



EnPower Capital

Financing sustainable energy solutions to unleash productive capacity

Challenge of Underpowered Africa

"In Sub-Saharan Africa the electrification rate is 31%...this is where the greatest challenge lies."^[1]

Grid-based electricity access merely reaches 15% of Africa's rural population. This translates to over 240 million people without access to power. Extending the electricity grid cannot affordably bridge this gap alone, and lack of electricity access still presents a barrier for small rural industries, collective community workers, and individuals to engage in income generating activities and increase productivity. As an alternative to grid connected electricity, rural industries resort to costly and time consuming manual labour or diesel generators.

To address this situation, Distributed Energy Services Companies (DESCOs) have gathered momentum in the region and numerous small and medium-sized entrepreneurs have started building and operating small-scale power solutions for rural communities in Africa.

Many of these DESCOs have proven their business models. However, accessing finance to operate and scale their businesses remains a challenge. Apart from initial capital investment costs, major working capital is required for importing equipment, sustaining growing distribution networks, and providing credit to end users. Barriers to securing working capital financing include:

- Donors mostly only finance upfront capital, whereas working capital is secured through social investors or commercial finance
- Firms lack credit history, a prerequisite for large loans
- Commercial banks have strict collateral requirements, long timelines for approvals, typically provide shorter-term loans, and prefer to participate in plain vanilla structures

The Opportunity

"Lack of electric power supply prevents women working in Shea Butter Extraction Society from increasing productivity. With electric machines, they can process 700 bags of shea butter instead of 75." - Ghana News Agency

"Cost of pumping water for irrigation using gasoline pumps in rural Senegal costs \$1/day plus time... Solar powered pumps can significantly cut down costs and produce time and environmental savings." - Sustainable Engineering Lab, Columbia University

- Solar can bridge 50-75% of energy gap in Sub-Saharan Africa (SSA)^[2].
- Market for solar lamps in Sub Saharan Africa (SSA) has grown on average by 90% each year^[3]
- Solar PV generates cost savings of \$50-\$100/MWh^[4] over off-grid diesel generation – over \$20 billion a year is spent on diesel and kerosene in Africa^[5]
- Addressable market of end users in Tanzania alone 500-750K with potential to expand across other SSA countries

Investment Summary

Use of Funds: Investment in purchasing and developing Power Generation Assets to support capital needs of micro, small and medium enterprises (MSMEs) and DESCOs

Geography: East Africa (Tanzania primarily)

Target Investor: Impact investor with energy / East Africa focus

Instrument: Fund for off-balance sheet financing

Financial Mechanism: Investment Fund

Investment Size per DESCO: \$50,000 to \$1M

Total Fund Size: \$10M

Term of Investment: 7 years + 1 + 1, with coupon payments

Target IRR to Investor: 15-17%

Security: Escrow Accounts and PGA assets

The Solution

The solution provided by EnPower Capital consists on the creation of a novel financial structure that channels funds from commercial investors – through an intermediary that facilitates the investment – to local African DESCOs who develop and install small-scale, renewable Power Generating Assets (PGAs), used to provide electricity to off-grid rural enterprises and collectives.

The structure provides the following benefits to each key stakeholder:

DESCO:

- Access to financing not previously available, enabled via off-balance sheet mechanism;
- Ability to concentrate resources on scaling their businesses, instead of locking up funds in inventory and/or long term assets (i.e., PGAs);
- Improved return on investment through lower deployment of capital;
- Increased market share and economies of scale through access to larger and diversified pools of end-users.

End Users:

- Improved productivity through increased access to reliable electricity;
- Affordable energy access through periodic payments, eliminating high upfront costs of purchasing small-scale generators.

Investors:

- Risk-adjusted and attractive returns for emerging market renewable energy investments;
- Diversification by investing in multiple businesses through a single investment vehicle;
- Reduced transaction costs and time;
- Increased ability to access base of the pyramid population;
- Access to due diligence and origination capabilities of EnPower Capital.

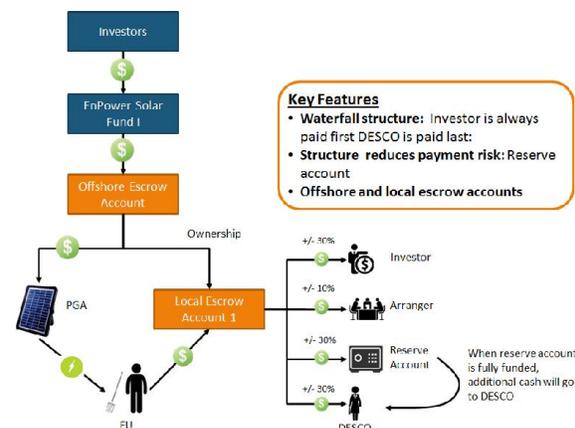
EnPower Capital:

- Ability to mobilize capital to and facilitate investment in renewable energy in Africa;
- Share of the profits from the business.

Financial Structure

The structure allows an Investor to i) provide financing to DESCOs and ii) generate returns from fees paid by End Users (EUs). Funds are invested into an offshore escrow account (EA) and from there directed to purchase and develop PGAs. Payments from EUs are collected in a local EA and distributed according to the waterfall hierarchy mutually agreed upon by the Investor, EnPower Capital, and DESCO.

Diagram of Financial Structure – One EU



An Offshore EA is responsible for distributing the funds for the purchase/development of the PGAs, and all funds received from EUs as fees for using the electricity are paid into a Local EA. The Local EA then distributes the funds back to the Investor, EnPower Capital, and DESCO until the investor is paid in full. The EUs only perceive payments as a single fee, facilitating their ability to pay for the electricity in a simple and affordable way:

- Investor:** Invests funds into the EA and receives a risk-adjusted return via amortizing payments from electricity usage, throughout the life of the investment (estimated net return of 15-17%).
- EnPower Capital:** Coordinates with local contacts, provides technical knowledge and regional expertise to identify DESCOs and perform due diligence; structures transaction and advises Investor.
- Offshore EA:** Will own PGAs as collateral until the Investor is paid in full and will also own one Local EA for every DESCO in operation under this structure.
- Local Escrow Account:** Channel funds between Investors, DESCOs, EUs and EnPower Capital, based on contractual arrangements. Local EA distributes usage fees collected from EUs according to the following waterfall hierarchy:
 - 30% to Investors as return on their invested capital
 - 10% to Arranger as fee for coordination services
 - 30% to Reserve Account until funded with 3 months' Investor returns
 - 30% (during reserve funding period), 60% (after reserve full) to DESCO as revenue generated for its business

The Local EA will benefit from a guarantee of a Development Finance Institution (DFI) for the payment risk associated with EUs.

- DESCO:** Should have a viable and proven business model to provide energy solutions to off-grid populations in Africa. The DESCO will be responsible for sourcing, developing and installing PGAs and identifying creditworthy EUs (ensuring timely payments from them). Maintenance of the PGAs will be performed by the DESCO until the investment is paid in full, and thereafter, according to the DESCO's business model.
- End Users:** Small business owners that require electricity to engage in income generating activities. They will pay for the use of the PGAs directly to the Local EA in regular instalments. Collections of fees can be made via different mechanisms, including mobile money or through collection services offered by microfinance institutions.

Potential Investment Example

DESCO Providing Solar Panels to Small Businesses in Tanzania

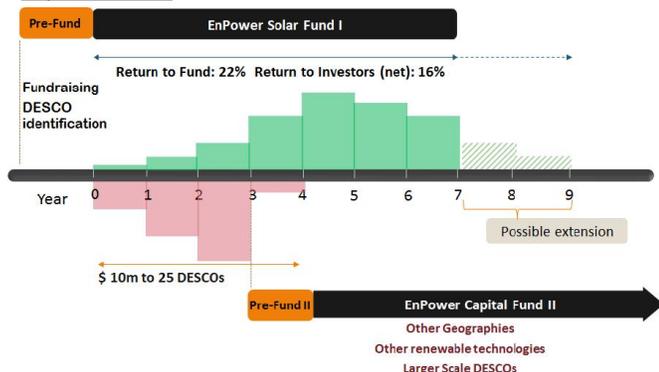
This DESCO uses small solar panels to provide power to business owners that offer mobile charging services to off-grid communities in Tanzania. The DESCO currently has \$16,000 in working capital, 80% of which is employed in inventory/PGAs (\$13,000).

A \$70,000 investment through EnPower Capital would allow the DESCO to expand his business and install additional PGAs. This investment would allow the DESCO to employ the \$13,000 in other operating activities to reach more clients and scale his/her business, leading to better financial results.

	Current Position	With EnPower Capital Investment	Difference	
# of Clients	100	533	433	+ 433%
Revenues (\$000s)	2,167	5,706	3,539	+ 163%
Profit (\$000s)	807	1,324	517	+ 64%
ROI	19%	80%	61%	

In this example the gross return to the Fund after two years is 20%.

Implementation



Impact

From the single example provided, an investment of \$70,000 could provide electricity to an additional 433 EUs via small-scale solar panels. The benefits of clean energy access for communal, non-farm, and farm productive uses has been well documented^[7] and not expanded upon here. However, cost and access to finance for electricity expansion remain barriers to provision, uptake, and use in rural areas, all of which are addressed by EnPower Capital. Breaking down barriers to financing energy provision, starting with small-scale solar PV projects, will directly reduce carbon emissions while providing employment and economic growth to rural communities. It is forecasted that within five years \$10M could be invested in growing the businesses of 25 African DESCOs, targeting 5,000 EUs / off-grid rural industries, collective community workers, and individuals with energy access.

[1] OECD/IEA. 2010. *Energy Poverty: How to make modern energy access universal?*
 [2] National Renewable Energy Laboratory (NREL). 2008. Technical Potential of Solar Energy to Address Energy Poverty and Avoid GHG Emissions in Africa.
 [3] Calculated over 2009-2012. IFC. Transforming the off-grid lighting market.
 [4] Using average levelized cost of energy values with diesel cost of \$2-\$4/gallon. Source: Lazarrd. 2014. Lazard's levelized cost of energy analysis – Version 8.0.
 [5] Solarkiosk GmbH. 2014. Enable empower
 [6] African Development Bank. African Guarantee Fund for Small and Medium-sized Enterprises
 [7] World Bank. 2003. Survey of Productive Uses of Electricity in Rural Areas; USAID. 2009. Enabling small and medium-sized enterprise access to finance.

Before the launch of EnPower Solar Fund I, EnPower Capital will start looking for potential DESCOs interested in getting funded and potential investors interested in clean energy in developing countries. Capital calls will be made during the first three years of the fund life, and returns will start to be obtained one quarter after the first investment is performed.

Once the committed capital is fully invested, EnPower Capital will start a similar process to create a second fund to achieve major scale. Subsequent funds can target different geographies, technologies and other characteristics.

Risks and Mitigation Strategies

Risk	Mitigation
Lack of payment by EUs results in investment underperformance	1. Partner with DFIs to act as guarantors ^[6] 2. Target DESCOs with business models that use mobile payments or co-guarantees
Short-term liquidity problems from end users delay payments	1. Reserve account within the EA to ensure sufficient cash is held in each period to pay the Investors 2. Investors prioritized in waterfall hierarchy
Foreign Exchange risk	Hedging options explored upon scale up
Energy alone does not achieve expected small business growth	Partner with local capacity building organisations and NGOs to provide other technical assistance
Arranger not able to identify sufficient high quality DESCOs	Arranger has strong local contacts, technical knowledge and regional expertise
DESCOs cannot deliver new projects at expected rate	Invest in DESCOs with proven business models and existing revenues; strong due diligence