan. This structure is increasingly being used to finance PAYG businesses, as during the scale-up phase they typically have significant receivables but insufficient existing cash flows to secure loans at the ticket sizes required.<sup>37</sup> Examples of specific loan instruments include inventory and receivables finance, trade finance such as letters of credit and invoice discounting, overdrafts and lines of credit.<sup>38</sup>

## OFF-BALANCE SHEET

Within this type of debt financing structure, the solar home system company typically raises debt through a special purpose vehicle (SPV) that issues securities backed by a selected tranche of existing receivables to investors (see diagram in figure 9).<sup>39</sup> This type of facility has the potential to attract more investors for solar home system operators because it separates the operational risk of the solar home system company from the receivables' risk of the PAYG portfolio and therefore the investors can assess the risk in isolation.<sup>40</sup>

Some financial intermediaries investing in off-grid solar companies (e.g. SunFunder) have also experimented with forward looking SPV structures that do not require securitization of existing tranches of receivables. In this case the investor directly injects debt into the SPV alongside equity from the solar home system company, and the SPV subsequently acquires PAYG customers over a 12-month period. Although structuring this type of off-balance sheet facility is less complex as no securitization is involved, investors must conduct in-depth analysis of historical payments data before investing and monitor sales and portfolio health on an ongoing basis.<sup>41,42</sup>



**Figure 7:** Example off-balance sheet structure

### **Case study: OikoCredit funding BBOXX through a special purpose vehicle**

In December 2015, the first asset securitization was completed by a solar home system operator. A special purpose vehicle subsidiary of BBOXX Ltd. issued asset backed notes – named Distributed Energy Asset Receivables, or DEARs – secured by approximately 2,500 customer installment sales contracts. The contracts represented the unpaid portion of the purchase price of BBOXX's solar home systems sold to customers living without electricity in Kenya.

This structure lowered the risk profile for investors because of the isolation of the receivables risk from the originator. In addition, off balance sheet structures such as these have benefits to consumers and PAYG companies too. The lower risk profile reduces borrowing costs for the company, which can then be passed onto consumers. For the PAYG companies, it reduces the risk of creating overleveraged companies in the event part of the portfolio underperforms. Collectively, these advantages are creating more interest in off-balance sheet financing from a range of stakeholders in the solar home system sector.

## CURRENCY HEDGING

While not a type of debt instrument, currency hedging – through the use of derivatives such as swaps, options and forward contracts – have been used by international lenders to provide local currency equivalent debt to solar home system companies. An example of this is SunFunder’s partnership with MFX Solutions to extend a USD 2 million multi-currency debt facility to SolarWorks, a PAYG solar home system provider in Mozambique.

The majority of debt financing to the solar home system sector globally through the structures highlighted above have come from DFIs and international impact investors and funds. It is critical that local and regional banks begin to lend via these instruments and facilities at greater scale in order to ensure the sustainability of the sector globally and in Uganda.

## OVERVIEW OF INITIATIVES TO CATALYZE LOCAL CURRENCY DEBT FINANCING

Globally, there have been a range of initiatives established by development partners, DFIs, and governments to catalyze local currency debt financing into the solar home sector and other growing sectors in emerging markets. This section provides an overview of these initiatives and identifies learnings for the solar home system sector in Uganda.

	<b>GUARANTEES</b>	<b>TIERED CAPITAL FACILITIES</b>	<b>LINES OF CREDIT</b>	<b>TECHNICAL ASSISTANCE</b>
<b>Overview</b>	Form of protection for a debt transaction in which a proportion of risk of default by the borrower is taken on by a third-party (e.g. a development organization).	Blended finance structure in which various types of funders pool investment for the same business while taking on different risk and return positions.	Funds provided by governments and donors to financial institutions at below market or commercial interest rates to lend on to borrowers in a specific sector.	Capacity building support: for financiers, to improve their understanding and capacity to lend to a sector and “investment readiness” support for businesses.
<b>How funding is catalyzed</b>	Assurance that a proportion of the loan value will be recouped in the event of default can be sufficient to tip the balance on a lending decision in a new sector or business with an innovative but perceived high-risk business model.	Provision of a first-loss layer by junior debt holders (who are compensated by higher financial return) can “crowd-in” more risk averse investors into senior debt positions, shifting their perception of risk over time.	Lines of credit allow financial institutions to use external funds to pilot lending to the sector. They provide an opportunity to understand the dynamics of lending to the sector at a low cost or when capital constrained.	Technical assistance helps address the knowledge and skills gap of financiers about the sector. It also addresses the lack of investible businesses by providing support to businesses to streamline their operations.

**Figure 8:** Summary of initiatives to catalyze local currency debt financing

## GUARANTEES

These are a form of protection or security for a debt transaction in which a proportion of the risk of default by the borrower is taken on by a third-party. Guarantees can be designed to cover different forms of risk associated with the default of the borrower, ranging from political risk to commercial risk.<sup>43</sup> Guarantees can be provided by a range of institutions who seek to de-risk lending in a particular sector, including public guarantees provided by national governments and bilateral or multilateral guarantees provided by development institutions or NGOs.

The structure of a guarantee facility is determined by factors such as percentage coverage, fees paid, and loan approval processes. The higher the percentage coverage, the more the lender's exposure to the risk of the borrower defaulting is reduced. Fees can either be an annual subscription fee or a proportion of total utilization. Different facilities also set more or less stringent criteria on who financial institutions can lend to or the extent to which they are involved in an investment approval process. The case study below looks at a guarantee used as a mechanism to catalyze lending to the healthcare sector in Uganda and the key learnings from the initiative.<sup>44</sup>

**Case study: Guarantee by SIDA and USAID aimed at the health care sector in Uganda**

This guarantee with the Centenary Rural Development Bank in Uganda was set-up as a loan portfolio guarantee covering loans to privately-owned and operated micro-, small-, and medium-enterprises, as well as healthcare workers in the healthcare value chain. Total cover was up to 60% of the principal amount (30% provided each by USAID and SIDA). The guarantee cumulatively covered up to USD 3 million between 2012 and 2019.

Key learnings from the guarantee facility pointed to the need for technical assistance to support the bank staff to better understand the needs of businesses in the health care sector. To improve utilization of similar facilities in the future, evaluators of the guarantee also highlighted the need to have more than one bank accessing the facility. This would create competition for the guarantee facility and stimulate effective deployment of capital.

**TIERED CAPITAL FACILITIES**

These are a form of blended finance that a range of financiers, including development partners, DFIs, impact investors and foundations, have collectively used to catalyze capital flows towards a market or sector with social or environmental impact. In a tiered capital facility, a development finance institution, impact investor, or foundation takes on first loss position that absorbs a proportion of risk should the project incur losses. This allows for more risk averse investors to take on mezzanine and senior debt positions within the facility in exchange for lower returns. Together these funds can be deployed to the sector of interest. The case study below looks at a tiered capital facility use to catalyze finance in the renewable energy sector.<sup>45</sup>

### **Case study: SunFunder's Tiered Capital Facilities**

SunFunder, a specialist financial intermediary, has raised USD 104.5m since its launch in 2012 to capitalize several debt funds which have been invested in solar home system companies. Through creating tiered capital structures, they have successfully utilized “catalytic capital” from more risk tolerant funders, such as foundations, to crowd in other debt financiers, such as DFIs. For example, the first Solar Empowerment fund, launched in 2014, featured a 15% first-loss junior tranche financed by high net worth individuals and SunFunder itself. This enabled SunFunder to crowd in senior investors, in this case impact investors, who were willing to accept lower returns because of the risk protection offered by first-loss junior layer.

This model has been taken to scale, with the USD 42.5m first close of the Solar Energy Transformation (SET) fund in early 2019 featuring a USD 5 million junior investment from IKEA Foundation, USD 25 million from OPIC in both junior and senior tranches, and USD 12.5 million from impact investors Ceniarth and Calvert Impact Capital in the senior tranches. SunFunder believe that they will soon have interest in their tiered capital facilities from banks and institutional investors – this is a model which could be replicated in the Ugandan market to “crowd-in” banks to meet the funding needs of SHS businesses.

### **LINES OF CREDIT**

These facilities are often implemented by governments, development partners and DFIs to provide financial institutions with capital at below market or commercial interest rates to lend on to borrowers in a particular sector. Lines of credit can be denominated in either hard or local currencies, with the latter being preferable to many financial institutions with lending focused in one country as it avoids exposure to FX risk. Lines of credit have been utilized across a range of sectors and markets where donors perceive a lack of liquidity and businesses who could deploy capital and generate social or environmental impact. However, they have also been widely criticized for being distortionary and creating aid dependency, particularly when deployed at interest rates significantly below market rate<sup>46</sup>.

### **TECHNICAL ASSISTANCE**

Technical assistance to catalyze local currency debt lending can be provided to parties on both sides of transactions – financiers, to improve their understanding and capacity to lend to a particular sector, and “investment readiness” support for businesses. Technical assistance to financial institutions can involve training on the trends and opportunities within a particular sector, pipeline and product development, development of industry specific due diligence processes, and in-depth transaction support. On the business side, technical assistance can involve strategy development, business planning, financial process improvement, financial modelling, preparation of investment materials, and investor outreach.

This chapter has reviewed common debt financing structures and initiatives used by governments, foundations, development partners and development finance institutions to catalyze local currency lending towards the off-grid solar and comparable sectors in emerging markets. Some of these initiatives are being implemented in Uganda with varying successes, and there is need to continue exploring innovative financing structures and facilities which can crowd in local commercial lenders. The following chapter looks at the overall debt financing landscape in Uganda, challenges faced by local banks when lending to the sector, and lessons learnt from ongoing initiatives to catalyze local currency debt financing into the sector.

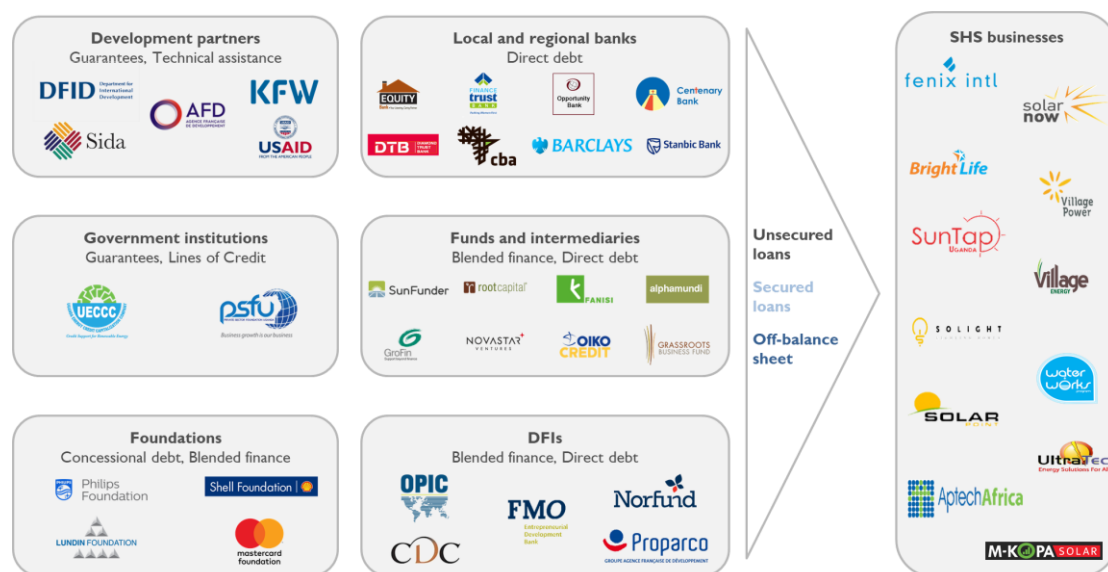


## LOCAL CURRENCY DEBT FINANCING FOR SOLAR HOME SYSTEMS IN UGANDA

There are several lenders in the Ugandan market today providing direct debt to solar home system operators, as well as institutions and funders providing risk sharing mechanisms and training to increase access to local currency debt. This section covers the overview of the debt financing landscape in Uganda, the challenges faced by local financial institutions and the lessons learnt from existing initiatives to accelerate local debt financing.

### THE DEBT FINANCING LANDSCAPE FOR SOLAR HOME SYSTEMS IN UGANDA

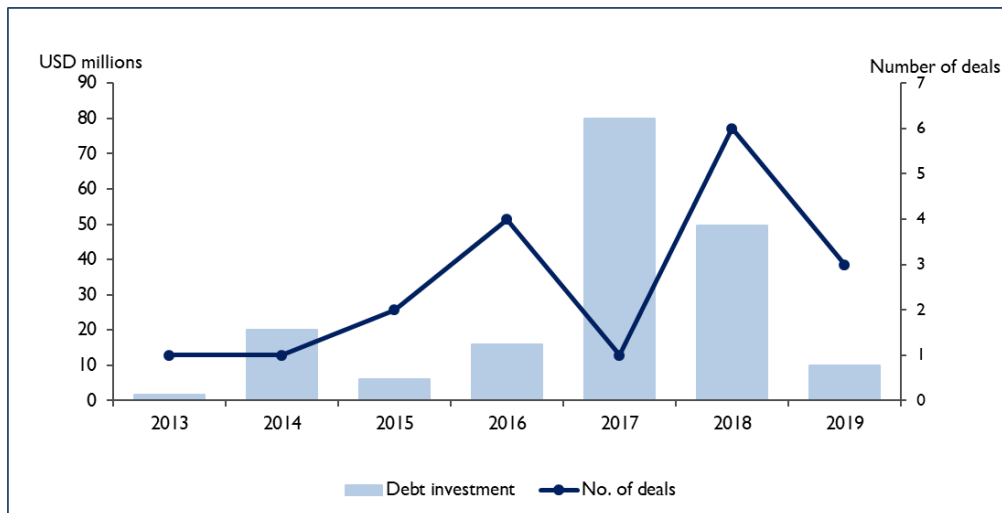
Development partners, government institutions and foundations are all interested in accelerating access to local debt finance for solar home system operators in Uganda, in order to ensure the sustainability of the sector in the long run. Development partners and government institutions have provided guarantees, lines of credit and technical assistance to support local financial institutions seeking to lend to the sector. Additionally, foundations are playing a critical role of reducing the perceived risk of the sector by local financial institutions by providing concessional debt directly to the businesses. Foundations are also funding technical assistance and taking junior positions in blended finance facilities in an attempt to “crowd-in” local banks into the sector. The ecosystem map below shows the key debt lenders operating in the Ugandan SHS market, as well as institutions which have established facilities to catalyze debt financing into the sector.



**Figure 9:** Debt financing landscape for solar home systems in Uganda

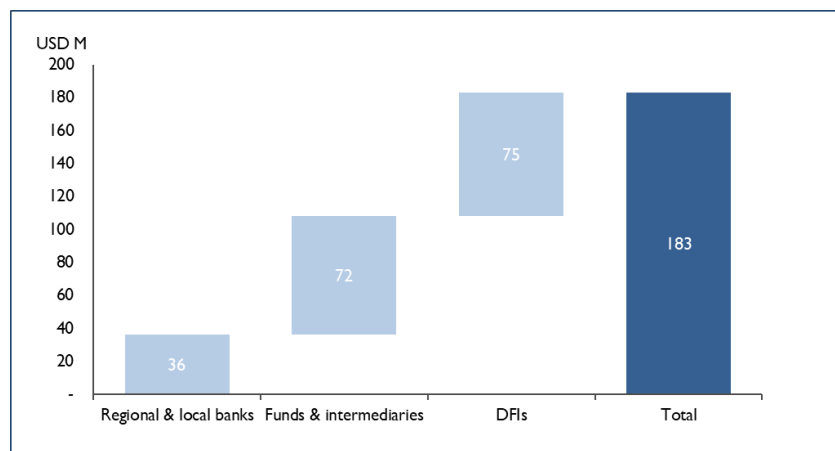
In Uganda to date, direct debt to solar home system businesses has been provided by local and regional banks, impact investors, financial intermediaries, and development finance institutions. These players have provided both local and hard currency denominated debt to SHS businesses operating in Uganda, both as individual lenders or as part of syndicates. Between 2013 and 2019, solar home system businesses operating in Uganda have disclosed USD 182 million in debt financing raised, with over 70% of this capital being invested in 2017 and 2018 (see Figure 10 above). It should be noted that the spike in 2017 was the result of one of the largest debt financing deals in the history of the sector to date – a syndicate of DFIs and a regional bank investing USD 80 million in M-KOPA to finance their regional operations.





**Figure 10:** Number and value of disclosed debt investments in SHS businesses in Uganda (2013 – 2019 YTD)

DFIs and funds have invested 80% of the debt capital in solar home system businesses in Uganda to date, with regional and local banks responsible for less than 20%. This poses several problems. First, while some of the debt invested by DFIs and funds have been in local currency equivalent facilities (see M-Kopa deal on page 21), the majority has been invested in hard currency and exposes businesses to FX risk as they scale. Secondly, funds from impact investors and DFIs will not continue indefinitely, and there is a need for commercial banks to lend more to the sector to ensure sustainability.



**Figure 11:** Disclosed debt investment in SHS businesses in Uganda by investor (2013-2019 YTD)

A third issue is that second generation businesses in Uganda have struggled to access debt capital, with the majority of the investment going to established first generation businesses. UOMA estimates that over 95% of the debt investment in the sector to date has gone to first generation businesses. While many second generation businesses are still early stage and have received grant and equity funding, in order to achieve SDG7 in Uganda these businesses will soon need to raise substantial debt capital – ideally from local or regional banks – in order to scale. The following section explores some of the barriers which will need to be overcome for local financial institutions to lend more to the sector.

## **BARRIERS TO ACCESS OF LOCAL CURRENCY DEBT FOR SOLAR HOME SYSTEM OPERATORS**

Since 2017, UOMA has established a number of initiatives to accelerate access to finance to the off-grid energy sector. These include technical assistance to financial institutions, industry coordination, investor matchmaking events and publications of market insights. As a result of this work, we have engaged with dozens of stakeholders from local and regional banks to solar home system operators and have identified the key barriers to the deployment of local currency debt. These barriers are outlined below.

### **LIMITED EXPOSURE & LENDING EXPERIENCE OF LOCAL FINANCIAL INSTITUTIONS TO SOLAR HOME SYSTEM BUSINESSES**

Many of the banks operating in Uganda today have a limited understanding of the solar home system sector, including range of technologies, business models and financing needs in the market. Senior management teams need to be trained on the opportunities in the sector so that off-grid energy companies can be included in the broader lending strategy of the banks. Staff in banks with appetite to lend to the sector but limited technical expertise would also benefit from training on the nuances on business models – in particular PAYG – so that they are able to structure appropriate debt instruments to meet the working capital and capex needs of solar home system companies.

### **PERCEPTION THAT THE SECTOR IS “HIGH RISK, LOW RETURN”**

Even if banks have had some exposure to the sector, many perceive solar home system businesses as extremely risky to lend to. Some banks have had bad lending experiences in the first few years of the sector, where poor technology sometimes led to high customer default rates and banks subsequently holding bad debt. The majority of banks also use generic, non-industry specific due diligence criteria to evaluate solar home system operators, such as the requirements for positive net profit or cashflow from operations within the first few years of operation that may be unrealistic for a PAYG company looking to scale their portfolio quickly.

Credit teams within Ugandan banks should also be trained in industry specific due diligence processes, such utilizing an analysis of current PAYG portfolio health and unit economics in order to forecast future revenues and profitability. Banks can also utilize de-risking mechanisms such guarantees or lines of credit, or enter into syndicated debt facilities with other financiers who are willing to take on first loss positions.

### **LACK OF TRANSPARENT INDUSTRY DATA USED TO ASSESS BUSINESSES ACROSS GROWTH STAGES**

Many lenders we have engaged with – particularly more sophisticated regional banks – have cited lack of industry benchmarks around financial and operational performance for different solar home system (and particularly PAYG) models and stages of business growth as a key factor hindering lending decisions. This has also been noted by the Global Off-Grid Lighting Association (GOGLA), who along with the World Bank have published suggested industry metrics and are currently assessing the viability of establishing an anonymized industry performance index.<sup>47</sup> Technical assistance to train credit teams in utilizing standardized industry KPIs when evaluating solar home system businesses will enable them to more effectively assess actual rather than perceived risks in the sector.

### **WEAK FINANCIAL SYSTEMS AND PROCESSES WITHIN SOLAR HOME SYSTEM BUSINESSES**

Many financial institutions have highlighted poor financial systems and processes as an obstacle to them providing finance to solar home systems companies, as this drives lack of confidence in the data provided during due diligence processes and in the business' ability to execute on growth plans. This is particularly an issue for many second-generation businesses, who would benefit from process improvement, capacity building, and investment readiness support. While this is important for the maturity of the sector, the detail around how this support can be provided effectively is out of the scope of this paper, which focuses on support to financiers.

## **INITIATIVES TO CATALYZE LOCAL DEBT FINANCING FOR SOLAR HOME SYSTEMS IN UGANDA**

As highlighted earlier in the paper, a number of initiatives exist to catalyze local currency debt financing into the solar home system sector in Uganda. In order to develop new facilities and improve existing initiatives that address the challenges identified above, this section takes stock of the lessons learned from past and present local debt financing initiatives.

### **LINES OF CREDIT**

The main lines of credit supporting the energy sector in Uganda at present are channeled through the Uganda Energy Credit Capitalization Company (UECCC). These include a biomass facility and grid-connection facility, as well as a solar loan facility extended to 4 Ugandan banks and MFIs for financing loans to consumers and SMEs who want to purchase solar home systems on credit.

The **UECCC working capital facility** is the line of credit which has been extended to 5 Ugandan banks to provide working capital finance to companies selling solar home systems on PAYG and cash up-front business models. The facility was capitalized with USD 8.5 million from the World Bank and was launched in February 2018, but has seen limited uptake. This has been partly due to a facility requirement which limit banks to lending to companies that have Lighting Global certified products, excluding banks from lending to businesses selling component based systems or plug and play kits which have not yet been through the certification process (which represents a significant proportion of second generation businesses in Uganda currently). While UECCC are now working with the Uganda National Bureau of Standards (UNBS) to develop an approved list of businesses which banks can lend to, this emphasizes the need to involve banks in the facility design process and ensure lending criteria set match the market reality.

### **GUARANTEES**

There are currently two targeted guarantee facilities available to financial institutions lending to solar home systems businesses in Uganda. The **USAID Development Credit Authority (DCA)** is a risk-sharing mechanism backed by the U.S. Treasury and exists to unlock finance for businesses who would not otherwise be considered by local investors in 80 countries and across multiple sectors. The facility covers a range of debt instruments via an individual loan guarantee, a bond guarantee, a fund guarantee and a loan portfolio guarantee. USAID specifically issued a USD 10 million guarantee providing 50% coverage to two local banks in Uganda with the aim of supporting these banks to mobilize financing for greater access to electricity through solar home systems and other clean energy technologies.<sup>48</sup> This has had some success with one of the banks in particular utilizing the guarantee to de-risk loans to both first and second generation solar home system companies who may not otherwise have received funding.<sup>49</sup>

However, the overall uptake of the guarantee facility has been slow. Despite the DCA covering 50% of potential losses, it appears that the banks subscribed to the guarantee still perceive many potential borrowers in the sector – particularly those before expansion phase with limited sales to date – as too high risk to lend to. However, these banks had limited prior experience in lending to solar home

system businesses and are not using industry-specific due diligence processes, highlighting the need for careful selection of banks and substantial technical assistance accompanying the guarantee as soon as it is established.

Guarantee experts have also highlighted that unlike some other portfolio guarantees, the DCA does not allow banks to “draw-up” financing once they have been repaid. This means it is not as effective in de-risking revolving working capital loans, a key debt financing instrument which solar home system businesses require, and highlights a need to involve banks in the design of the guarantee to ensure it is appropriate for its intended use. This may be an area for USAID to consider as the DCA is rolled into the US Development Finance Corporation in late 2019.

The **Uganda Energy Credit Capitalisation Company (UECCC) Partial Risk Guarantee** was set up by UECCC – with support from the World Bank – to enhance their solar working capital line of credit. The guarantee covers up to 50% of each loan made on a first loss basis, but can also be used in conjunction with other guarantee facilities which banks are subscribed to). While this flexibility has the potential to increase lending through substantially reducing the risk borne by banks, it will also be important to consider how banks can be effectively “weaned” off such a significant risk-sharing mechanism. The criteria of selection for businesses is in line with that of the working capital facility; one of the main criteria for selection is that solar home systems sold by borrowers should be Lighting Global certification.

## DFI LENDING IN LOCAL CURRENCY DENOMINATED DEBT

DFIs have been a primary force for driving debt financing to businesses selling solar home systems in Uganda, with some instances of DFIs providing local currency debt to the sector. **United Nation’s Capital Development Fund’s (UNCDF) Clean Start** program recognizes the critical need for local currency debt financing towards small and medium sized solar home system operators in Uganda to enable them to scale without significant exposure to foreign exchange risk. In 2018, UNCDF provided 3 local currency loans to second-generation Ugandan solar companies totaling to ~USD 500,000. These loans were provided on concessionary terms below the average bank lending rate for local currency debt. The main aim of these loans was to finance the working capital needs of these companies to catalyze growth. UNCDF continues to explore other deal structures, especially through off-balance sheet financing and blended finance facilities where they are willing to take on junior debt positions which will help crowd in Ugandan banks.<sup>50</sup>

In 2017, **M-KOPA, a first generation PAYG company raised USD 80 million in two local currency debt facilities** (Kenya Shillings and Uganda Shillings) from a syndicate of DFIs, impact investors and a regional bank. Stanbic Bank led a USD 55 million syndicate in which it contributed USD 9 million, CDC contributed USD 20 million, and FMO and Norfund lent USD 13 million each. The other USD 25 million was raised from responsAbility, Symbiotics, and Triodos Investment Management.<sup>51</sup> It is worth noting that while the DFIs provided local currency debt, some chose not to hedge internally to avoid passing on the cost of hedging to M-Kopa. Instead they are exploring lending local currency debt to a range of solar home system businesses in different countries, and offsetting the FX risk through holding debt in a “basket” of local currencies.

As the market grows, there is need for DFIs to continue exploring such innovate deals in local currency, even towards second generation companies. UNCDF does not have the same mandate for generating financial return as other DFIs do, and therefore has found it easier to provide direct debt to second generation companies at smaller ticket sizes. Larger DFIs like CDC and FMO will need to be creative and find ways to provide much needed local currency debt financing to smaller second generation solar home system companies in Uganda, either through intermediaries or through establishing specific funds with different mandates.

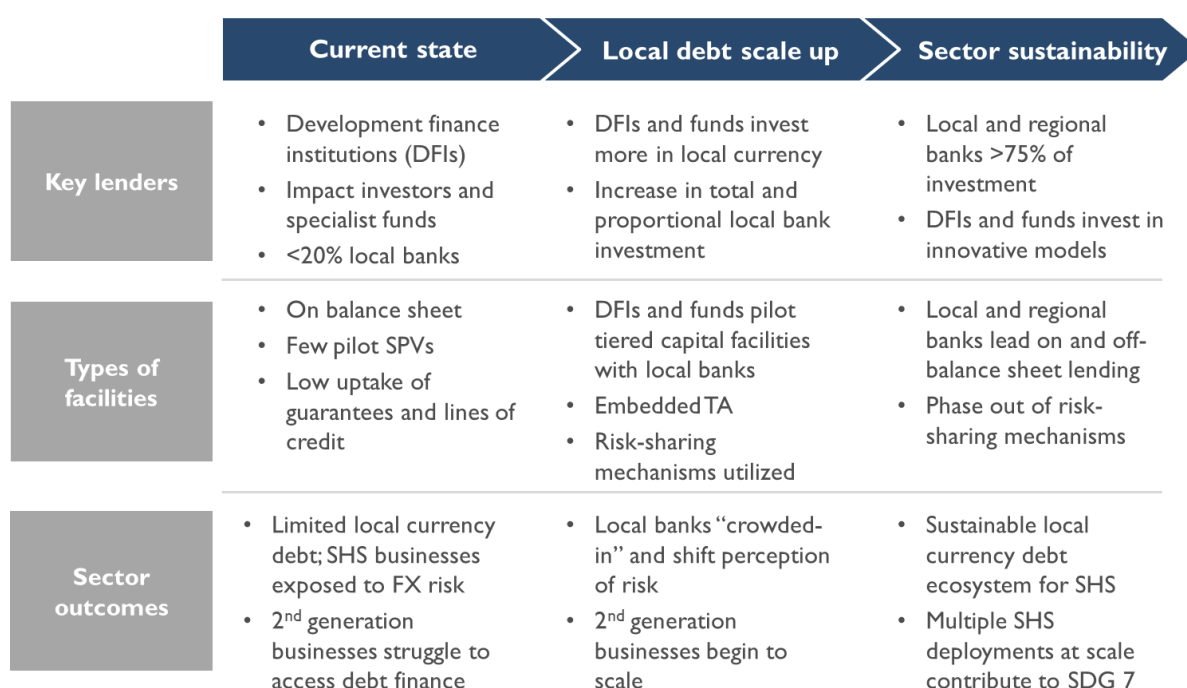
## TECHNICAL ASSISTANCE

As highlighted in the previous section, Ugandan banks require capacity building to understand how to effectively evaluate lending opportunities, build pipeline, and develop debt instruments suited to the financing needs of solar home system companies. USAID has funded a range of technical assistance support and training activities to help Ugandan banks scale lending to solar home systems businesses. The **Power Africa Uganda Electricity Supply Accelerator (PAUESA)** offers transaction advisory support to financial institutions to support both on and off-grid energy projects. Under the **Climate Economic Analysis for Development, Investment and Resilience (CEADIR)** program, Open Capital Advisors (in conjunction with UOMA) worked closely with four banks to identify specific lending opportunities across the off-grid solar value chain. Tailored capacity building support was then delivered for each bank, including training for credit teams to improve their ability to conduct industry specific due diligence on solar home system companies as well as pipeline development support. Part of the motivation for funding this technical assistance is to help increase uptake of energy DCA guarantee facility which two local banks are subscribed to. While the training has received positive feedback and banks are showing some shifts in appetite, it is clear that embedded or longer term support will be required to support banks to lend at the level required. A number of other development organizations have also provided technical assistance to financial institutions looking to lend to solar home systems companies in Uganda. In addition to providing direct debt and grants to solar home system companies, **UNCDF's Clean Start program** provides technical assistance to financial institutions to develop consumer financing products and increase lending to the solar home system sector through conducting market research and linking financiers and businesses.<sup>52</sup> In 2017, the **European Union funded a Technical Assistance Facility (TAF) for the Sustainable Energy for All (SE4ALL) Initiative** focused on countries in Southern and Eastern Africa. This facility in Uganda provided capacity building for commercial banks on renewable energy project development. The trainings conducted covered technical, financial, environmental and regulatory themes and were attended by representatives from a number of local and regional banks operating in the country. An important lesson learned from the technical assistance to date and feedback from businesses is that while training is a useful component of building knowledge and ability of banks to lend to the sector, long term embedded support on due diligence and transaction advisory will also be key to move the needle substantially. Well-designed technical assistance is also required before and alongside risk-sharing mechanisms, in order to ensure banks understand the opportunity and know how to best make use of facilities provided.

## RECOMMENDATIONS: BUILDING A SUSTAINABLE LOCAL CURRENCY DEBT ECOSYSTEM FOR THE SOLAR HOME SYSTEM SECTOR IN UGANDA

This paper has demonstrated the need for a rapid increase in local currency debt lending to second generation solar home system companies in Uganda to support universal energy access by 2030. In the long term, this financing must come primarily from local and regional banks with a deep understanding of the sector and the ability to structure debt instruments that meet the working capital and capex needs of businesses across the solar home system value chain.

Significant risk sharing and technical assistance will be required from development partners, DFIs, impact investors, and government to get to this stage, and while facilities and mechanisms exist these will need to be better designed and aligned to banks' needs. DFIs and international funds will need to increase the level of debt invested in local currency in order to bridge the gap in the market in the interim. Figure 12 below highlights this pathway to sector sustainability.



**Figure 12: Pathway to a sustainable local currency debt ecosystem**

Our review of global facilities and ongoing initiatives in Uganda surfaced a number of important lessons which should be taken forward by development partners, DFIs, funds, the government and local banks in order to accelerate access to local currency debt for the sector. These are outlined below, with potential “quick-wins” emphasized as a way of building momentum in the short to medium term.

### GUARANTEES

#### **Recommendation 1: Improve ongoing technical assistance support provided by existing guarantee facilities to increase utilization and likelihood of continued lending after risk-sharing support ends**

One of the key barriers to local currency debt financing for solar home systems businesses is the limited knowledge amongst financial institutions about the operational models of businesses in the sector. Without this understanding risk sharing mechanisms alone may be insufficient to move the



needle on investment, and increased and embedded technical assistance to local banks could significantly increase utilization of existing facilities in the short to medium term. This will both help banks understand the sector opportunity and how to evaluate risk/return once the guarantee is factored in. Ongoing engagement and frequent check-in meetings between teams managing guarantee facilities and local banks is key to ensure technical assistance requirements are well understood, issues relating to lending criteria or other financial requirements are being addressed, and momentum is maintained. There is a clear business case for development organizations and DFIs to provide technical assistance alongside guarantees, as it will not only maximize utilization but increase the likelihood that supported banks will continue to lend to the sector without risk-sharing support.

**Recommendation 2: Ensure guarantee facilities can be “drawn up” to match working capital needs of solar home system companies, and provide coverage and duration required to sufficiently shift risk perception among local and regional banks**

The growth of the solar home system sector is heavily driven by businesses operating credit models, presenting unique funding needs. For a guarantee facility to effectively de-risk potential local lenders, it is critical for the structure to match these funding needs by mirroring revolving working capital facilities and enabling subscription to be drawn back up when borrowers repay – this is key as PAYGO businesses primarily require working capital finance. Furthermore, given the continued innovation in the sector, the guarantee facilities should have the flexibility to increase coverage percentage (e.g. from 50% to 60%) for banks funding more innovative business models or those targeting businesses in underserved regions of the country.

Existing facilities should consider lengthening the guarantee period, as it takes time for the sector to develop and perceptions of risk to shift – with industry experts suggesting 7 years as the minimum.<sup>53</sup> To ensure good working relations and faster turnaround for loan disbursement, banks should have the leeway to independently carry out investment selection with limited interference for the guarantee facility. Management of the facility should, however, have reviewed and approved the banks due diligence processes prior to their subscription to the facility. Lastly, guarantees should be priced appropriately to screen for genuine interest in lending to the sector while still providing an affordable risk-sharing for banks.

## LINES OF CREDIT

**Recommendation 3: Ensure lines of credit do not limit banks’ ability to invest in SHS companies on the basis of business stage, historical financial performance, or product certification**

In order to rapidly scale lending new lines of credit for the sector should have inclusive lending terms that enable banks to lend to a range of companies at different growth stages, including second generation businesses which have sales traction but are not yet profitable. However, quality assurance remains a key barrier; financial institutions lack a comprehensive framework of standards to verify the quality of solar home systems that businesses are selling. For example, until recently Lighting Global standards only covered plug and play systems and exclude component-based systems that many of the second-generation businesses were selling. This has had an impact on the ability of second-generation businesses in Uganda selling component based systems to raise finance in cases where lines of credit to banks’ have specified that debt can only be lent to companies selling Lighting Global certified products.

There are, however, on-going initiatives to address this gap. The World Bank is working closely with the Uganda National Bureau of Standards (UNBS) to pilot standards for component-based systems.

Organizations providing lines of credit to banks can also explore establishing a pre-approved list of businesses which lenders can provide debt financing to, rather than enforcing the need for businesses to have Lighting Global certification.

## BLENDING FINANCE FACILITIES

### **Recommendation 4: Pilot the use of first-loss capital from DFIs, impact investors and foundations in tiered capital facilities to “crowd-in” local bank investment in solar home system companies**

As shown in Chapter 2, there is potential to use blended finance facilities to catalyze lending to the off-grid solar sector by local banks. Foundations, impact investors and DFIs have the opportunity to deploy catalytic capital by taking junior debt positions with first-loss layers in tiered capital facilities, crowding in local and regional banks would then take senior debt positions with lower returns but some risk protection. This could be done on an individual deal basis or via a fund, utilizing a financial intermediary with the capacity and track record in managing these types of facilities globally.

Providing first-loss capital via tiered capital facilities aligns well with many DFIs’ existing fund or intermediated debt strategies, as it enables them to deploy debt at lower ticket sizes to smaller businesses without the associated high transaction costs while supporting the development of the local financial ecosystem to invest in the sector

Some progress has been made in this area. In 2018, the SEED Practitioner Labs Climate Finance series brought together investors, banks, development finance institutions, foundations, governments, innovators and intermediaries to jointly prototype a syndicate tiered capital facility for the solar off-grid sector in Uganda. There are on-going efforts by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat and the East African Development Bank (EADB) to implement this initiative.<sup>54</sup> However, more needs to be done to encourage and explore potential partnerships between DFIs and local and regional banks to finance solar home systems in Uganda.

## DFIS AND FUNDS LENDING IN LOCAL CURRENCY

This paper has demonstrated that many Ugandan and regional banks are in the early stages of building expertise and familiarity with lending to the solar home system sector. It will take time for banks to lend to the sector at the volume required, and in the medium term there is a role for DFIs and funds to lend in Ugandan shillings until banks’ expertise and risk appetite has shifted. Practical considerations for DFIs and funds include:

### **Recommendation 5: Deploy local currency debt in second generation companies effectively by capitalizing local funds with lower transaction costs**

Many second-generation companies in Uganda are still in the early to growth stage of development and therefore require debt at relatively small ticket sizes (e.g. >USD 2M). Investing at these ticket sizes, whether in local or hard currency, can be a challenge for DFIs and international funds given the high transaction costs per deal.. Effectively deploying debt in smaller tranches will either require DFIs and international funds to provide capital to local and regional funds with on-the-ground capacity and lower overheads, or creating stand-alone facilities with lower financial return mandates. As highlighted in recommendation 4, providing capital local or regional fund managers is particularly attractive because it allows DFIs to both catalyze the growth of second-generation businesses while developing the capacity of local investors to invest debt in the sector in the medium to long term.



### **Recommendation 6: Minimize cost implications of currency hedging for investees by benchmarking with local banks and making investments across a range of markets**

If DFIs and funds choose to hedge when lending in local currency equivalent, they should avoid passing hedging costs to smaller second-generation businesses but rather mirror costs that a local bank would charge. An alternative to hedging is for DFIs and funds to build up a portfolio of local currency debt deals across companies in different emerging markets which will allow for diversification and risk management across a basket of currencies, as is currently being explored by some organizations in the market.

## **TECHNICAL ASSISTANCE**

### **Recommendation 7: Provide embedded technical assistance to financial institutions to build internal capacity to lend to the sector and industry coordination to support pipeline development**

To date, much of the technical assistance to Ugandan financial institutions to lend to the sector has come in the form of trainings and events. Longer term support which embeds expertise within banks' credit teams to design processes and support banks through pipeline development, industry specific due diligence, and transaction processes will require increased commitment from development partners, but is likely to be more catalytic. This capacity building support should also be clearly aligned to risk-sharing mechanisms and their demands for greatest impact. This alignment can be achieved through increased collaboration between the DFIs which provide the funding for the risk sharing mechanisms and their partner development agencies which run the technical assistance programs.

There is also a need for continued industry coordination to further facilitate pipeline development and sharing of information. This can be achieved by hosting industry convening and matchmaking events to enable solar home system businesses, local banks, and other financiers to discuss financing opportunities and familiarize themselves with the others' processes and data requirements.

## **PERFORMANCE MEASUREMENT**

### **Recommendation 8: Support the development and adoption of standardized performance metrics and benchmarks for the solar home system and PAYGO solar industry**

A key challenge for investors looking to invest in the solar home system sector is benchmarking business performance. This is particularly important in the context of businesses offering products on credit, as investors need to understand what good portfolio health looks like before investing. Developing a harmonized set of metrics and industry benchmarks is nevertheless a challenge, as the sector is less than 10 years old and companies are still refining and optimizing their business and operating models.

The World Bank, GOGLA and CGAP are aiming to tackle this issue through their PAYGO Perform<sup>55</sup> project by developing key performance indicators (KPIs) for the PAYGO solar sector, offering a more structured assessment of portfolio health and company operations across business models. An initial suite of KPIs was launched in 2018 and is currently being refined after feedback from investors and businesses. Investors should continue to engage with this project to ensure that the KPIs fit their due diligence needs and encourage investee to adopt the framework as the industry grows.

## ENDNOTES

---

- <sup>1</sup> GLOBAL OFF-GRID LIGHTING ASSOCIATION (GOGLA), *PROVIDING ENERGY ACCESS THROUGH OFF-GRID SOLAR: GUIDANCE FOR GOVERNMENTS*, (2015), [HTTPS://WWW.SUN-CONNECT-NEWS.ORG/FILEADMIN/DATEIEN/NEW/ENERGY\\_ACCESS\\_THROUGH\\_OFF-GRID\\_SOLAR\\_-\\_GUIDANCE\\_FOR\\_GOVTS.COMPRESSED.PDF](https://www.sun-connect-news.org/fileadmin/dateien/new/energy_access_through_off-grid_solar_-_guidance_for_govts.compressed.pdf)
- <sup>2</sup> ILARIA LENZI, JACOPO BONAN AND ILARIA PAIS, *TOWARDS A UNIVERSAL ENERGY ACCESS: A MULTISTAKEHOLDER PATH FOR A GLOBAL CHANGE*, (UNITED NATIONS), [HTTPS://SUSTAINABLEDEVELOPMENT.UN.ORG/CONTENT/DOCUMENTS/6499109-LENZI-TOWARDS%20A%20UNIVERSAL%20ENERGY%20ACCESS.PDF](https://sustainabledevelopment.un.org/content/documents/6499109-lenzi-towards%20a%20universal%20energy%20access.pdf)
- <sup>3</sup> INTERNATIONAL ENERGY AGENCY, [HTTPS://WWW.IEA.ORG/SDG/ELECTRICITY/](https://www.iea.org/sdg/electricity/)
- <sup>4</sup> THE WORLD BANK, DATABANK: SUSTAINABLE ENERGY FOR ALL, (WORLD BANK 2019), [HTTP://DATABANK.WORLDBANK.ORG/DATA/SOURCE/SUSTAINABLE-ENERGY-FOR-ALL](http://databank.worldbank.org/data/source/sustainable-energy-for-all)
- MINISTRY OF ENERGY AND MINERAL DEVELOPMENT, UGANDA'S SUSTAINABLE ENERGY FOR ALL INITIATIVE ACTION AGENDA, (2015), [HTTPS://WWW.SEFORALL.ORG/SITES/DEFAULT/FILES/UGANDA\\_AA\\_EN\\_RELEASED.PDF](https://www.seforall.org/sites/default/files/uganda_aa_en_released.pdf)
- <sup>6</sup> BENON BENA, PROJECT OPPORTUNITIES IN OFF-GRID RENEWABLE ENERGY, (OFF-GRID RENEWABLE ENERGY DEVELOPMENT AND RURAL ELECTRIFICATION AGENCY UGANDA), [HTTPS://WWW.GIZ.DE/DE/DOWNLOADS/REA%20PRESENTATION\\_%20PROJECT%20OPPORTUNITIES%20IN%20OFF-GRID.PDF](https://www.giz.de/de/downloads/rea%20presentation_%20project%20opportunities%20in%20off-grid.pdf)
- <sup>7</sup> MINISTRY OF ENERGY AND MINERAL DEVELOPMENT, UGANDA'S SUSTAINABLE ENERGY FOR ALL INITIATIVE ACTION AGENDA, (2015), [HTTPS://WWW.SEFORALL.ORG/SITES/DEFAULT/FILES/UGANDA\\_AA\\_EN\\_RELEASED.PDF](https://www.seforall.org/sites/default/files/uganda_aa_en_released.pdf)
- <sup>8</sup> UOMA, FISCAL POLICY ANALYSIS: AN ASSESSMENT OF THE TAX AND SUBSIDY OPTIONS TO ACCELERATE SOLAR HOME SYSTEMS IN UGANDA, (KAMPALA UGANDA, 2018), [HTTPS://UOMA.UG/WP-CONTENT/UPLOADS/2019/03/FISCAL-POLICY-ANALYSIS-REPORT.PDF](https://uoma.ug/wp-content/uploads/2019/03/fiscal-policy-analysis-report.pdf)
- <sup>9</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>10</sup> UOMA CONSULTATIONS AND SURVEY DATA
- <sup>11</sup> MAJORITY OF THESE SOLAR DEVICES WERE SOLAR LANTERNS AND SMALL MULTI-LIGHT SYSTEMS WHICH DO NOT MEET THE WORLD BANK AND SUSTAINABLE ENERGY FOR ALL'S (SE4ALL) MINIMUM THRESHOLD (SEE APPENDIX 1) IN THEIR MULTI-TIER FRAMEWORK FOR HOUSEHOLD ENERGY ACCESS
- <sup>12</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>13</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>14</sup> UNDP, UGANDA POVERTY STATUS REPORT, (2016), [HTTP://PUBDOCS.WORLDBANK.ORG/EN/381951474255092375/PDF/UGANDA-POVERTY-ASSESSMENT-REPORT-2016.PDF](http://pubdocs.worldbank.org/en/381951474255092375/pdf/uganda-poverty-assessment-report-2016.pdf)
- <sup>15</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>16</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>17</sup> GSMA, THE MOBILE ECONOMY SUB-SAHARAN AFRICA (2017), [HTTPS://WWW.GSMAINTELLIGENCE.COM/RESEARCH/?FILE=7BF3592E6D750144E58D9DCFAC6ADFAB&DOWNLOAD](https://www.gsmaintelligence.com/research/?file=7BF3592E6D750144E58D9DCFAC6ADFAB&download)
- <sup>18</sup> MACMILLAN R., PACLO A., & PAREMOER T., *THE EVOLUTION OF IN UGANDANS MOBILE MONEY SECTOR*, (2016), [HTTPS://WWW.ACADEMIA.EDU/31890342/THE\\_EVOLUTION\\_OF\\_REGULATION\\_IN\\_UGANDAS\\_MOBILE\\_MONEY\\_SECTOR](https://www.academia.edu/31890342/the_evolution_of_regulation_in_ugandas_mobile_money_sector)
- <sup>19</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>20</sup> CATALYST ADVISORS, *DRAFT UGANDA OFF-GRID STRATEGY*, (JUNE 2018)
- <sup>21</sup> DANIEL WALDRON ET AL., *TAMING THE STRANGE BEASTS: SERVICING AND THE FUTURE OF PAYG*, (WASHINGTON: CGAP, NOVEMBER 2018), [HTTPS://ASSETS.CDCGROUP.COM/WP-CONTENT/UPLOADS/2018/12/17125008/TAMING-THE-STRANGE-BEASTS.PDF](https://assets.cdcgroup.com/wp-content/uploads/2018/12/17125008/taming-the-strange-beasts.pdf)
- <sup>22</sup> DANIEL WALDRON ET AL., *TAMING THE STRANGE BEASTS: SERVICING AND THE FUTURE OF PAYG*, (WASHINGTON: CGAP, NOVEMBER 2018), [HTTPS://ASSETS.CDCGROUP.COM/WP-CONTENT/UPLOADS/2018/12/17125008/TAMING-THE-STRANGE-BEASTS.PDF](https://assets.cdcgroup.com/wp-content/uploads/2018/12/17125008/taming-the-strange-beasts.pdf)
- <sup>23</sup> DALBERG AND LIGHTING GLOBAL, *OFF-GRID MARKET TRENDS REPORT*, (2018), [HTTPS://WWW.LIGHTINGGLOBAL.ORG/WP-CONTENT/UPLOADS/2018/03/2018\\_OFF\\_GRID\\_SOLAR\\_MARKET\\_TRENDS\\_REPORT\\_FULL.PDF](https://www.lightingglobal.org/wp-content/uploads/2018/03/2018_off_grid_solar_market_trends_report_full.pdf)
- <sup>24</sup> CHRISTOPHER AIDUN, PEPUKAYE BARDOUILLE AND DIRK MUENCH, *FINANCING THE DESCO S-CURVE: WHAT ARE WE WAITING FOR?*, (2015), [HTTPS://PERSISTENT.ENERGY/WP-CONTENT/UPLOADS/2018/11/FINANCING-DESCOS.PDF](https://persistent.energy/wp-content/uploads/2018/11/financing-descos.pdf)
- <sup>25</sup> THE UGANDA OFF-GRID ENERGY MARKET ACCELERATOR (UOMA), *MAPPING THE UGANDAN OFF-GRID ENERGY MARKET* (KAMPALA UGANDA: UOMA, 2018), [HTTPS://SHELLFOUNDATION.ORG/APP/UPLOADS/2018/10/2018-UOMA-MARKET-MAP.PDF](https://shellfoundation.org/app/uploads/2018/10/2018-uoma-market-map.pdf)

- 
- <sup>26</sup> ADAPTED FROM [HTTPS://DATA.BLOOMBERGLP.COM/PROFESSIONAL/SITES/24/2016/10/BNEF\\_WP\\_2016\\_10\\_07-PAY-AS-YOU-GO-SOLAR.PDF](https://data.bloomberglp.com/professional/sites/24/2016/10/BNEF_WP_2016_10_07-PAY-AS-YOU-GO-SOLAR.PDF)
- <sup>27</sup> WOOD MACKENZIE AND ENERGY 4 IMPACT, *STRATEGIC INVESTMENT IN OFF-GRID ENERGY ACCESS; SCALING THE UTILITY OF THE FUTURE FOR THE LAST MILE* (FEBRUARY 2019)
- <sup>28</sup> ANDRÉ RADLOFF ET AL., *FINANCING THE OFF-GRID SECTOR: TURNING PORTFOLIO INTO FINANCE*, (GERMANY: GIZ, OCTOBER 2017)
- <sup>29</sup> WOOD MACKENZIE AND ENERGY 4 IMPACT, *STRATEGIC INVESTMENT IN OFF-GRID ENERGY ACCESS; SCALING THE UTILITY OF THE FUTURE FOR THE LAST MILE* (FEBRUARY 2019)
- <sup>30</sup> WOOD MACKENZIE AND ENERGY 4 IMPACT, *STRATEGIC INVESTMENT IN OFF-GRID ENERGY ACCESS; SCALING THE UTILITY OF THE FUTURE FOR THE LAST MILE* (FEBRUARY 2019)
- <sup>31</sup> WOOD MACKENZIE AND ENERGY 4 IMPACT, *STRATEGIC INVESTMENT IN OFF-GRID ENERGY ACCESS; SCALING THE UTILITY OF THE FUTURE FOR THE LAST MILE* (FEBRUARY 2019): “UNDISCLOSED” REPRESENTS THE CUMULATIVE TOTAL OF ALL INVESTMENTS WHERE THE INVESTOR HAS NOT BEEN DISCLOSED
- <sup>32</sup> WOOD MACKENZIE AND ENERGY 4 IMPACT, *STRATEGIC INVESTMENT IN OFF-GRID ENERGY ACCESS; SCALING THE UTILITY OF THE FUTURE FOR THE LAST MILE* (FEBRUARY 2019)
- <sup>33</sup> CATALYST ADVISORS AND SHELL FOUNDATION, *ACHIEVING SDG 7: THE NEED TO DISRUPT OFF-GRID ELECTRICITY FINANCING IN AFRICA*
- <sup>34</sup> CHRIS AIDUN AND DIRK MUENCH, *FINANCING DESCOS: A FRAMEWORK OF FINANCING WORKING CAPITAL FOR DISTRIBUTED ENERGY SERVICES COMPANIES*, (PERSISTENT ENERGY, MARCH 2015), [HTTPS://PERSISTENT.ENERGY/WP-CONTENT/UPLOADS/2018/11/FINANCING-DESCOS.PDF](https://persistent.energy/wp-content/uploads/2018/11/financing-descos.pdf)
- <sup>35</sup> DANIEL WALDRON ET AL., *TAMING THE STRANGE BEASTS: SERVICING AND THE FUTURE OF PAYG*, (WASHINGTON: CGAP, NOVEMBER 2018), [HTTPS://ASSETS.CDCGROUP.COM/WP-CONTENT/UPLOADS/2018/12/17125008/TAMING-THE-STRANGE-BEASTS.PDF](https://assets.cdccgroup.com/wp-content/uploads/2018/12/17125008/taming-the-strange-beasts.pdf)
- <sup>36</sup> THE UGANDA OFF-GRID ENERGY MARKET ACCELERATOR (UOMA), *MAPPING THE UGANDAN OFF-GRID ENERGY MARKET (KAMPALA UGANDA: UOMA, 2018)*, [HTTPS://SHELLFOUNDATION.ORG/APP/UPLOADS/2018/10/2018-UOMA-MARKET-MAP.PDF](https://shellfoundation.org/app/uploads/2018/10/2018-UOMA-MARKET-MAP.PDF)
- <sup>37</sup> DANIEL WALDRON ET AL., *TAMING THE STRANGE BEASTS: SERVICING AND THE FUTURE OF PAYG*, (WASHINGTON: CGAP, NOVEMBER 2018), [HTTPS://ASSETS.CDCGROUP.COM/WP-CONTENT/UPLOADS/2018/12/17125008/TAMING-THE-STRANGE-BEASTS.PDF](https://assets.cdccgroup.com/wp-content/uploads/2018/12/17125008/taming-the-strange-beasts.pdf)
- <sup>38</sup> THE UGANDA OFF-GRID ENERGY MARKET ACCELERATOR (UOMA), *MAPPING THE UGANDAN OFF-GRID ENERGY MARKET (KAMPALA UGANDA: UOMA 2018)*, [HTTPS://SHELLFOUNDATION.ORG/APP/UPLOADS/2018/10/2018-UOMA-MARKET-MAP.PDF](https://shellfoundation.org/app/uploads/2018/10/2018-UOMA-MARKET-MAP.PDF)
- <sup>39</sup> ANDRÉ RADLOFF ET AL., *FINANCING THE OFF-GRID SECTOR: TURNING PORTFOLIO INTO FINANCE*, (GERMANY: GIZ, OCTOBER 2017)
- <sup>40</sup> DANIEL WALDRON ET AL., *TAMING THE STRANGE BEASTS: SERVICING AND THE FUTURE OF PAYG*, (WASHINGTON: CGAP, NOVEMBER 2018), [HTTPS://ASSETS.CDCGROUP.COM/WP-CONTENT/UPLOADS/2018/12/17125008/TAMING-THE-STRANGE-BEASTS.PDF](https://assets.cdccgroup.com/wp-content/uploads/2018/12/17125008/taming-the-strange-beasts.pdf)
- <sup>41</sup> ITAMAR ORLANDI ET. AL, *HOW CAN PAY-AS-YOU-GO SOLAR BE FINANCED?* (BLOOMBERG NEW ENERGY FINANCE, NOVEMBER 2016), [HTTPS://WWW.BBHUB.IO/BNEF/SITES/4/2016/10/BNEF\\_WP\\_2016\\_10\\_07-PAY-AS-YOU-GO-SOLAR.PDF](https://www.bbhuh.io/bnef/sites/4/2016/10/BNEF_WP_2016_10_07-PAY-AS-YOU-GO-SOLAR.PDF)
- <sup>42</sup> ANDRÉ RADLOFF ET AL., *FINANCING THE OFF-GRID SECTOR: TURNING PORTFOLIO INTO FINANCE*, (GERMANY: GIZ, OCTOBER 2017)
- <sup>43</sup> CHRIS HUMPHREY AND ANNALISA PRIZZON, *GUARANTEES FOR DEVELOPMENT: A REVIEW OF MULTILATERAL DEVELOPMENT BANK OPERATIONS*, (ODI, DECEMBER 2014), [HTTPS://WWW.ODI.ORG/SITES/ODI.ORG.UK/FILES/ODI-ASSETS/PUBLICATIONS-OPINION-FILES/9398.PDF](https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9398.pdf)
- <sup>44</sup> CARNEGIE CONSULT, *EVALUATION OF SIDA’S USE OF GUARANTEES FOR MARKET DEVELOPMENT AND POVERTY REDUCTION*, (SIDA, 2016), [HTTPS://WWW.SIDA.SE/CONTENTASSETS/A99E846C5EAF48268EFB1F99A0DE0EDF/36729336-4134-4ECE-8F9F-AFAB49824678.PDF](https://www.sida.se/contentassets/a99e846c5eaf48268efb1f99a0de0edf/36729336-4134-4ECE-8F9F-AFAB49824678.pdf)
- <sup>45</sup> NICO TYABI, ISABELLE DE COINET AND RYAN LEVINSON, *SCALING ENERGY ACCESS WITH BLENDED FINANCE SUNFUNDER AND THE ROLE OF CATALYTIC CAPITAL*, (SUNFUNDER, MAY 2018) AND NEWS POSTS AVAILABLE AT [HTTPS://SUNFUNDER.COM/NEWS/BLENDING](https://sunfunder.com/news/blending)
- <sup>46</sup> IFAD, *HOW TO DO LINES OF CREDIT*, (2014), [HTTPS://WWW.IFAD.ORG/DOCUMENTS/38714170/40185841/HOW+TO+DO+LINES+OF+CREDIT.PDF/CF0C12A6-A57D-4C36-B45C-E94F2E863595](https://www.ifad.org/documents/38714170/40185841/How+to+do+lines+of+credit.pdf/CF0C12A6-A57D-4C36-B45C-E94F2E863595)
- <sup>47</sup> WORLD BANK, *LIGHTING GLOBAL AND GOGLA, KEY PERFORMANCE INDICATOR TECHNICAL GUIDE FOR THE OFF-GRID PAY-AS-YOU-GO SECTOR* (JANUARY, 2018)
- <sup>48</sup> USAID, *DEVELOPMENT CREDIT AUTHORITY UGANDA: SOLAR ENERGY FOR ALL EXPANDING COMMERCIAL PROVISION OF GRID CONNECTIONS AND OFF-GRID RENEWABLE ENERGY*, [HTTPS://USAID-CREDIT.EXPOSURE.CO/UGANDA-ENERGY-ACCESS](https://usaid-credit.exposure.co/uganda-energy-access)
- <sup>49</sup> USAID, *DEVELOPMENT CREDIT AUTHORITY UGANDA: SOLAR ENERGY FOR ALL REVITALIZING AND POWERING DAILY LIFE*, [HTTPS://USAID-CREDIT.EXPOSURE.CO/UGANDA-SOLAR-ENERGY-FOR-ALL](https://usaid-credit.exposure.co/uganda-solar-energy-for-all)
- <sup>50</sup> OCA INTERVIEWS

---

<sup>51</sup> M-KOPA “PRESS RELEASE: M-KOPA SECURES US\$80 MILLION COMMERCIAL DEBT FUNDING” (OCTOBER 2017) AVAILABLE AT [HTTP://SOLAR.M-KOPA.COM/WP-CONTENT/UPLOADS/SITES/4/2015/02/M-KOPA-DEBT-ANNOUNCEMENT.PDF](http://solar.m-kopa.com/wp-content/uploads/sites/4/2015/02/M-KOPA-DEBT-ANNOUNCEMENT.PDF)

<sup>52</sup> UNCDF WEBSITE [HTTPS://WWW.UNCDF.ORG/UGANDA](https://www.uncdf.org/uganda)

<sup>53</sup> UOMA CONSULTATIONS

<sup>54</sup> UOMA CONSULTATIONS AND SEED WEBSITE [HTTPS://SEED.UNO/PROGRAMMES/ECOSYSTEM-BUILDING/FINANCE/CLIMATE-FINANCE](https://seed.uno/programmes/ecosystem-building/finance/climate-finance)

<sup>55</sup> [HTTPS://WWW.FINDEVGATEWAY.ORG/ORGANIZATION/PAYGO-PERFORM](https://www.findevgateway.org/organization/paygo-perform)