



State Secretariat for Economic Affairs SECO

Swiss Agency for Development and Cooperation SDC

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Final Report:

East Africa Smallholder Productive Use Lending



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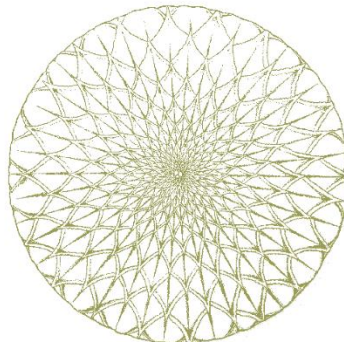
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Financing the Missing Middle

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Please note:

- Please include photos, easy to understand graphics, etc., with this report.
- The length of the main report (Chapters 1 to 7) should not exceed 12 - 15 pages max.
- Please attach additional interesting information about the project.
- The final report is published on the REPIC website and should not contain confidential information.
- Please send the completed final report directly to: info@repic.ch (REPIC Secretariat, c/o NET Nowak Energy & Technology Ltd., Waldweg 8, CH-1717 St. Ursen)

1. Summary

For many countries, increasing agricultural production is essential for achieving food security, resilience to climate change, generating jobs and income to reduce poverty. Access to capital in the form of capital goods (productive equipment), financing and skills is the key to increase agricultural output. Solar powered solutions exist for productive equipment in agriculture (water pumps, drying, milling, egg incubators, fishing lights etc). Solar equipment for small business also exist and can replace diesel generators and create jobs. This project targeted the financing of productive use and solar product distribution companies serving in East Africa to accelerate the adoption and scaling of renewable energy based, environmentally friendly, productive use equipment.

East African communities require financing to purchase reliable irrigation, appropriately designed agricultural machinery and small business equipment. Our project addressed various Sustainable Development Goals (SDGs) simultaneously: poverty reduction (SDG 1), zero hunger (SDG 2), access to affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), responsible production and consumption (SDG 12), climate action (SDG 13).

While the sale of solar lanterns and home systems with financing and PAYG capabilities have exploded in East Africa these past few years, very few companies were selling solar products for productive use in 2018 and even fewer were able to offer end-user financing. Lack of financing remains the biggest constraint to scaling sales and distribution. Venture South Kenya (VSK) finances solar companies in Kenya, Tanzania and Uganda so that farmers and small businesses can purchase Solar Water Pumps (SWPs) and other productive - use solar products.

The project consisted of developing funding relationships with solar partners and designing funding that meets the specific cashflow of their products. This implied due diligence on the solar companies and analysing repayment potential for dairy cooperatives and other end user clients. We have succeeded in developing a successful loan portfolio in East Africa in a new market niche which serves rural communities. We are proud of what we have achieved and seek to expand upon this and grow the loan portfolio. Our next actions are to continue growing the portfolio, raise additional capital and expand the number of solar partners we work with.

2. Optional: Abstract in local language

If relevant, an abstract in the language of the country where the project was implemented.

3. Starting Point

When the project began, we had a successful loan portfolio with solar home systems (SHS), but no productive use loan products. Productive use products are very different than SHS and require time to study each product and design repayment periods for each product. A cooler for a dairy cooperative is different than fishing lights is different than a solar unit which replaces a diesel generator for a restaurant. Many of these products were new and the viability of the products had to be proven. Solar companies were learning what the market was willing to purchase, what the price points were and over what period of time end users could repay. Demand was clear, but at what price and how to design loan repayments that meet client cashflows needed to be developed.

4. Objectives

The overall objectives of the project were to finance solar companies in Tanzania, Uganda and Kenya for the development of productive use products.

- Objective 1: Adapt our innovative asset – backed lending model to finance the acquisition of solar powered productive use equipment



- Objective 2: Expand our partnerships and lending to Tanzania and Uganda
- Objective 3: Create a sustainable investment product and platform to raise more capital from a variety of sources

The first object we were able to meet by adapting our asset back lending model to productive use equipment. The basic model of using the assets as a security for a loan was similar to the solar home system loans. However, each productive use product is different and generates revenue or does cost replacement differently. This required understanding each product in detail and adapting the loan repayment period accordingly. Barber kits and fishing lights repay rather quickly in contrast to school loans and solar water pumps. This required additional preparation and time on our side.

Objective two, expanding our partnerships in Tanzania and Uganda was possible because of the strong demand for the lending. In Uganda, we work through Venture South Uganda. Having a local entity and staff greatly facilitated lending in the local market. All matter of operational matters with the new partners from banking to loan contracts were easier in Uganda by having a legal entity there. We lend in Tanzania through Kenya and this complicated matters, mostly bank transfer delays. The problem with bank transfers was from the TZ central bank. Additional paperwork was required and in one instance it took six weeks to transfer funds. This was not the fault of our partner, but it did influence our decision to not expand additional partnerships in Tanzania. With strong demand in Uganda, we decided to focus new partnerships in that country.

Fund raising is a continuous process. The project gave us the necessary time to prepare viable loan products and build a track record to present to investors. We have successfully been able to prove our methodology and staying power and raise funds from several different investors. We have successfully met Objective three and work with several different investors.

5. Project Review

5.1 Project Implementation

How was the project carried out (approach, partner and project's main steps)?

The project relied on the existing operations of Biashara na Fedha in Kenya and Venture South Uganda in Uganda. This allowed us to make loans for operating lending companies and existing staffing. We relied on existing partnerships with solar companies, expanded upon those relationships and developed new partnerships. One solar company we were working with in Tanzania expanded to Uganda. We have subsequently begun to lend to them in Uganda. We have also developed new solar partners.

The operating relationship with each solar company varies with each company depending on their methodology and solar products. Consequently, we invest time at the beginning of the relationship with a solar company to get to know them and determine what would be the best way to lend to them. Working with solar companies allows us to complement our respective work. Solar companies have direct contact with end users and we work only with the solar companies so as to not disrupt their client relationship.

Did the project's main objectives have to be modified during the course of the project? Describe any of the modifications made.

The main objectives of productive use lending never had to be adapted. However, we certainly needed to adjust to Covid. Shipments of solar products were interrupted during Covid and consequently some solar companies were out of product for a period of time. Needless to say, this affected their sales and our ability to lend. Covid meant that we stopped lending for over one year. We had to still monitor the outstanding loans however and work closely with our partners when we began lending again.

5.2 Achievements of Objectives and Results

To what extent were the objectives achieved? Which results were achieved?

All of our objectives were achieved. We met our objectives in terms of number and value of loans made. 1,182 solar units were financed for a total value of CHF 403,441. This is over both the number and value of Milestones.

Perhaps more importantly, we have demonstrated that it is possible to successfully lend for productive use solar products. We have built a track record from which we are able to raise additional funds and expand our lending. It is always difficult to begin financing in a market where no track record exists and market viability needs to be proven. All our loans to solar partners were repaid or continue to repay.

5.3 Multiplication / Replication Preparation

What preparatory work was carried out for the multiplication and replication within the project's framework?

Multiplication and replication of the project's work exists in the framework of existing loan agreements with several loan partners and a track record we can show to investors. We have expanded to work with six different solar companies and are working with partners to prepare to finance large orders they have received. We are well positioned to increase our lending in Kenya and Uganda where we have lending companies which can build on our success to date. We have also begun funding conversations with potential creditors which is in a large part possible thanks to the support from Repic.

5.4 Impact / Sustainability

Which impacts were already noticeable up to the end of the project?

Each productive use product produced different results, depending on what type of product they were. However, stopping to use kerosene was a clear benefit for the health of fisher people using solar fishing



lights who used kerosene previously and were affected by the smoke. Solar fishing lights are also much more lucrative for fisher people because kerosene is expensive and the solar lights are much cheaper. An independent report done on a partner solar company states: "78% of fishing light customers and 94% of water pump customers reported they had experienced increased yields since purchasing their" product. The report goes on to state that for 86% of customers this purchase was the first done on credit. This shows that credit is opening opportunities of financial inclusion.

Another report states: "The results show that CO2eq emissions could be significantly lower if solar lanterns were used. During a lifetime of 30 years, a simple kerosene lamp emits a total of 15 500 kg CO2eq, a hurricane lantern 7 900 kg CO2eq, whereas a solar lantern emits 66.1 kg CO2eq."¹

Demand from clients clearly shows that the products are beneficial to end users and economically viable for them. Switching to solar and away from diesel and kerosene also protects end users from fuel price increases which have such a negative impact on end users. This is a particular problem during periods when currencies fall, as has been the case in Kenya recently.

Please provide qualitative text and quantitative information (in the table below) in the following three main categories, where applicable:

Ecological	Unit	At the REPIC Project's Completion
Installed renewable energy capacity	[kW]	126.44 kw
Renewable energy produced	[kWh]/year	184'602
Amount of fossil fuel energy saved	[kWh]/year	4'649'290
Greenhouse gas reduction	[t CO ₂ -eq]/year	1'503.7
Newly collected and separated waste	[t]	n/a
Newly recycled waste	[t]	n/a

¹ Environmental and health impacts when replacing kerosene lamps with solar lanterns: Emma Olsson & Erik Stenemo, Juni 2018

Economic		
Energy costs (LCOE)	[ct/kWh]	n.a.
Triggered third-party funding/investments	[CHF]	CHF 630,000
Local private income generated – Solar Water Pumps (Avg. Increased income per year)	[CHF]	CHF 420 per pump per year
Local private income generated – Solar Fishing Lights (Avg. Increased income per year)	[CHF]	CHF 362 per boat per year
Social		
Number of beneficiaries (direct/indirect)	[Number]	3'460 / 17'300
Number of new jobs	[Number]	160
Number of trained personnel	[Number]	n.a.

Other Indicators		
Solar Water Pumps		
Improved quality of life	% of surveyed	86%
Increase in farm production	% of surveyed	72%
Decrease in work burden (spouses) (mostly women's burden of manual watering)	% of surveyed	58%

Note: 60 Decibels Survey, Lean Data Analysis (Acumen)

6. Outlook / Further Actions

6.1 Multiplication / Replication

What are the next planned steps?

Our next steps are to raise additional capital and expand our lending portfolio with additional partners. We are replicating this work in Uganda and Kenya with new partners and an expanded loan portfolio. A partner of ours has received a large order for SWPs. This contract will require financing. This order brings both scale and visibility to expand our partnership further.

We also recently spoke about solar water pumps loans at the SAM conference in Kigali. This generated a good amount of interest from creditors and solar companies. Fund raising is a constant and we have several conversations ongoing right now.

What is being done to promote multiplication / replication?

We are continuing with our lending, expanding it and working with new partners. We have had inquiries about creating a lending entity in Tanzania to scale up the work there. We are talking with multiple creditors to expand our reach both within existing countries of operation and new countries. Our work in Uganda is already a replication. We are replicating and expanding on several levels.

Which hurdles need to be overcome in order to have successful multiplication / replication?

The greatest hurdle to have a successful replication is additional funding. Fund raising requires track record, trust and relationships. We have achieved all of these. We also have a Guarantee Agreement with Africa Guarantee Fund which will help us raise funds. The guarantee should help de risk investors as they consider a loan to us. Additional scale will give us additional visibility and credibility with creditors. We have spoken to a few creditors who are interested in talking with us once we have close on our next funding.

6.2 Impact / Sustainability

What are the sustainable effects (environmental, socio-economic aspects, CO₂ relevance, resource efficiency, etc.) expected during the multiplication phase, in the medium term?

The sustainability effect will depend upon the type of product sold. However, all productive uses products we work with have replaced either kerosene or diesel fuel products. Consequently, CO₂ is not burned and wont be burned going forward. The end users are saving money on fuel costs because the solar payments are lower than their kerosene or diesel costs. Once the loan is paid off, the end user then has free energy and an asset which can be borrowed against, should they wish. We have only worked with solar companies which use products which are reliable and have guarantees and after sales service. This ensures resource efficiency, client satisfaction and greater potential for replication.

	M1		M2		M3		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
Barber Kits - KE	25	6 353 CHF					25	6 353 CHF
Solar Water Pumps	36	35 460 CHF			153	119 737 CHF	189	155 196 CHF
Fishing Lights	99	24 133 CHF	211	25 103 CHF	58	7 326 CHF	368	56 562 CHF
Schools	310	34 988 CHF	274	53 960 CHF			584	88 949 CHF
HealthCare Facilities					8	48 684 CHF	8	48 684 CHF
Dairy Coop + Coolers					8	47 697 CHF	8	47 697 CHF
Total	470	100 934 CHF	485	79 063 CHF	227	223 445 CHF		
Cumulative numbers			955	179 997 CHF	1 182	403 441 CHF	1 182	403 441 CHF
Cumulative Target	150	93 000 CHF	600	195 000 CHF	950	360 000 CHF		
Above Target	320	7 934 CHF	355 -	15 003 CHF	232	43 441 CHF		

This table shows all the productive use loans made over the three countries. The introduction of new products like HealthCare Facilities and Coolers came with a new partner while no new loans of products can be for a variety of reasons. The barber kits were very popular and stock ran out. Covid interrupted supply chains and greatly affected supplies. Fishing lights were interrupted due to government restrictions in Tanzania for a period of time. This table only reflects the productive use loans made. At the same time we made loans for solar home systems and we kept supporting our partners for this.

Our own lending activities are also sustainable. As loans repay, we use the principal to make more loans and we use the interest to cover our costs and continue as an ongoing entity. Repic funding has helped us to develop these new loan products and raise new funds to increase our impact and sustainability.

7. Lessons Learned / Conclusions

We have proven that lending for productive use loans can be viable. However, productive use loans are not solar home systems and loans need to be adapted to conform to the productive use cashflow. If this is not done, clients will have difficulty to repay. It takes time to develop a loan product which conforms to the product. Some trial and error is inevitable. One should not give up too soon, sometimes it just requires an adjustment to the loan design to make it work for clients to pay on time. This requires one to listen to clients and adapt appropriately. Regardless of what one plans, adjustments will need to be made once operations begin. Also, financing is necessary to grow the market. Lack of financing was a serious barrier to the growth of most productive use products.

What are this project's main findings and conclusions?

We can safely say that productive use lending is viable and an important tool to expand the use of productive use products. Productive use products are however each different, the one from the other. The products have to be studied carefully and loan products need to be designed based on the cashflow of each product. An independent study has shown positive impact for the end users providing both increased yields (solar water pumps and fishing lights) and averting CO₂ and black carbon emissions.

Which recommendations can be made for similar projects, or within this context?

Time invested upfront studying how end users use the technology was important. It was important for us to start small and expand after making adjustments. Also, initial problems does not mean failure. Adjustments can be made which lead to successful lending.

Interesting observations within the project's context: Which of your personal impressions would you like to share?

Developing new products in a new industry is not for the faint hearted. However, it is necessary to grow the market and to make the changes we need in this world.

8. References

References list of publications, reports, etc.

9. Annex

When available: Reports, press articles, brochures, test results, etc.