



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



**TSE4ALLM**  
TOWARDS SUSTAINABLE ENERGY FOR ALL  
M O Z A M B I Q U E

## PROJECT OVERVIEW, RESULTS AND LESSONS LEARNED

## **GEF-6 Mozambique: Towards Sustainable Energy for All - *promoting market-based dissemination of integrated renewable energy systems for productive activities in rural areas through the following components***

### **Off-grid energy sector context:**

- Electrification only 28% (2018); network extension is technically difficult, costly and inefficient due to the dispersion and distancing of populations
  - Small farms and agro-processing industries without electricity and dependent on diesel generators; environmental problems caused by emissions and waste.
  - Vast potential for renewable energies such as solar, mini-hydro, wind and biomass
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## Project objective:

- To support the adoption of integrated renewable energy (ER) systems (solar energy and waste-to-energy) in small and medium-sized enterprises (SMEs) as well as in rural food processing industries in Mozambique

## Project information:

- **Project approval date:** 31.07.2017
- **GEF Project ID:** 9225
- **GEF cycle:** GEF-6
- **Project duration:** 72 months (after the approval of a 12-month extension in June 2022)
- **Total project cost:** USD 2,854,384 (As of today, the implementation expenditure is 86%)

**Target Industries:** Small to medium size **agriculture** and **food processing industries**

**Technologies:** Solar Photovoltaic **Solar Photovoltaic** and **Waste to Energy**

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## Project components (Intervention areas):

<b>Component 1</b>	Establish policy and regulatory environment to promote integrated renewable energy systems in rural areas
<b>Component 2</b>	Strengthen the capacity of key players and information available for market enablers and players
<b>Component 3</b>	Demonstrate integrated RE systems
	Scale up investment in integrated RE Systems through the development of an attractive financial mechanism
<b>Component 4</b>	Monitored and evaluate the project's progress toward objectives continuously

## Key Implementation Challenges:

- Weaknesses to prepare demonstration projects in accordance with GEF/UNIDO requirements.
- Weak financial capacity of private sector entities to co-invest.
- Low supply (from Financial Service Providers) of financial mechanisms adjusted to market needs
- RE systems and their productive uses still considered 'high risk' by FSPs;
- Weak local capacity to supply ER systems
- Weak competitiveness of local providers
- Need to localize technologies and solutions
- Many MSMEs unwilling to become formal businesses
- SMEs prefer to avoid formal engagements with FSPs
- COVID-19 + Natural Disasters (IDAI, Kenneth, Guambe,....)

## Key Implementation Results

### Component 1: Establish policy and regulatory environment to promote integrated renewable energy systems in rural areas

#### **Private sector participation in renewable energy businesses**

In 2021, a consultation campaign was carried out by a local expert to develop guidelines for the private sector participation in renewable energy project's development and implementation in rural areas of Mozambique.

### Component 2: Strengthen the capacity of key players and information available for market enablers and players

#### **Software for Project Appraisal and Analysis (COMFAR)**

In 2022 a training on Project preparation and appraisal was delivered for at least 20 individuals from government institutions, academia and a selected FSP in three different levels of COMFAR (Computerized Model for Project Feasibility Analysis and Reporting)

## Key Implementation Results

### Component 3: Demonstrate integrated RE systems – CONCLUDED

Implementation Partner	Tecnologies	Total Installed Capacity	Beneficiaries
ADPP - Proyecto de Clube de Agricultores	Solar PV	28 kW	Local farmers and communities from Sofala, Tete e Zambézia provinces
KAMALEON Eventos Tecnológicos	Solar PV	12.5 kW	Several Rural Communities at a country level

## Key Implementation Results

### Component 3: Demonstrate integrated RE systems – ONGOING

Implementation Partner	Technologies	Proposed Installed Capacity	Beneficiaries
MADER/Quinta IRINI	Solar PV Waste-to-Energy	21kW	Local farmers and communities from Mafuiane, Namaacha district, Maputo province
AFORAMO	Solar PV	63 kW	Local water service providers in Maputo, Matola, Inhambane, and Manica provinces
MAKOMANE-ADM	Solar PV Waste-to-Energy	15.5 kW Solar PV / 8.4 kW biogas system	local community and fisheries in Zavala District (Quissico)
CHARIS-Associação de Solidariedade Social	Waste-to-Energy	96 m3/day of biogas production	Local farmers and families' business owners in Inhambane province



## Key Implementation Results

### Component 3: Development of Attractive Financial Mechanism and Project Scale Up

#### Tripartite Agreement signed in March 2020, BCI-SUPER Credil Line Launched in April 2021



UNIDO made available a Guarantee Fund of one million dollars (1,000,000.00USD) to facilitate access to capital (loans) for investments in renewable energy systems for productive uses in Mozambique.



FUNAE responsible for the strategic management of the guarantee fund and for the technical assistance necessary for the design, implementation and monitoring of projects.



BCI, responsible for the financial management of the guarantee fund, making attractive loans available to potential beneficiaries through its extensive branch network.

## Key Implementation Results

### Component 3: Development of Attractive Financial Mechanism and Project Scale Up

#	Characteristic	Explanation
1	Geographic coverage	National
2	Maximum amount per loan	Up to 3.500.000,00 Meticaís
3	Objectivo	Investments in renewable energy systems for productive uses
4	Beneficiaries	Companies (public, private), NGOs, cooperatives, associations
5	co-financing	Beneficiaries must co-finance with 25% of the intended loan. In kind or in cash.
6	Collateral	Equipment acquired through the loan will be automatically pledged until the full settlement of the loan;
7	Loan maturity	According to the business plan and up to 36 months
8	Interest rate	7.5% p.a fixed
9	Capital grace period	12 months

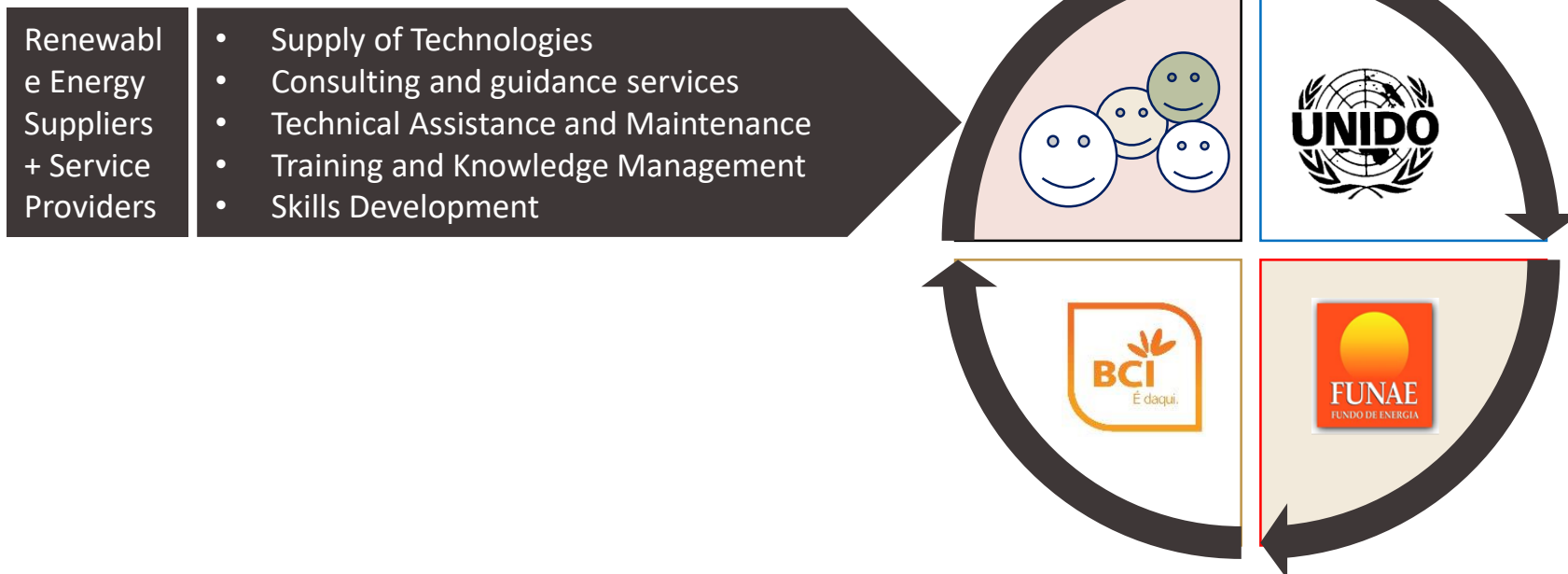
## Key Implementation Results

### Component 3: Development of Attractive Financial Mechanism and Project Scale Up

Wave #	# of proposals technically approved	Financing request	Total proposed installation capacity
Wave 1 June 2021	9	MZN 23,751,682.20	68.4 kW
Wave 2 July 2021	4	MZN 9,038,259.25	20 kW
Wave 3 October 2021	3	MZN 7,391,482.00	28.5 kW
Wave 4 June 2022	9	MZN 24,805,750.00	117.8 kW
<b>TOTAL</b>	<b>25*</b>	<b>MZN 64,987,205.00</b>	<b>235kW</b>

## Project Implementation Structure

### Component 3: Development of Attractive Financial Mechanism and Project Scale Up



## Key Implementation Results

TSE4ALLM is a GEF-funded climate change intervention that seeks to accelerate the adoption of innovative technologies and management practices to reduce GHG emissions and carbon sequestration.

The project uses a market approach to involve low-income farmers and MSMEs promoting the scale up of Renewable Energy systems and services using an attractive financial instrument developed in partnership with BCI and FUNAE.

One year after the launch of the financial instrument, the project fully committed the resources available under the guarantee fund due to the introduction of technical assistance services, strong dissemination and awareness-raising activities and close interaction with potential beneficiaries.

The established \$1,000,000 revolving fund will leverage around \$250,000 of private investment every 3 years, creating a major impact on the energy transition and increasing efficiency and income generating capacity for small and medium-sized agribusinesses in rural areas of Mozambique. It's a good example of blended finance where development finance is capable of mobilizing private capital flows.

## Key Lessons and Considerations

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### Policy and Regulations

- Project developers need installation guidelines, quality standards for RE systems covered by the project according to typical project size and technology employed;
- Specific fiscal incentives need to be in place to foster international partnerships and incentivize imports of RE equipment from global manufacturers;

### Capacity Building

- Targeted interventions to build capacity and raise awareness about the relevance and usefulness of RE technologies still very necessary;
- SMEs need tailored financial literacy to better understand the benefits of the formal sector, particularly removing misconceptions about **fiscal compliance** and **banking**;
- All stakeholders, along the lifecycle of the financial instrument need to be at the same level of understanding and capable of using the same approach during project preparation, assessment and reporting;
- Strengthen the technical capacity of RE Technology vendors and service providers to deliver RE systems covered by the project;

## Key Lessons and Considerations

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### RE Systems Scale UP

- The upfront investment cost for RE systems is relatively high, which makes access to finance one of the biggest constraints for a massive adoption;
  - Strengthen the team responsible for project preparation and M&E to be able to provide valuable hands-on technical assistance for the preparation of bankable proposals.
  - The governance structure of the TEC should be strengthened to allow for a timely and comprehensive proposal review and evaluation;
  - Develop and implement a comprehensive accreditation system targeting RE technology vendors; consider direct disbursements from the FSP to accredited vendors, particularly for investments in equipment and supplies.
  - The role of RE technology providers and service providers need to be strengthened allowing them design ambitious, innovative and impactful interventions. De-risking mechanisms for this particular group should be made available to facilitate access to finance, technologies and know-how;
  - Segment the target market according to project/system size and allow for beneficiary “graduation” to larger projects upon successful implementation and full repayments of smaller/entry level loans;
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## Key Lessons and Considerations

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### RE Systems Scale UP

- The market needs additional innovative financial mechanisms, blending different types of funds and different competencies to deliver affordable and attractive products to the marketplace;
  - The majority of projects are using solar PV technology. Even though this is positive and relevant, there is comparatively less involvement of SMEs in waste-to-energy systems (demand and supply).
  - The local development of relevant solutions (particularly W2E-Biogas systems) should be made a priority to bring down costs and increase market confidence over RE systems which will then be supplied and maintained locally.
  - More social enterprises are needed to act as honest brokers between communities and technology providers, cultivate new social relationships, and encourage communities to adopt and use cleaner energy systems. Combining social enterprises with PURE can catalyze change and promote sustainable economic and social development.
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## Key Lessons and Considerations

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### Complementary Financing Mechanisms

- **Index Insurance**

Index insurance uses an index, such as rainfall, that is highly correlated to local crop or livestock yields. If the index is triggered all insured farmers in the affected region receive an insurance pay-out with no need to physically assess the damage before making a pay-out. Index insured farmers can increase confidence of FSPs and reduce the traditional risk profile of farmers, provided that the insurance is granted at a competitive and affordable price to the farmer.

- **Carbon Credits**

Carbon credits are created from activities that avoid, reduce, or remove emissions. The demand for carbon credits is expected to grow considerably over the short term future driven by the increase demand from large global corporations that have set net-zero targets that will need to purchase carbon credits to offset emissions that are hard to completely avoid through voluntary markets. Therefore projects that are implemented in developing countries can potentially be funded by these large corporations provided that all the necessary operational and legal framework is in place.

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## Key Lessons and Considerations

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### Complementary Financing Mechanisms

- **Green Bonds**

Local commercial banks are well positioned and well-structured to add green bonds as an additional source of finance from investors and to re-finance borrowers implementing environmentally sustainable activities. We should be inspired by the recent undertaking made by Standard Bank of South Africa in 2020, on the issuance of its first green bond of US\$200 million, to finance projects in renewable energy, energy efficiency and other sustainable activities. In 2021 NedBank did the same to fund green residential developments in South Africa.

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**THANK YOU!**

Vicente Matsinhe – National Project Coordinator (Mozambique) – [v.matsinhe@unido.org](mailto:v.matsinhe@unido.org)

Jossy Thomas – Project Manager (Vienna) – [j.thomas@unido.org](mailto:j.thomas@unido.org)