

# UNCDF

## LOCAL FINANCE INITIATIVE (LFI)

Case Study No.5: REPARLE Uganda

Unlocking Private Finance

### INTRODUCTION

To realize inclusive growth, countries should have the capacity and resources to mobilize, allocate and account for capital flows to “last mile” pockets where poverty is entrenched, economic opportunities are limited, and development plans under-funded. Concurrently, local communities should have access to capital to fund their local development needs and respond to growing demands for better infrastructure, services, and jobs.

Yet, in many least developed countries (LDCs), local savings are not invested locally or limited investment is provided for local development because of lack of confidence from financiers and track record of successful transactions. Innovative financing mechanisms coupled with UNCDF risk mitigation instruments help reveal markets to a wider pool of investors; and thereby crowd-in non-traditional funders, public and private, into new areas.

In 2012, UNCDF launched the Local Finance Initiative (LFI), a “last mile” finance model aiming to unlock finance so that local development projects can get to “closure.” The purpose of LFI is to correct market failures and attract catalytic capital for the investments that are not being picked up by existing public or private investors. Therefore, LFI does not seek to crowd out the private sector and provide public subsidies for those investments that would be likely to attract investment without its support. This represents the foundation on which LFI investments are identified and how the selection process does not distort the market. UNCDF seeks to spark a demonstration effect where the public sector can replicate the blend, leveraging the private sector finance to take the business model to scale. The LFI approach and its risk mitigation

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Unlocking Public and Private  
Finance for the Poor



strategies have proven that local development investments can access additional funds from domestic capital markets, which is in line with the call for action in the Addis Ababa Action Agenda and Sustainable Development Goal 17 (the means of implementation) to mobilize resources from multiple sources to finance development.

As the LFI investment pipeline is expanding rapidly, UNCDF would like to document and capture the knowledge, information, and lessons learned in a systematic manner. This series of case studies aims to demonstrate how LFI approach contributes to unlocking domestic capital and realizing transformational local impact.

Case study 5 covers LFI’s use of blended finance to attract additional capital for the Renewable Energy Powering Agriculture and Rural Livelihoods Enhancement (REPARLE) project in northern Uganda.

## PROJECT SUMMARY

**Name:**

Renewable Energy Powering Agriculture & Rural Livelihoods Enhancement (REPARLE)

**Location:**

Nwoya district in northern Uganda

**Sector:**

Sustainable agriculture, access to clean energy

**Purpose:**

1) Scaling up of agricultural milling services and 2) production of biomass briquettes for clean energy

**Total project cost:**

US\$ 2 million (UNCDF seed capital grant and concessional loan + equity investors + asset financing loan + project developer’s contribution)

## MARKET CONTEXT

Agriculture is the backbone of Uganda’s economy, with over 72% of the country’s predominantly rural labor force employed in the sector and/or engaging in farming activities as a primary source of income. Yet, agriculture only made up 27% of the country’s GDP in 2014. The earning potential of rural farming communities has not been maximized due to low agricultural yield, high post-harvest losses, high transportation costs due to poor roads, high diesel prices, and lack of agricultural value addition.



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Power shortage is one of the key barriers in improving Uganda's agricultural productivity and overall economic growth. Uganda has one of the lowest electricity consumption per inhabitant in Africa; the national electrification rate is estimated at 14% with the rural population having an even lower rate of less than 7%. Lacking access to affordable, reliable, and sustainable electricity, households rely on alternative sources of energy such as kerosene, charcoal, and diesel. At the enterprise level, agro-processors and other agri-businesses rely on diesel-fueled generators to power their operations.

Nwoya district is located in northern Uganda, bordered by Sudan. Agriculture is the backbone of the district economy, with the major source of household incomes (85%) being the sale of crops. The major crops by quantity of production include cassava, groundnuts, sorghum, maize, and rice. Fruits like citrus, mangoes, pineapple and bananas are also produced. These are considered as both food and cash crops.

The district is about 44 km from Gulu town, the third largest urban center in Uganda in terms of population, behind Kampala and Kiira. The large urban population of Gulu Town provides a sizeable market for the agricultural produce from Nwoya district.

## DEVELOPMENT CHALLENGE

In Nwoya district, most farmers cultivate between 2-5 acres of land, a combination of maize, rice, groundnut, and vegetables/fruit, with each acre yielding about 2 tons of produce. For every ton processed, about 33% is left as agricultural waste and 5% as bran (from rice and maize).

Currently, agro-processing services are only available in towns and major urban centers. The lack of electricity in the district limits the community's ability for value-added agriculture. Farmers sell their crops to middlemen or aggregators who take the produce into town for processing, hence losing out to opportunities for value addition.

- The REPARLE project was identified by UNCDF through a request for proposal to provide access to energy to the Nwoya district. The project is a joint venture comprising three entities:
- Mandulis Energy Ltd: a Ugandan private developer of renewable energy sources with responsibility for the energy (biomass-gasification plant) component;
- Dream Shuttle Ltd: a Ugandan agriculture company with responsibility for the agro-processing/milling component of the project; and,
- ACTED: A French NGO working to build resilience and promote sustainable growth in vulnerable communities, with responsibility for the farmers' aggregation, training, and social impact component.

Under the REPARLE initiative, agricultural waste will be transformed to produce electricity through a process called biomass gasification. The process of heating the biomass (i.e. agricultural waste) produces an energy/gas that can be used to produce emissions-free electricity. The plan is to use 80% of this electricity to power processing equipment for maize, rice and ground-nuts, with the remaining 20% of the electricity to be distributed, at an affordable cost, to households who currently have no access to on-grid electricity. The gasification process generates biochar as a by-product which can be

sold directly or processed into carbonized charcoal briquettes depending on customer preferences.

REPARLE will use the agricultural waste to run their own biomass-gasification power plant which will supply power to the milling operations and the briquette production line while the bran by-product will be sold to livestock and poultry keepers as animal feeds. Roughly, the power plant will consume a third of the biomass/waste generated. The remaining two-thirds of biomass will be turned into uncarbonized biomass briquettes, which will be sold to industrial/commercial off-takers. Thus, REPARLE will have two main income streams—one from providing processing (milling and shelling) services to farmers, and the other from selling biochar and briquettes to industrial/commercial off-takers.



*"I am a farmer from Pamin Olango, Nwoya district. We have 200 acres of land here growing Maize and Rice as the major crops, we have also started testing growing cassava. In this area, farmers have been selling produce raw, but we note that adding value would be able to make farmers earn more profits and give jobs to neighbors and help process neighbors crops as well. The nearest processing unit is 20kms in Purong but the processors there aren't of quality. Basically, we have been selling all the produce raw, without value addition because this place has no electricity.*

*We are creating a good relationship with the farmers as a source of future biomass. We have already worked with the farmers to keep the biomass and are storing it until we start buying it from them. Once the gasifier is installed, we shall buy all that biomass from farmers, this is going to be a good source of revenue to them.*

*With the support from UNCDF we shall also be able to process produce for other players like the churches, schools, etc. We shall also provide storage, marketing and financial services to the farmers. We have a huge customer potential from Congo, Southern Sudan, Kenya, as well as traders coming from Kampala."*

Johnson Kezekiya Nyeko  
Board Chairman, Mandulis Energy Ltd

## PROJECT RATIONALE

The key driver for UNCDF's intervention is to support access to energy in Nwoya district, a place where there is no electricity, and extension of the power grid by the Government of Uganda is not planned in the near future. Electrification of the district is expected to exert the following transformative impact on the locality's economic, social, and environmental development.



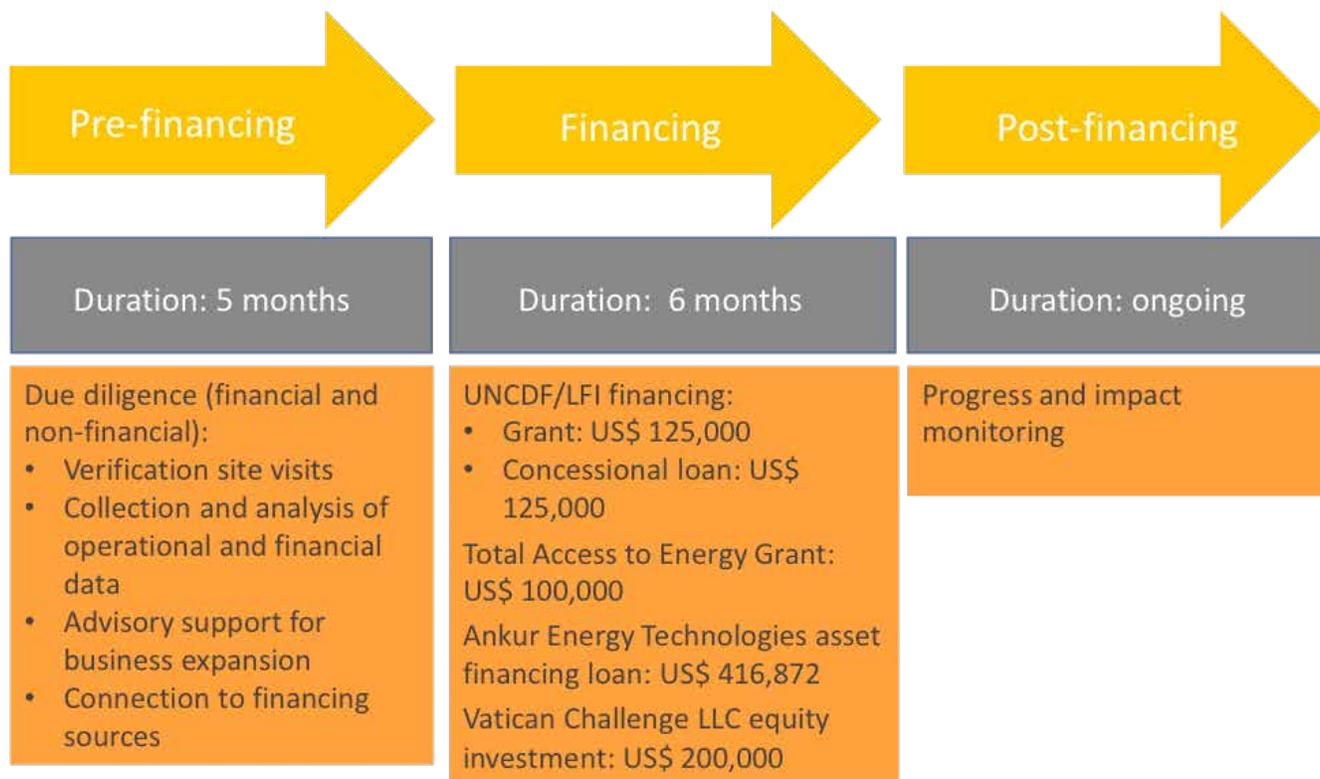
- Rural communities in Northern Uganda represent one of the most vulnerable populations in the country. This project will target the families in the poorest 20th percentile of the population and lower middle-income groups.
- REPARLE's technology is a "zero-waste" approach since all raw materials will be used to power agro-processing mills and produce briquettes. This efficiency results in a cleaner and cheaper power source for the targeted population.
- REPARLE can offer processing services to poor rural communities at affordable rates and below current market rates while still earning a good return. Concurrently, farmers will benefit from value addition services through higher sales prices of processed crops.
- The business model allows farmers access to storage and drying facilities without removing the farmer's control over when to sell their produce to achieve better prices, thus enabling them to significantly increase their income.
- Through ACTED, farmers will receive direct capacity building and skills development to improve and modernize agronomic practices, as well as training on good financial management and enterprise development.

REPARLE has successfully piloted its technology and needs funding in order to scale up its operations in northern Uganda. Unfortunately, the project developer's own capital was insufficient to attract commercial capital on their own merits. UNCDF's support is needed to improve its financial viability and make it a more attractive investment for external funders.

## PROJECT IMPLEMENTATION

LFI's key activities under this project can be broken down into three distinct phases (see Figure 1 below). Overall, the initial two phases spanned a period of 11 months and involved the participation of multiple stakeholders (project developer, local government entities, local financial institutions, UNCDF).

UNCDF used a mix of technical assistance and financial assistance in this project intervention, with technical assistance being provided to the promoter during the first phase for project development, and collaboration with the various external financiers on terms and conditions during the second phase.



### Pre-financing

During this stage, LFI investment officers worked closely with the project developer to conduct due diligence of the project – collecting and analyzing all relevant operational, financial, and legal information. The key tasks included:

#### Project preparation:

- Site visits to verify availability of raw material, existence of contractual arrangements with farmers (out-grower scheme), processing capacity and gathering market intelligence.
- Development of data collection tools for collecting operational and financial data.
- Verification of commercial viability of the expansion through detailed financial analysis.
- Determination of the optimal size of the project and structuring of the proposed investment to expand the factory.

### Business advisory support:

- The developer originally wanted to roll out the project in 16 sites. UNCDF advised the developer to phase out the implementation plan with one pilot site in the initial years followed by the remaining 15 sites in the second phase after the successful implementation of the pilot.

### Design financing options:

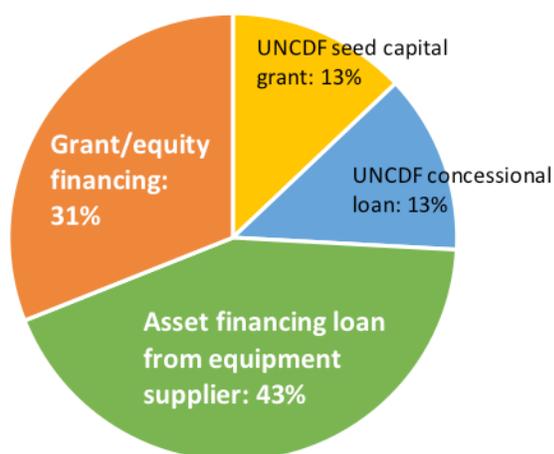
- Preparation of LFI's internal investment documents to support a recommendation of financing investment.
- Preparation of a bankable investment package (e.g. financial model, project information memorandum) for submission to third parties including potential lenders and equity investors.

## Financing

To date, the project developer has invested about US\$ 1.1 million in the project to purchase, among other things, processing equipment and machines, buildings (including warehousing) and a 32kw biomass-gasification plant. The REPARLE factory started operations after the harvest season in 2017 but additional investments are needed to scale up the pilot:

- Increased processing capacity from 1.5MT to 3MT per hour
- Installation of a charcoal briquette production
- Increased power plant capacity from a 32Kw biomass gasification unit to a 250Kw unit
- Farmers' aggregation and supply chain

Percentage of financing unlocked by LFI



From the due diligence, UNCDF determined that the developer would require an additional US\$ 966,872 for the upscale. To attract investors and lenders to the project, UNCDF would need to deploy credit enhancements to de-risk the transaction—offering a blend of seed capital grant and subsidized credit to increase the equity contribution and lower the overall debt burden of the owners.

UNCDF approached and worked with several potential funders, which ultimately converged on the following capital structure for REPARLE:

**UNCDF instruments:** (i) Technical assistance and (ii) a catalytic seed capital grant of \$125,000 and (iii) a concessional loan of US\$ 125,000.

**Total Access to Energy:** Total Access to Energy is a platform funded by the Oil & Gas Industry to seed innovative and alternative solutions for energy access. Through UNCDF's intervention, the platform agreed to onboard the project with a seed capital grant of US\$100,000.

**Ankur Scientific Energy Technologies Pvt. Ltd:** Provided asset loan finance (equipment) totaling US\$416,872.

**Vatican Challenge LLC (Laudato Si' Challenge Accelerator):** REPARLE received an equity investment of US\$ 200,000 (grant to be converted into equity in the future). This global initiative of the Vatican provides mentorship and equity funding for start-ups to grow their solutions.

Since REPARLE is a start-up and still in pilot phase, attracting a significant amount of debt did not make sense.

## Post-financing

UNCDF's assistance does not end with the funding approval. Upon the issuance of the financing agreements, UNCDF worked with the project developer to clear all remaining conditions precedent for disbursement including UNCDF's financing of seed capital of 125,000 (disbursed) and concessional loan of US\$ 125,000 (in progress). UNCDF will continue to provide monitoring of loan utilization, business advice to the developer on his operations to ensure repayment, and technical support to ensure that the project is achieving the intended socio-economic development impact.

## RESULTS AND IMPACT

The REPARLE project illustrates how UNCDF grant funding and tailored technical support can facilitate the entrance of private financing for innovative and sustainable agriculture production in Uganda. In this case, UNCDF funding successfully **unlocked 74% of the total financing gap**, with a **leverage ratio of 1:3**, and enabled the implementation of a US\$ 2 million local development project in rural Uganda.

Even more significantly, the zero-waste approach adopted by REPARLE will have significant economic, health, and environmental impact. REPARLE activities are expected to contribute towards **promoting 15 of the 17 SDGs** in Uganda, in particular energy access (SDG 7).



## Income Generation and Poverty Reduction

The project improves farmers' access to processing and storage services at a significantly lower price than other processors in the market. The plant allows for produce to be stored on-site thanks to cooling/drying facilities. This benefit enables farmers to ride out the cyclical in prices and sell at a higher margin at an appropriate time.



## Job Creation

Around 1,500 farmers (750 women and 750 men) will be engaged as customers and suppliers of biomass. Assuming an average household of 6 members, the indirect beneficiaries of this project can reach as many as 9,000 people. In addition, the business will generate direct employment for 62 people.



## Reduction of Carbon Footprint

Agro-processing will be powered by biomass instead of diesel, which helps to maintain affordability and reduce the plant's carbon footprint. Every liter of diesel not consumed is equivalent to a proportional reduction of 2.68 kilograms of CO<sub>2</sub> emitted. Likewise, each ton of waste treated leads to a reduction of greenhouse gases (~0.03 ton of methane per ton of waste), or 0.85 ton of CO<sub>2</sub> emitted.



## Access to Clean and Affordable Energy

Households would benefit by switching from kerosene to electricity; lighting needs would become cheaper with the new energy source. A community of 1,500 households would be able to save over \$180,000 per year by connecting to the plant for their electricity needs, using 2 or 3 bulbs instead of kerosene lamps. Every liter of kerosene not consumed is equivalent to a reduction of 2.4 kg of CO<sub>2</sub> emitted.



## Improved Health Outcomes

Briquettes are an efficient, clean burning, and smoke-free alternative to wood/coal/charcoal, for both households and industries. Until now, wood and charcoal are used by 95% of households for cooking. By displacing wood/charcoal in households, the project is tackling indoor air pollution which will help reduce child mortality and improve maternal health (SDG 3).



## Economic Empowerment of Women

Cooking fuel accounts for 50% of a household's daily income. Biochar is about 30% cheaper than fossil fuels, providing cost savings to the community. Moreover,

women and children typically walk 5-10km daily in search of wood, a safety and security risk. The project will contribute to gender equality (SDG 5) by reallocating the 36-hours per week women spend on gathering wood fuel towards income generation activities and/or education, activities that eradicate extreme poverty and hunger (SDGs 1 and 2).



### Prevent Further Deforestation

Increased use of briquettes means a reduction of the unsustainable extraction of wood, which has resulted in a 30% loss of forest cover in Uganda since 1990. Every kilogram of coal not consumed is equivalent to a reduction of 2.6 kg of CO<sub>2</sub> emitted.

## LESSONS LEARNED

**Work with project developer to set realistic expectations and goals.** Most project developers have limited experience and business capacity to move their project beyond proof of concept. While financial assistance is crucial in helping startups scale up their solution, it is equally important to pair that financing with technical assistance to ensure that the business model is viable, the ownership and organizational structures are fundamentally sound, and the roll-out of the expansion is reasonable and realistic. UNCDF's interventions successfully helped the project's owners to focus on one site instead of spreading their resources over multiple sites, thereby broadening the level of engagement within that community and deepening the overall impact of project activities. Moreover, financial institutions are not used to financing innovative start-ups and new business ventures such as REPARLE, so ensuring the successful roll-out of one site would facilitate the developer's future ability to obtain commercial financing.

**Investment facilitation entails continuous monitoring and persistence.** Each financing source has its own set of rules, conditions, and requirements which can be beyond a developer's capacity to manage. Consequently, UNCDF adopts the role of an intermediary to manage the relationship with various stakeholders more efficiently. This entailed consistent follow up on the loan application with the financier, including liaising with the financier's management team to expedite the approval processes. The UNCDF LFI Investment Officer also worked with the developer to address the financier's due diligence queries relating to the investment documents (i.e. project information memorandum, financial model and general inquiries) and questions regarding the business model. The developer's ability to respond to these investor questions effectively made a good impression and instilled more confidence on the part of the investor. Just as importantly, LFI facilitated the negotiation process with the financier on the proposed investment structure and handled requested adjustments to the structure in collaboration with the developer. This hands-on support enabled UNCDF to anticipate the type and level of UNCDF financing that is needed to mitigate the perceived risks of the project.



**Capacity building and technical support for project beneficiaries should not be overlooked.** For the project to roll out successfully, farmers need to be mobilized, trained, and supported. Under the project, farmers will receive direct capacity building and skills development from ACTED to improve and modernize agronomic practices, and training on good financial management and enterprise development. ACTED’s training curriculum is designed to support farmers to increase their production per acre, as well as their acreage under production (using improved techniques and supporting the use of technology to enhance agricultural outputs and productivity). By partnering with ACTED—an organization already operating bulking stations and providing capacity building for farmers in the region—the project can be assured of having a steady and reliable source for its raw materials, not to mention buyers of its processing and storage services, and consumers of its briquettes.

# UNCDF & SUSTAINABLE DEVELOPMENT GOALS

**1 NO POVERTY** 

**17 PARTNERSHIPS FOR THE GOALS** 

LFI with impact on



## ABOUT UNCDF

The UN Capital Development Fund makes public and private finance work for the poor in the world's 47 least developed countries (LDCs).

With its capital mandate and instruments, UNCDF offers “last mile” finance models that unlock public and private resources, especially at the domestic level, to reduce poverty and support local economic development.

UNCDF's financing models work through two channels: financial inclusion that expands the opportunities for individuals, households, and small businesses to participate in the local economy, providing them with the tools they need to climb out of poverty and manage their financial lives; and by showing how localized investments—through fiscal decentralization, innovative municipal finance, and structured project finance—can drive public and private funding that underpins local economic expansion and sustainable development.

By strengthening how finance works for poor people at the household, small enterprise, and local infrastructure levels, UNCDF contributes to SDG 1 on eradicating poverty and SDG 17 on the means of implementation. By identifying those market segments where innovative financing models can have transformational impact in helping to reach the last mile and address exclusion and inequalities of access, UNCDF contributes to a number of different SDGs.



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