

# PICO-SOLAR FOR ALL

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**Country: Tanzania**

**Sector: Renewable Energy**

## CHALLENGE

Access to clean and affordable energy for all is a major challenge in Tanzania. Only 15% of the population has access to the national grid<sup>1</sup>. In rural areas, where 68% of 51 million Tanzanians live<sup>2</sup>, this percentage is even lower. Even for those who are on-grid, the grid has been very erratic in recent years with regular power cuts.

Instead of the grid, most people in rural Tanzania have traditionally been relying on kerosene for lighting and on woodfuels for cooking. The use of these energy sources relies on inefficient technologies, like traditional stoves and kerosene lamps, which consume more than 33% of a typical household's monthly income<sup>3</sup>.

The use of kerosene lamps for lighting has several disadvantages. The investment in kerosene is significant, there is a risk of serious burns when the lamp falls over and inhaling smoke and soot that is produced by the lamp leads to life threatening respiratory illnesses.

The dissemination of affordable and safe off-grid solar lighting solutions would greatly benefit customers at the bottom of the pyramid. Yet, most attention and investment in energy in Tanzania continues to be directed to large scale on-grid power generation and the extension of the national grid. With a population that is spread out among the vast country, even in the most positive of scenarios the largest part of the rural population will not have access to the national grid in many years to come.

When the project started, only one firm offering quality Lighting Global approved solar products at scale was located in Mwanza. But no real last-mile distribution network existed. Other firms were based in Arusha and Dar es Salaam, but the high cost involved in setting up operations in the Lake Zone prevented them from coming.



**Figure 1: Two of the projects' most successful retailers. (Picture by: Russell Watkins/DFID)**

Some solar products could be obtained in rural markets. Yet none of these products were Lighting Global approved, the choice of products was very limited and no warranty or after-sales were offered. Furthermore, no last-mile distribution network existed and customers would have to find their way to markets in trading centres to find solar products.

1 World Bank 2016: <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>

2 CIA 2015: <https://www.cia.gov/library/publications/resources/the-world-factbook/geos/tz.html>

3 SNV 2012: Report of Renewable Energy Consumer, Enterprise and Enabling Environment Dynamics in Tanzania's Lake Zone

## CLIENTS

SNV's Results Based Finance (RBF) for Pico-Solar Project started in mid-2013. In late 2013, SNV sent out a call for expression of interest (EoI) for the role of financial institution (FI) in the project, through SNV's network in Tanzania and publically advertised in two national newspapers. Four applications were received and scored, and finally TIB Tanzania Development Bank was selected. From early 2013, TIB Tanzania Development Bank hosted the EUR 1 million RBF fund and played a role in due diligence of solar companies and verification of claims. Each of the steps have been guided by SNV advisors, working together intensively with TIB Tanzania Development Bank staff in Arusha, Dar es Salaam and Mwanza, building the capacity of the FI and making the FI more aware of the viability of the solar sector for loan provision.

Then in early 2014 and again in early 2015, SNV and TIB Tanzania Development Bank sent out a call for expression of interest to Tanzanian solar companies, for which a total of 19 solar firms applied, with 11 applications per round (3 companies not selected in the first round applied again in the second round). In each round, the best 5 companies were selected by SNV and TIB Tanzania Development Bank<sup>1</sup>, after thorough evaluation of written proposal and onsite due diligence of the companies, and after consultation with the RBF Advisory Group which –in addition to TIB and SNV- include the Tanzania Renewable Energy Association (TAREA)<sup>2</sup> and IFC Lighting Africa<sup>3</sup>.



**Figure 2: Rural SACCOS selling solar products in installments through the projects' support. (Picture by: Russell Watkins/DFID)**

The selected companies are supported by SNV, mostly by providing access to finance through the RBF fund. Yet many other capacity building activities were undertaken too. Market intelligence and knowledge on the solar sector was shared with the companies in individual meetings. Support in setting up their distribution channels and finding quality staff was offered. SNV also helped the companies to set up their M&E and record keeping and provided detailed GIS sales maps to help determine their sales strategy.

## METHOD/SNV INTERVENTION

Through the RBF project many off-grid households in rural areas of Tanzania's Lake Zone (like the one in the picture below), get the chance to benefit from clean, safe and affordable lighting and phone charging through linkages with suppliers and retailers of quality 'pico-solar' products. These pico-solar products range from solar lanterns, to powerful solar lights that can charge phones and radios to small solar home systems, with panels ranging from less than 1 to around 10 Watt peak.

This unique project, as financed through Energising Development (EnDev), which is managed by GiZ and funded by DFID, works by creating a temporary post-financing product within mainstream banking to players in the solar sector. The money available to import-suppliers come in the form a sales incentive that can only be claimed for payment after the sales of approved solar product are verified. The value of the sales incentive is determined by the energy service that the product provides (brightness and runtime). Half of the incentive value is awarded to the retailer in the form of a bonus product that will help grow their business, while the supplier earns the remaining value of the incentive as cash, which is intended to off-set part of the investments done by these companies to scale their

1 TIB Tanzania Development Bank: <http://www.tib.co.tz>

2 Tanzania Renewable Energy Association (TAREA): <http://tarea-tz.org/>

3 IFC Lighting Africa: <http://www.lightingafrica.org/>

operations to the Lake Zone and extend impact to this part of the country.

The total amount all of the incentives are managed as a competitive RBF Fund valued at EUR 1 Million. These funds are hosted by TIB Tanzania Development Bank through which the financial incentives are transacted. SNV's main role in this project is to broker relations among actors that ensure fair, transparent and verifiable financial transactions throughout management of the fund.

## OUTCOME

Although the RBF project has only been active for two years, significant progress has been made in bringing a unique financial product to market. It is now considered to be the first operational RBF Fund under the EnDev global programme in Africa.

Since the opening of the fund in May 2014 to qualified and claimable sales, 8 out of 10 suppliers as competitively selected to participate in the RBF have started operations in Tanzania's Lake Zone with serious investments. Each supplier has applied a unique distribution model and some used the opportunity of the RBF Fund to independently leverage for additional commercial pre-financing.



**Figure 3: Rural household using an RBF supported solar light for studying. (Picture by: Russell Watkins/DFID)**

At the close of 2015, 12,398 Lighting Global approved solar products have been sold under the RBF to rural Tanzanians, while results keep growing due to continued presence of the companies. A mix of 19 different solar products have been sold. As a result, more than EUR 300,000 have been verified as claimable for direct payment to the private sector. RBF is proving to be a powerful tool for supporting the private sector in increasing rural access to renewable energy technologies.

A key highlight has further been the ability of participating firms to leverage additional financing access by both exercising their access to the RBF as means for greater traditional pre-financing (loans-equity-grants) or using their new presence in the Lake Zone to capture unforeseen solar business operations (either domestic or institutional).

## IMPACT

At the close of 2015, 49,320 beneficiaries had clean, affordable and reliable pico-solar energy through the RBF project. This figure comes from EnDev's official beneficiary calculation, which assigns a specific number of beneficiaries to each specific product sold (e.g. a small desk light counts as 1 beneficiary while a solar home system counts as a full household or 6 beneficiaries).

This corresponds with an abatement of 11,690 tons of CO<sub>2</sub>, that would have been emitted in case non-renewable sources would have been used for providing this energy.

A key impact has also been the realization of employment based gains in the project that have far exceeded anticipated effects. Companies have trained and employed many people in newly created work opportunities. Before even reaching the mid-term of the programme, employment related results have been exceeded by roughly 500% (to date: 275 firm related salary employments [target ~20] + 449 sales agent -commission based employments [target ~100]).

## LESSONS LEARNED

The project has been universally recognized amongst the private sector and development partners alike as a global example for best practices in solar market development. It has provided as clear basis to inspire the Energy Africa Campaign of DfID and worked as a significant point of knowledge generation through (inter)national forums and publications.

Attention for the project has been universally positive, but was completely unanticipated to occur to the extent as realized. As such, aside from unanticipated investments in time, there have also been unintended consequences realised (increasing of competition for scaling resources, actual copy-pasting of the project documentation and tools by others and subsequent mis-application of the approach, etc.).

A key lesson learned has been that careful attention to communication planning is critical at the outset of the project so as to reduce any risks that may emerge, but most importantly to be able to efficiently maximize the opportunities success can bring.

## TESTIMONIALS

*'Previously, I would walk to a relative's house that is connected to the national grid, to charge my cell phone. Now that I have my own solar system, I charge my phone at home and no longer have to feel ashamed of being the head of an underdeveloped household', a farmer in Misungwi district of Tanzania.*

*'Hands-on RBF facilitation by SNV has really helped get this programme moving effectively, and has lowered the burden of participation facing private sector firms. My experience working on other programmes suggests that without strong facilitation / comms, actors can be very slow to respond to the incentive created, due to lack of or misunderstanding. SNV have avoided this through hands-on facilitation. And in doing so, SNV are generating a richer understanding of what is happening in the market.', Donald Menzies, Innovative Aid Instruments Adviser DFID*

*'The cross-comparative assessment of Implementation and Management Processes makes Tanzania stand out in terms of compatibility with the proposed approach to run the RBF Operations, and the underlying Verification Processes as well as Reporting Requirements.'* Evaluation of the Results-Based Financing for Low Carbon Energy Access Facility (RBFF) within Energising Development (EnDev)

*'This incentive is exactly the kind of support we need to rapidly expand energy access to the customers who need it most. We believe it is an ideal model because it accelerates the market without distorting it.'* Xavier Helgesen, CEO of Off Grid Electric.

## STANDARD DATA

- Start and end date of contract: From August 1st 2013 until July 31st 2017.
- Consistence of team: Number of SNV-staff: 3 advisors, LCBs: 2 and external consultants: 1
- Relevant partnerships: EnDev, GIZ, Lighting Global, TAREA
- Financial resources invested: EUR 1,401,535 over a period of 4 years.