Review of the Financing Landscape for Off-Grid Energy
Results of the ROGEP Market Assessment

GreenMax Capital Advisors

Context and Scope of the ROGEP Market Assessment

Regional Off-Grid Electrification Project

With funding from the World Bank, ECREEE launched the Regional Off-Grid Electrification Project (ROGEP) in 19 countries in West Africa and the Sahel. The project aims to enhance shared capacity, institutions and knowledge in order to increase electricity access of households, businesses and public institutions using modern stand-alone solar systems through a harmonized regional approach.

Geographic Scope

The 19 countries covered by ROGEP (collectively referred to as “West Africa and the Sahel”) include the 15 member states of ECOWAS – Benin, Burkina Faso, Cabo Verde, Cote d’Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo – plus Cameroon, Central African Republic, Chad and Mauritania.

Off-Grid Solar Market Assessment

Scope of Work/Objectives:

- Task 1: Enabling policy and market environment
- Task 2: Off-grid solar market assessment
  - Demand [private households, public institutions, productive use applications]
  - Supply
- Task 3: Willingness and capacity of national and regional financial institutions to provide financing
- Task 4: Models to incentivize private sector and financial institutions to support off-grid solar market development

Two complementary work-streams:

- Least-Cost Electrification Analysis
- Gender Assessment

Methodology

Data Collection Methods and Tools

Available Information	• Government statistics (census data, electrification data), energy sector plans (electrification master plan), published reports (GOGLA, World Bank, IEA data) and input from local experts
Key Stakeholders	• Representatives from government, donor community, NGOs, solar companies, financial institutions, impact investors, industry associations, academia, community groups and women's groups
Focus Group Discussions	• Key stakeholders from household, institutional, productive use and supply sectors • Relevant data and high-level market insights
Surveys and Questionnaires	• Solicited information from selected target groups (solar companies, local Financial Institutions – FIs, Micro Finance Institutions – MFIs and Specialized Off Grid Debt Funds – SOGDFs)
GIS Data and Analysis	• Datasets on population, settlements, households, public/social facilities (health facilities and schools), electrical grid network, etc. • Least-cost electrification analysis

Results


ECREEE
Towards Sustainable Energy
ROGEP
Regional Off-Grid Electrification Project
WORLD BANK GROUP
LIGHTING AFRICA
BOAD
CTF

Financial Inclusion in West Africa and the Sahel

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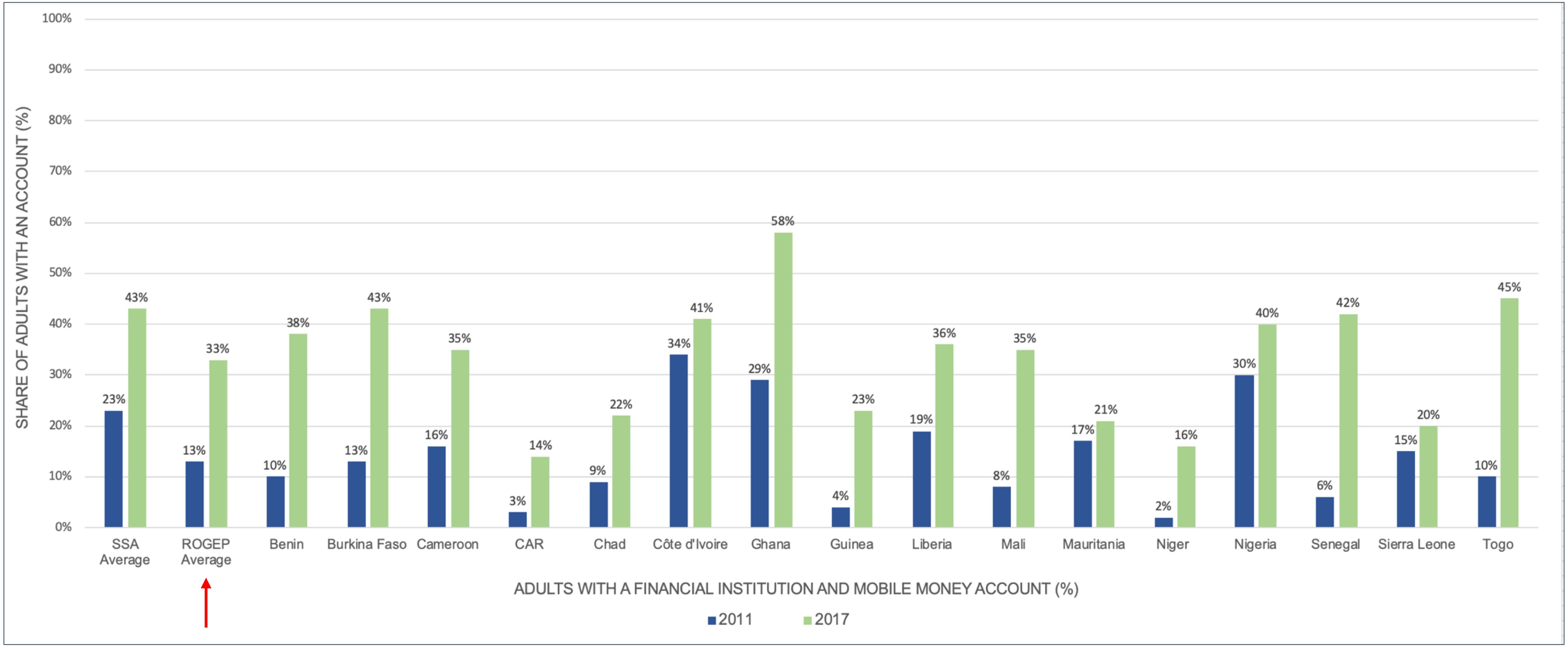
Share of Adults with Access to Financial Services, 2011 and 2017



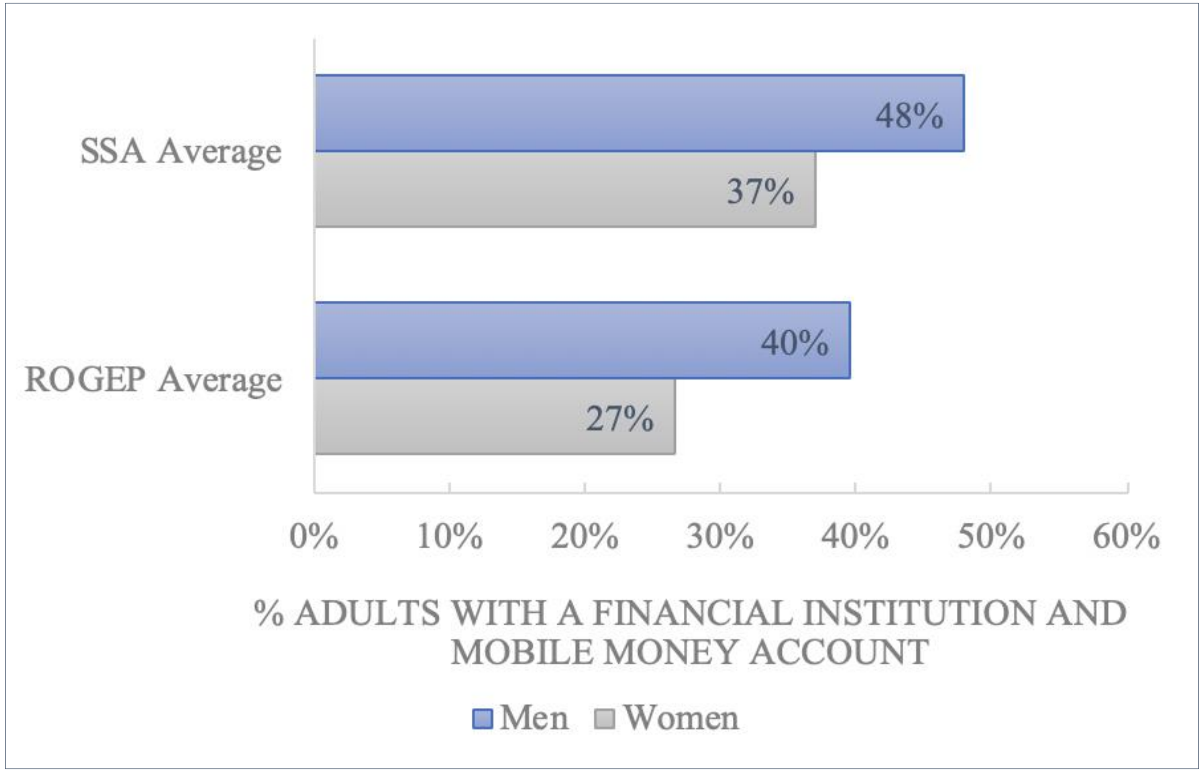
NOTE: Cabo Verde, Guinea-Bissau and The Gambia excluded (no data); data for Côte d'Ivoire is from 2014 and 2017

Source: World Bank Global Findex Database; GreenMax Capital Advisors analysis

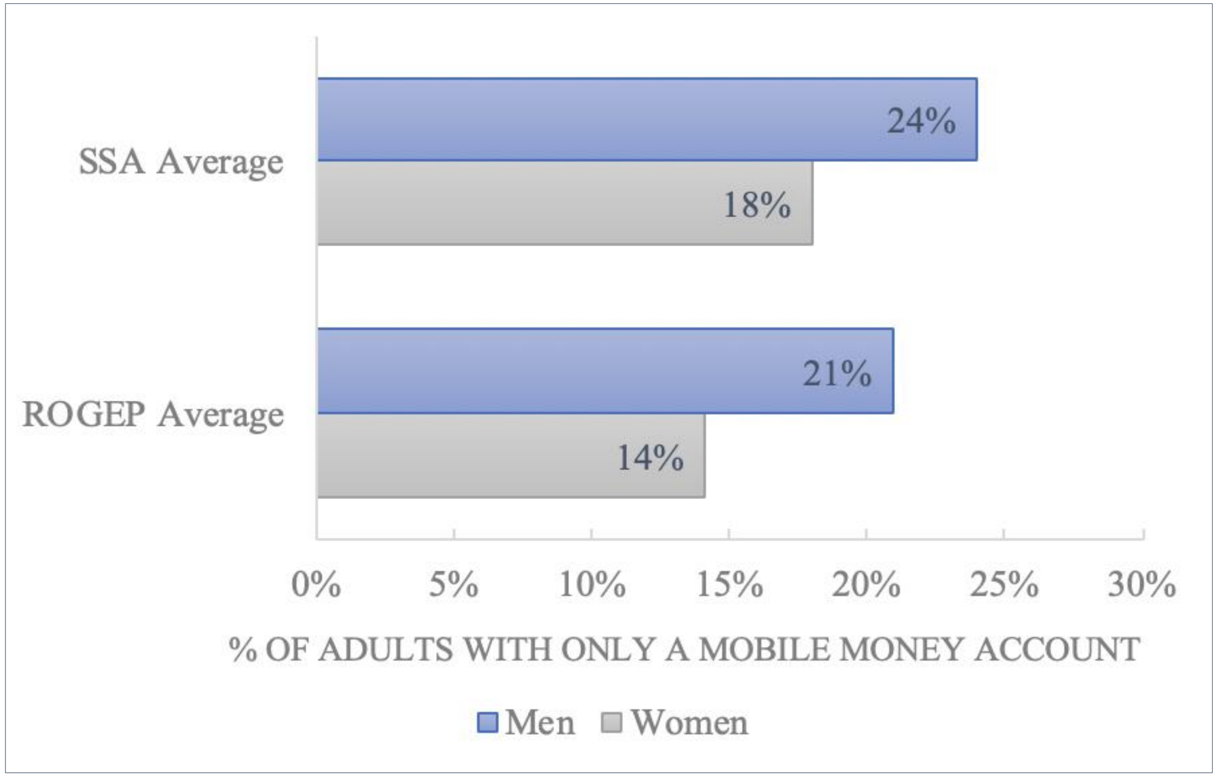
Financial Inclusion Gender Gap

Financial Inclusion Gender Gap in Sub-Saharan Africa and West Africa and the Sahel, 2017

Financial Inclusion Gender Gap



Mobile Money Gender Gap



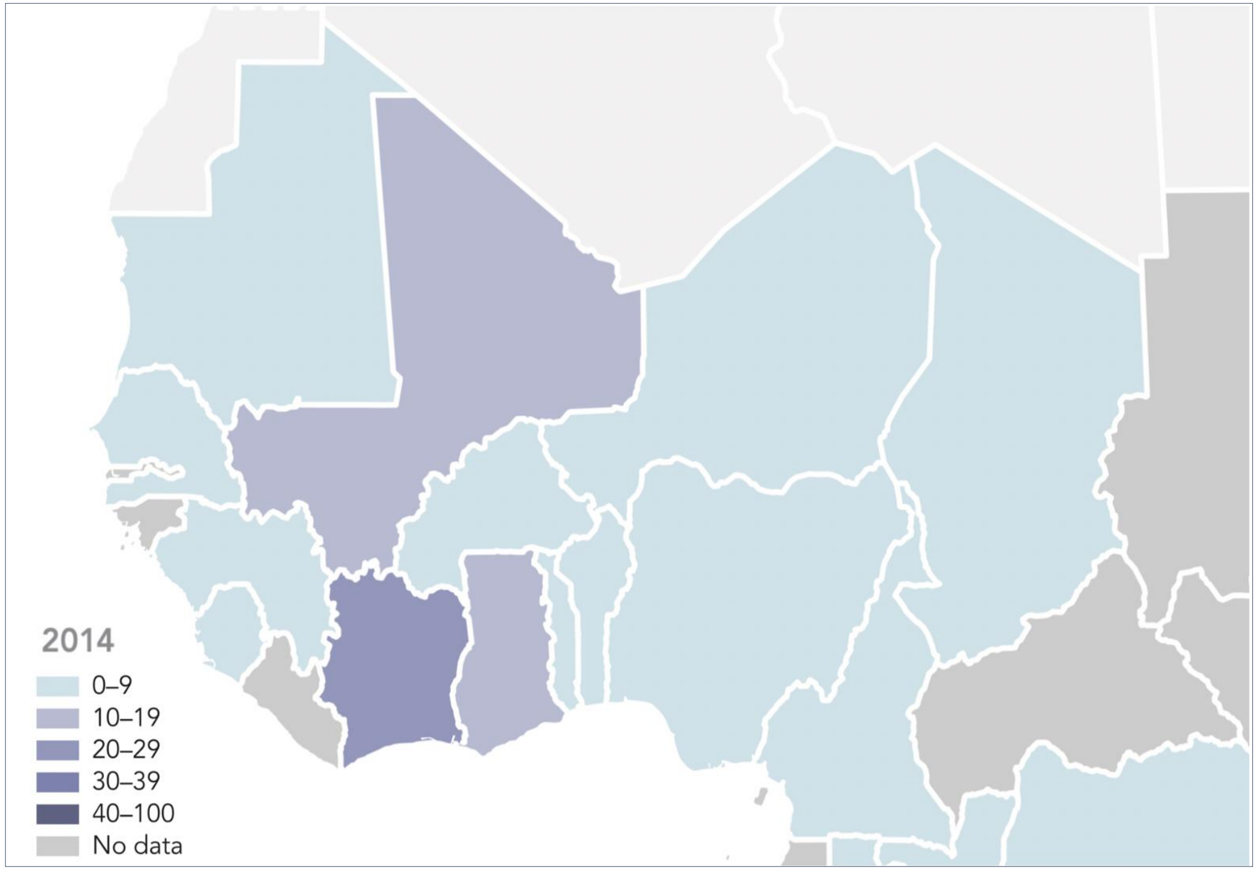
Women in West Africa and the Sahel are 13% less likely than men to have an account at a financial institution or with a mobile money service provider. The gender gap in access to mobile money services is smaller (7%).

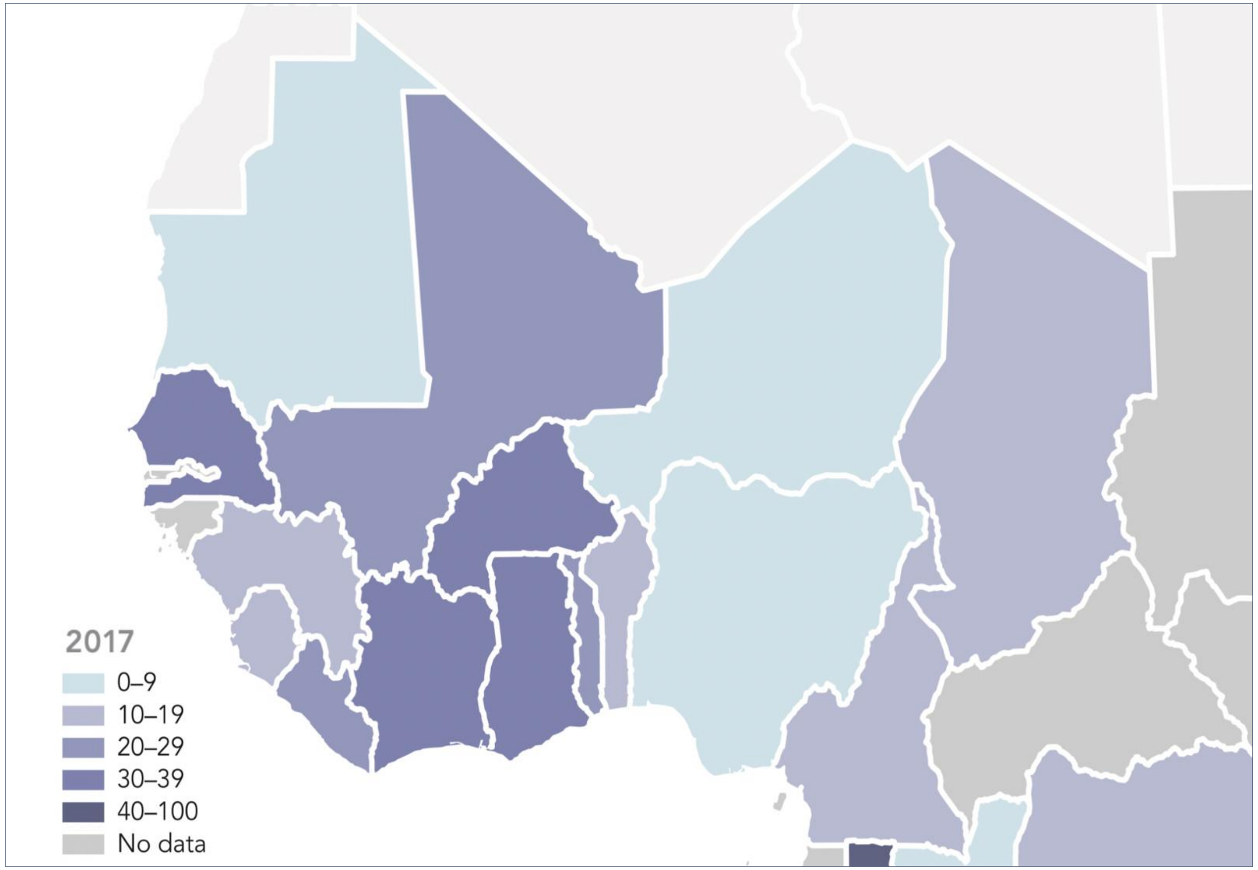
NOTE: Cabo Verde, Guinea-Bissau and The Gambia excluded (no data)

Source: World Bank Global Findex Database; GreenMax Capital Advisors analysis

The Digital Revolution and Electricity Access

Share of Adults with a Mobile Money Account in West Africa and the Sahel (%), 2014 and 2017





Source: World Bank Global Findex Database

Key Programs Supporting Off-Grid Solar Lending

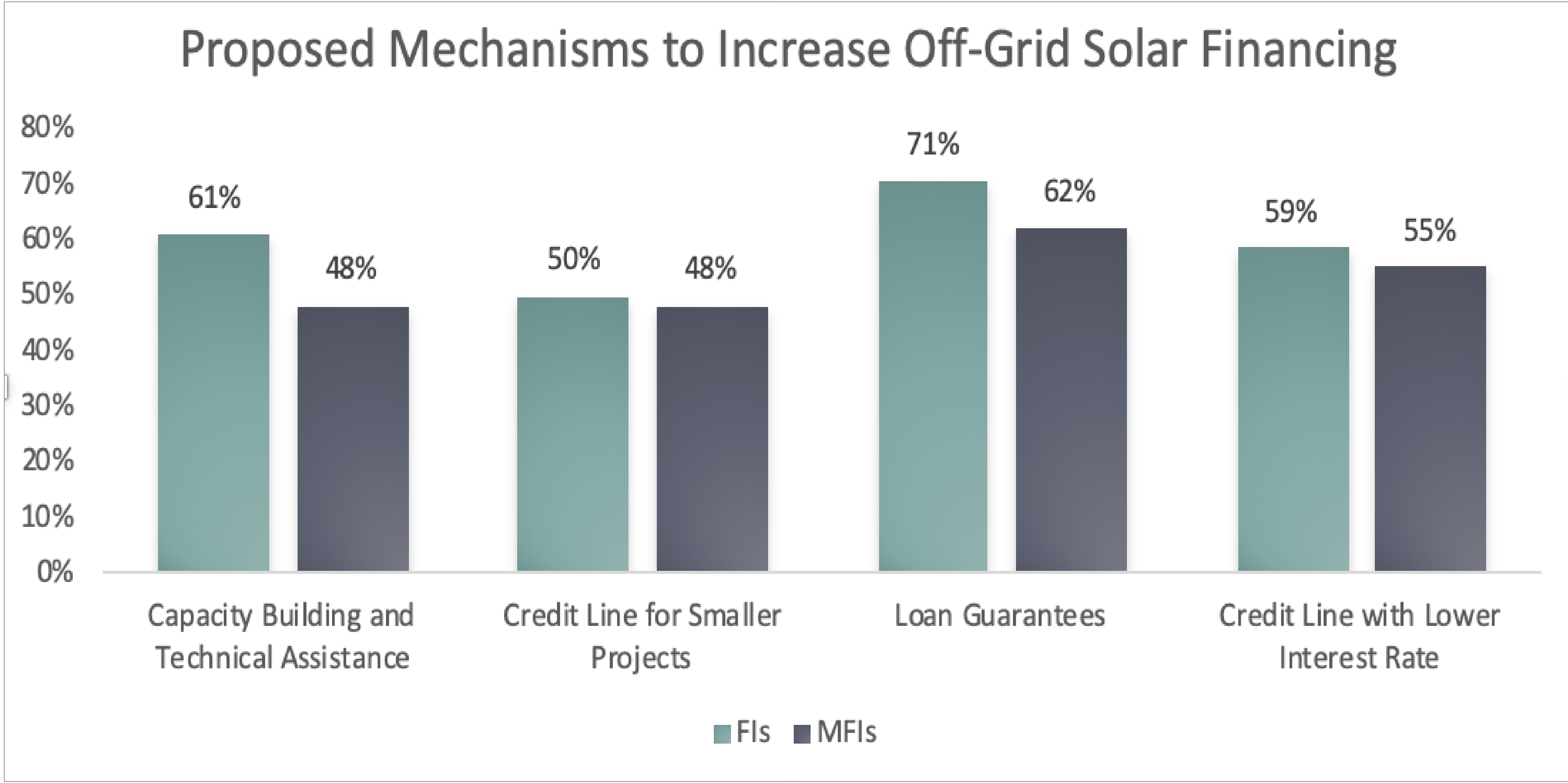
- Sustainable Use of Natural Resources and Energy Finance (SUNREF): AFD-sponsored initiative that provides concessional financing and technical assistance to financial institutions to fund clean energy projects. The TA component aims to validate projects and their eligibility for the program, which are then presented to partner banks for financing.

- In 2014, Orabank, Société Générale and AFD signed a partnership agreement to launch **SUNREF's West Africa program**, which makes a EUR 30 million credit line available to banks in the West African Economic and Monetary Union. To date, the program has deployed financing to partner banks in Benin, Côte d'Ivoire, and Senegal, with projects in Togo and Nigeria scheduled for implementation in 2019. Prior to its expansion into West Africa, the SUNREF initiative achieved success in East Africa's off-grid sector, where it increased lending particularly to the commercial and industrial (C&I) market segment.

- Climate Economic Analysis for Development, Investment and Resilience (CEADIR): The CEADIR program in West Africa was a multi-year initiative that took place from 2016 to 2018 in eight West African countries – Côte d'Ivoire, Ghana, Guinea, Liberia, Niger, Nigeria, Senegal and Sierra Leone.

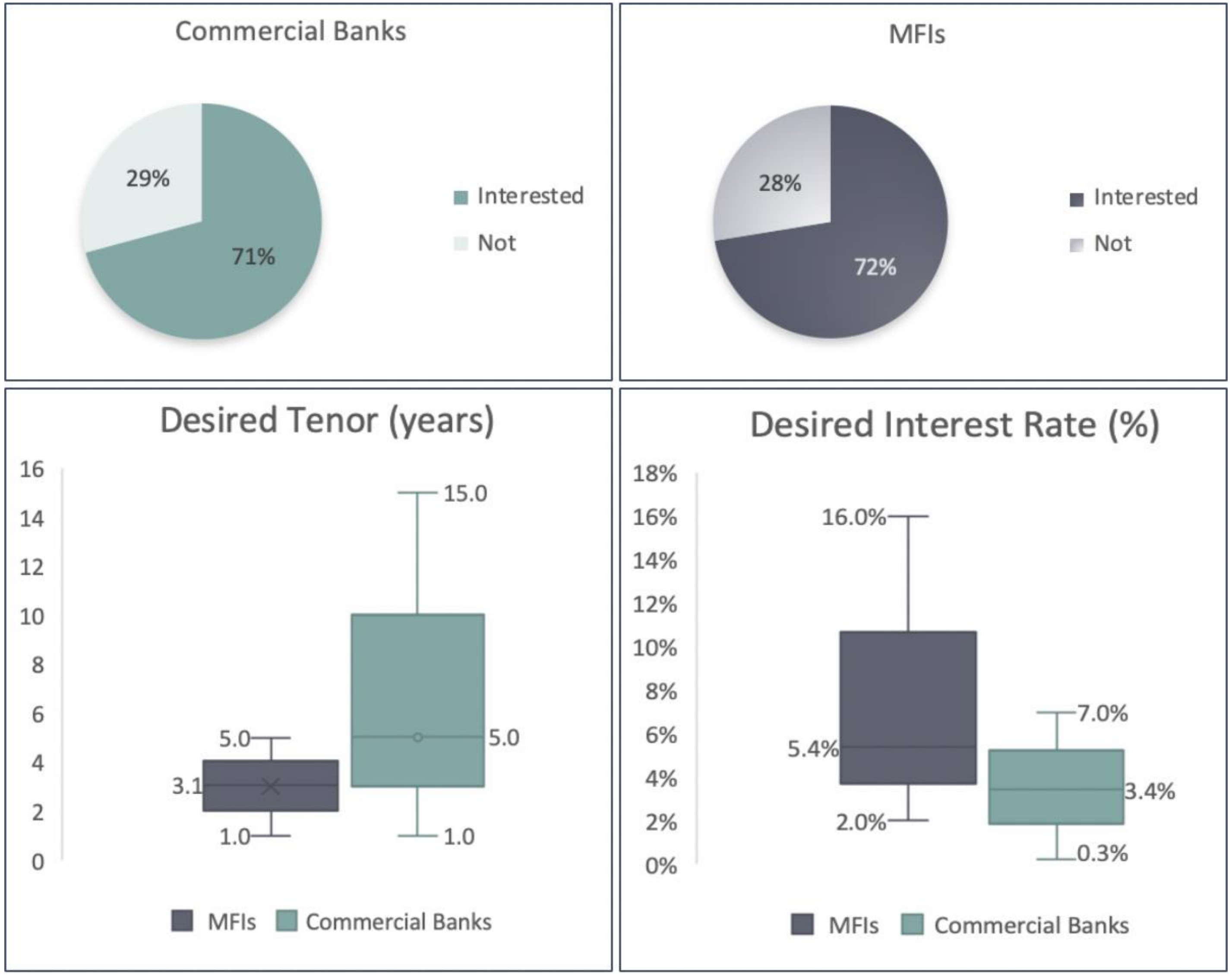
- The program's objective was to strengthen the clean energy lending capacity of participating local FIs in each country. CEADIR engaged with local banks by delivering national workshops that provided training to bank staff covering the stand-alone solar sector, mini-grids and the PAYG business model. The workshops were complemented with one-on-one TA to help banks develop clean energy lending strategies based on the specific capacity building needs of each bank in the context of each country.

Financial Institution Assessment



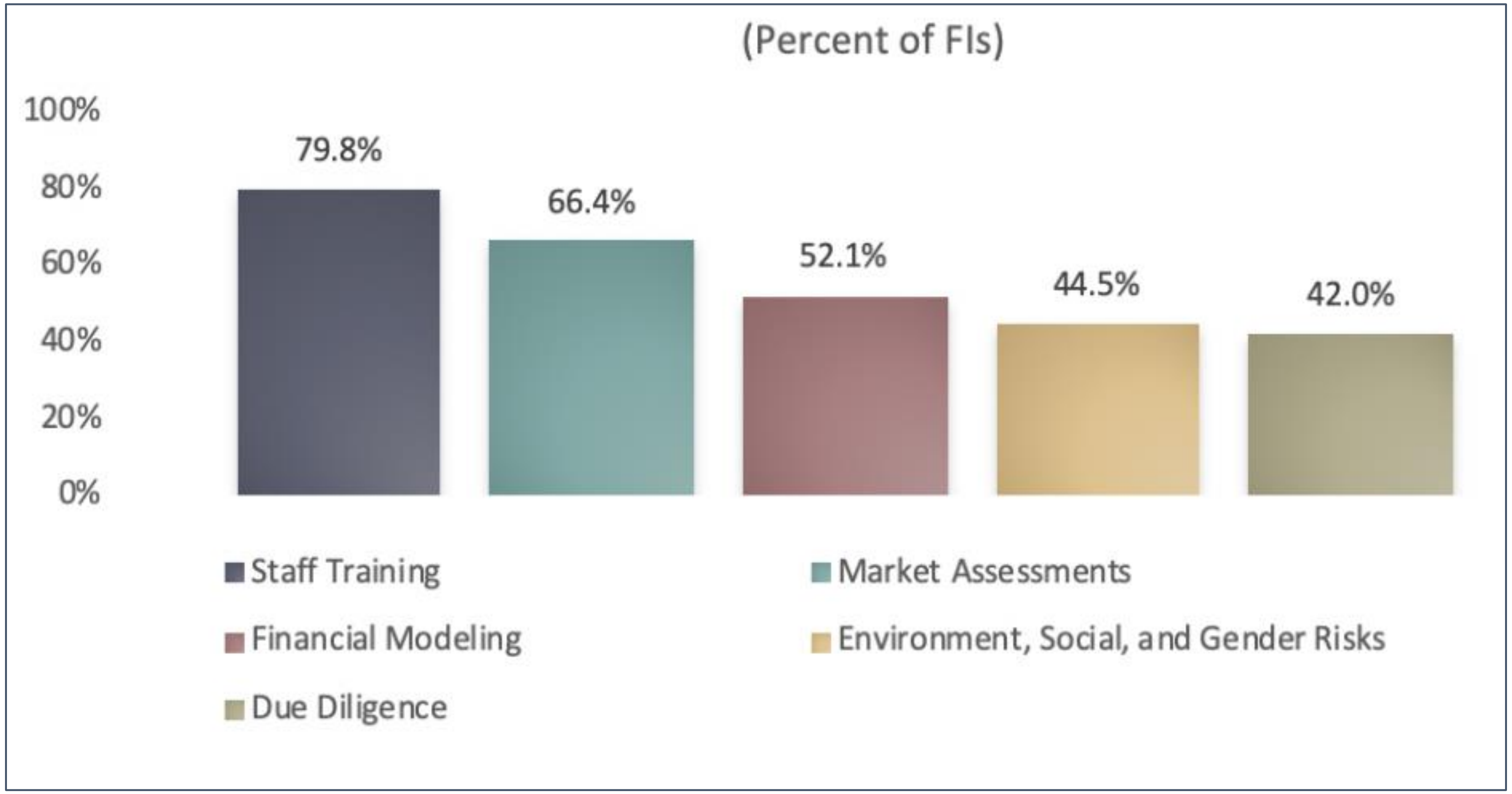
Source: Stakeholder interviews, 2018; GreenMax Capital Advisors analysis

Financial Institution Assessment



Source: Stakeholder interviews, 2018; GreenMax Capital Advisors analysis

Financial Institution Assessment



Surveyed Financial Institutions (Commercial Banks and Microfinance Institutions) identified several areas of internal capacity that require improvement in order to lend (or increase lending) to the off-grid solar sector. The most common need among FIs was training for bank staff.

Source: Stakeholder interviews, 2018; GreenMax Capital Advisors analysis

Financial Institution Assessment

SPECIALIZED OFF-GRID DEBT FACILITIES

- In recent years, responding to a lack of debt financing overall for all off-grid energy sub-segments, there have emerged specialized debt funds dedicated solely to lending for African off-grid projects and enterprises.
- GreenMax has identified 18 specialized lenders either already in operation or nearing their first close. Most of these funds are focused on asset-based lending for SHS portfolios.
- If all of these facilities accumulate the funds they have indicated, there will be a total of close to USD 2 billion in funds under management available to lend to the African off-grid space by sometime in 2019.

✓ Bettervest
✓ Blue Orchard
✓ Catalyst – Venture Builder Fund
✓ CDC Off-Grid Local Currency Facility
✓ CrossBoundary Energy
✓ CrossBoundary Energy Access
✓ DWS Energy Access Fund
✓ Energize Africa
✓ Lendable
✓ Lion's Head Off-Grid Energy Access Facility
✓ Lion's Head/Fieldstone JV
✓ Neot
✓ responsAbility Energy Access Fund
✓ Shell Foundation Energy Access Growth Vehicle
✓ Sima Funds
✓ Solar Frontier
✓ SunFunder
✓ Triple Jump Energy Entrepreneurs Fund

Source: Stakeholder interviews, 2018; GreenMax Capital Advisors analysis

Equity Ecosystem for Off-Grid Sector

- Energy Impact Investors: Acumen Energy Access, Bamboo, Blue Haven, Differ, DOA, Energy Access Ventures, FactorE, Gaia, KawiSafi, Persistent,, Rockefeller Fdn, Shell Fdn
- General Impact Investors: AHL Ventures, Apis Partners, Blue Orchard, Ceniarth, Grassroots Business Fund, Grey Ghost, I&P, LGT Impact, Novastar, Omidyar, Palladium, PG Impact, SeedsLife Caban Impact Investment, The Social Enterprise Fund, Treehouse, Village Capital, LGT Impact, Lundin Fdn, Grey Ghost Ventures, Gates Fdn, Facebook, Microsoft, Unilever
- Specialized Africa Energy Funds: Archem, Ariya Capital, Berkeley Energy, Climate One, DI Frontier, Globeleq, Inspired Evolution, Metier, ResponsAbility Renewable Energy Holding (rAREH), Shell New Energies
- Africa Infrastructure Funds: Africa Finance Corp, AIIM, Amaya, AP Moller, ARM Harith, Pembani Rempro
- Africa General Private Equity: Adlevo, AFIG, Africa Capital Alliance, Amethis, CRE, DBL, Emerging Capital Partners, Helios, Platform Capital, Singularity, Synergy, Verod
- Global Tech Venture Capital: Khosla, Prelude, Vulcan, Zouk
- Strategic Investors: Caterpillar, EDF, EGIS, Enel, Engie, ENI, EDP, EON, GE, Iberdrola, Siemens, Sumitomo Mitsui Tesla, Total

NOTE: These funds/investors have either already made or indicated that they will consider making investments in Africa's off-grid sector

Key Insights and Recommendations

Key Market Insights

GreenMax Capital Advisors

- High Level of Interest: As the results of the Financial Institution Assessment indicate, there is strong interest to provide financing to the off-grid solar sector among local commercial banks and microfinance institutions.
- Opportunity for ROGEP Credit Lines: Local currency cost of capital remains very high for most FIs, which in turn results in prohibitively high pricing for typical loans; hence there is an opportunity for ROGEP credit lines to provide liquidity to local commercial banks and MFIs to support lending to the sector.
- Local Currency and Pricing: Most loans to off-grid enterprises and all loans for consumer purchases of stand-alone solar systems must be denominated in local currency. However, taking up hard currency denominated credit lines presents challenges for local lenders who would have to bear the foreign exchange risk. This risk is mitigated in countries that are part of the WAEMU or CEMAC monetary unions, as the CFA franc is pegged to the euro, which shields it from volatile currency fluctuations.
- Collateral Requirements: The collateral requirements of commercial banks across the region are generally high, particularly for small firms. Moreover, lenders already in the space are constrained from originating loans where the borrower cannot meet these requirements. This makes it very difficult for banks to lend to the sector outside of the largest market segments/to the largest solar companies. Hence, there is a need for credit enhancement mechanisms to enable banks to extend loans to borrowers without such high collateral requirements.
- Risk Perception of Lenders: **In order to address market entry risks for new lenders and encourage additional lending to the sector, there is a need for partial credit guarantees that cover first-loss.**

Key Market Insights

A DEARTH OF EQUITY

- One of the key findings of GreenMax's survey of both off-grid equity and debt financiers as well as of stand-alone solar entrepreneurs, is that there is a dearth of available equity, particularly for seed and Series A investment rounds in the off-grid space.

- As a result, many off-grid entrepreneurs are left with no source for early-stage development aside from grant funding, which has become ever more competitive.

- Moreover, even many established off-grid enterprises find themselves overleveraged with debt. A recent study by Wood Mackenzie and Energy4Impact indicates that of more than USD 1.1 billion raised by Solar Home System companies to date, more than 50% has been through debt facilities.

Source: "Strategic investments in off-grid energy access: Scaling the utility of the future for the last mile," Energy4Impact, 2019.

Key Market Insights

GreenMax Capital Advisors

LOAN GUARANTEE PROGRAMS

- Governments, DFIs and donor agencies can offer guarantees to private lenders that loans will be repaid in the event of default by off-grid project developers or owners.
- Common sources of these guarantees include the IFC Small Loans Guarantee Program, the USAID Development Credit Authority, the African Guaranty Fund, the Swedish International Development Cooperation Agency, GuarantCo, Afrexim Bank and African Trade Insurers.
- Guarantees usually cover 50% of the outstanding principal of the loan but can cover more (75%) to encourage banks to offer more attractive terms. Preliminary evidence suggests that 50% pari-passu coverage typically offered by guarantee funds is not strong enough coverage to entice lending to those off-grid solar projects and companies in greatest need of financing.

Key Market Insights

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CROWDFUNDERS

- Crowdfunding is an important source of funding for all types of SME activities in Africa; it has reached USD 3.7B with a 12% annual growth rate
- Crowdfunding specifically for energy access projects reached USD 8.7M in 2016 and indicators are that it has more than tripled by 2019
- Most individual transactions have been under USD 500K, although some have exceeded USD 2-3M

bettervest nachhaltig · fair · effizient

ecoligo.

trine

CROWD CREDIT

lendahand

sunexchange

KIVA

Summary of Recommendations

Technical & Financial Support	• Technical and financial support to off-grid solar companies and entrepreneurs to accelerate business growth and/or facilitate market entry • Market entry assistance should focus on frontier markets
Technical Assistance for Banks	• Training of bank staff to originate deals and assess credit risk • Due diligence support to qualify products and approve vendors • Support new lenders with product structuring and building deal flow
Advisory Services for Off-Grid Solar Businesses	• Customized advisory services for solar enterprises/entrepreneurs to ensure proper financial management systems are in place
Consumer Education	• Education / awareness raising on consumer financing options (PAYG) • Financial literacy campaigns

Summary of Recommendations

Risk Mitigation and Subordinated Debt	• Instruments to provide first-loss protection for both lenders/investors in specialized debt funds and FIs/MFIs lending directly to off-grid projects and enterprises
Technical Assistance	• TA to build FI/MFI capacity for lending to the off-grid sector • TA to build capacity of off-grid solar enterprises/entrepreneurs
Credit Lines	• Low price • Long tenor • Locally-denominated
Collaboration	• Foster collaboration on off-grid lending between specialized debt funds and local FIs/MFIs • Foster collaboration with guarantors to provide more robust overall coverage

Green-4-Access First Loss Facility

Risk Mitigation Concept

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The Problem

Local lending for Energy in Sub Saharan Africa is not scaling up quickly enough due to the perception of significant credit risks (consumer credit, forex risks, wariness of business models/collateral values). This is particularly true for expansion of off grid finance outside of asset based lending for PAYG portfolios in East Africa. Increased application of First Loss Facilities could help mitigate these perceptions but to date only a limited amount of philanthropic and donor funds have been deployed in this way and these have been placed largely on an ad hoc basis. In order to better leverage concessional funding and "crowd in" other sources of capital to fund first loss instruments, there needs to be a common understanding among lenders and investors about what risks first loss facilities should cover and is it possible to reach a level of pricing to allow the facilities to be more widely used and sustainable.

G4A Green for Access

G4A's Solution

The Green 4 Access First Loss Facility partnership will establish a common, blended finance platform for First Loss Facilities to support Energy Access lending. Through methodical, industry-wide data collection and analysis, the partnership will design and offer first loss products that help local and international lenders to perceive off grid lending as sufficiently de-risked, while also aiming to allow the fund's investors to achieve commensurate returns that make the products sustainable. To be initially capitalized at up to $50 MM, G4A will seek to create a tiered fund structure in order to blend existing philanthropic and donor sources with capital from impact investors, DFIs and others.

First Loss Products

G4A intends to offer two first loss instruments to enhance the credit of portfolios of off-grid loans that are originated by qualified lenders including Financial Institutions, Microfinance Institutions and Specialized Off Grid Debt Funds.

1. **Cash Deposit Facility**

A Cash Deposit may be placed with a qualified lender to provide credit support in favor of the lender's origination of a portfolio of energy access loans. A maximum cover of portfolio loans will be established.

2. **Subordinated Debt**

G4A may provide junior debt to a qualified lender in tranches up to a to-be-determined percentage of a portfolio of energy access loans.

Both products may also be originated with an off-grid enterprise who will then "shop" for an accredited lender. As the facility matures, we will seek to enlarge its asset base to allow for First Loss guarantees on a levered basis, i.e. cashless.

G4A is at design and development stage with hope to be operational during 2021

Questions & Comments

Thank You

For more information, please contact:

KOYE ALABA: kalaba@greenmaxcap.com

GreenMax Capital Advisors
www.greenmaxcap.com

Corporate Headquarters
540 President Street, 3rd Floor
Brooklyn, New York 11215
United States
Tel: +1 646 564 3500

West Africa Regional Office
1 Towry Close
Victoria Island
Lagos, Nigeria
Tel: +234 806 389 1650