



September 2023

# About ERC

The Energy Resource Centre (ERC) is one of the components designed to implement the Energy Preparation Facility.

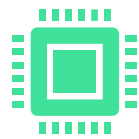
ERC is a 5 years Technical Assistance project financed by the European Union and embedded within the National Directorate for Energy at the Ministry of Mineral Resources



**Overall objectives:** increasing gender equitable access to sustainable and affordable renewable energy in rural areas.



**How:** Provision of technical assistance for the preparation and facilitation of investment projects in renewable energy and energy efficiency.



**Demand-driven facility :** upon request from the beneficiaries MIREME-DNE, ARENE, EDM and FUNAE – ERC can also suggest actions



**Activities:** provision of short terms expertise for various needs as training, policy and strategies formulation, feasibility studies, conception of tools and instruments for an improved enabling environment for investment in RE

# Achievements

During his 4 years of implementations, the Energy Resource Centre has been managing a portfolio of 14 projects of which 9 are completed and 5 are ongoing.

## MIREME-DNE

### Finalized Projects

- AF#8: CAPACITY BUILDING ON RE FS AND PROPOSAL EVALUATION PROGRAMME DEVELOPMENT
- AF#11: ENERGY INFORMATION SYSTEM FOR MOZAMBIQUE PHASE 1
- AF#16: MARKET SURVEY TO ESTABLISH THE IMPACT OF ENERGY EFFICIENT LIGHTING IN MOZAMBIQUE

### On-going Projects

- AF#9: ENERGY EFFICIENCY STRATEGY AND ACTION PLAN
- AF#15: NATIONAL BIOGAS PROGRAMME FOR COOKING , LIGHTING AND BIO FERTILIZERS
- AF#23: ENERGY INFORMATION SYSTEM FOR MOZAMBIQUE – PHASE II

### Planned Projects

- Implementation of the Energy Efficiency Strategy – Phase II

## ARENE

### Finalized Projects

- AF#2 : KEY PERFORMANCE INDICATORS (KPI)
- AF#31: ARENE STUDY TOUR TO UGANDA AND PORTUGAL FOR KPI BENCHMARKING
- AF#12: DEVELOPMENT OF A UNIFORM TOOL FOR FINANCIAL-ECONOMIC EVALUATION OF RENEWABLE ENERGY PROPOSITIONS INCLUDING TRAINING IN THE USE OF THE TOOL

### Planned Projects

- KEY PERFORMANCE INDICATORS PHASE II

# Achievements

During his 4 years of implementations, the Energy Resource Centre has been managing a portfolio of 14 projects of which 9 are completed and 5 are ongoing.

## EDM

### Finalized Projects

- AF#10: ECONOMIC DISPATCH FOR REVENUE PROTECTION
- AF#14: TIME OF USE TARIFFS

### On-going Projects

- AF#18: TIME OF USE TARIFFS PHASE II

### Planned Projects

- AF#25: EDM RENEWABLE ENERGY 2023-2033

## FUNAE

### Finalized Projects

- AF#13: STANDARDIZATION OF EXECUTIVE PROJECTS FOR PV MINI-GRIDS









### On-going Projects

- AF#5: FEASIBILITY STUDY FOR MAJAU HPP AND MINI-GRID AND DRAFTING OF THE BIDDING DOCUMENTS FOR PRIVATE MANAGEMENT

### Planned Projects

- AF#28: MINI AND MICRO HYDRO TECHNICAL ASSISTANCE – STANDARDIZATION OF O&M
- Assistance for continuation of Majaua

# Impacts on Building Capacity

-  50 specialists from MIREME, FUNAE, EDM, ARENE and CTA are trained in various RE technologies and business models.
-  Training 10 specialists from ARENE and EDM in the use of the economic and financial model tool.
-  Uganda and Portugal Visit tour for 7 ARENE staffs to learn about the ERA success in implementing KPIs.
-  Training 20 specialists from FUNAE on solar mini-grid projects modelling and also using Homer software
-  About 37 training modules on various RE business model and technologies with supported materials and documentation have been developed and made available for permanent use by all Mozambican institutions and experts
-  Definition of Key Performance Indicators to ARENE to enable a proper monitoring of the performance of the utility (EDM)
-  About 10 specialists from MIREME are trained in the use of E-Sankey diagram, which enables MIREME to represent and design the whole energy information system and present annual energy balance
-  The positioning within ARENE of an experienced Energy Market Regulator (KE2), with contributions in tariff regulation, KPI implementation, quality of service regulation, plus other requests by ARENE. Day to day coaching.

# Impacts on Enabling Environment

Elaboration of Energy Efficiency Strategy and Action Plan (EESAP) with a comprehensive set of EE policies and tools to the government and private sector.

Elaboration of the Energy Information Systems, a comprehensive tool to capture all key indicators, flows and energy balances according to international norms. EIS is an important tool for policy makers and investors.

Economic Dispatch and Revenues protection tool for EDM to select the most suitable production possibility at any time of the day to meet the various demands and save considerable amount of money.

Elaboration of a uniform financial model for the renewable energy sector to ease and standardise the formulation, evaluation, and selection of RE projects.

Implementation of the Time Of Use Tariff for EDM to optimally shift demand to greater availability of power.

Efficient Lighting strategy for Mozambique that provide an overview of the lighting market and a guideline for efficient lighting.

Elaboration of Solar/mini grid Toolbox for FUNAE to enable prefeasibility studies of sites and modelling the country potential .

Feasibility study for the establishment of market oriented national biogas program for cooking and lighting.

Design a of blue print for transferring mini grid O&M to private operators on the basis of the Majaua FS .





# Impacts on Project Pipeline Development and Investment

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Energy Efficiency Strategy yielded a pipeline of 15 priority projects with interest from Germany, Swedish and Norwegian cooperation.

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Energy efficient policy document proposed by MIREME to the Minister Council to be officially adopted by the Government

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Energy Information Systems leveraged extra finance from the Africa Union and IRENA to undertake a survey on biomass use.

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Elaboration of annual energy balance 2019.

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The biogas program : interest for Brilho and UNIDO for funding its implementation phase.

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The solar mini box tool enabled FUNAE a attract funding from AFD/EU for a large-scale standardisation program.



# Budget: Working days of NKE Expert



The ERC has two main Key experts which are the Team Leader embedded within the MIREME-DNE and the Senior Advisor Energy Market Regulation (Key expert II) embedded in ARENE.



Since the beginning of the project over 27 experts (international and National) were mobilised for the various activities of ERC.

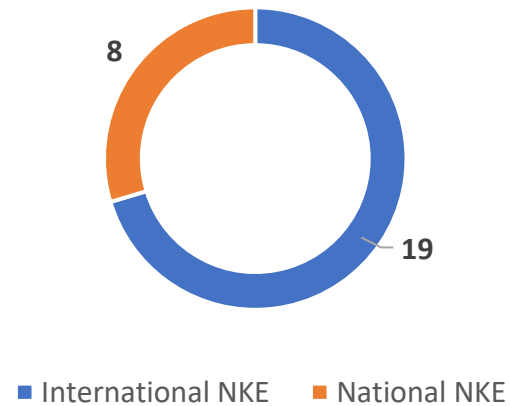
## Total working days for Non key experts

|                          | NKE CAT I | NKE CAT II | NKE CAT III |
|--------------------------|-----------|------------|-------------|
| Total Budgeted           | 1218      | 1304       | 282         |
| Total consumed           | 677       | 765        | 132         |
| Available to be consumed | 541       | 539        | 150         |

## Total Budget for NKE in Euros

|                          | NKE CAT I | NKE CAT II | NKE CAT III |
|--------------------------|-----------|------------|-------------|
| Total Budgeted           | 974 400   | 912 800    | 84 600      |
| Total consumed           | 541 600   | 535 500    | 39 600      |
| Available to be consumed | 432 800   | 377 300    | 45 000      |

## Non Key Experts Mobilised



## Provisional for Incidental Expenditures in Euros

| Provisional Incidental expenditures | Budgeted | Available to be consumed |
|-------------------------------------|----------|--------------------------|
| Travels                             | 100 000  | 58 609,58                |
| Key experts per-diems               | 20 000   | 17 966                   |
| Office Ancillary                    | 10 000   | 7 714,17                 |
| Office rent                         | 50 000   | 30 642,50                |
| Workshops-seminars-external courses | 165 000  | 127 892,81               |
| Studies                             | 20 000   | 13 226,27                |
| Communication and visibility        | 50 000   | 42 957,81                |





# WAY FORWARD: Additional Support to improve the capacities of the main Institutions

## MIREME

- Implement the 15 priority actions planned in the Energy Efficiency strategy
- Undertake the feasibility study for an Energy Efficiency Agency
- Implement the outcomes of the national Biogas programme.
- Continuous training and development programs for the existing staffs including the hiring of legal expert specialised on energy

## ARENE

- Implementation of the KPIs as an incentive-based regulation, as opposed to cost-based concepts
- Use of the Financial model.
- human resource capacitation, in topics of regulation and KPIs.

# WAY FORWARD: Additional Support to improve the capacities of the main Institution

## EDM

- Elaboration of an RE strategy to pave the way for a greener, cleaner, and more resilient energy sector.
- Feasibility Studies of VRE integration and battery storage to enhance the grid capacity

## FUNAE

- Continuous training and human resource capacitation, in topics of development projects, maintenance, carbon finance and best practices in renewable energy.
- Defining a model of O&M for small hydro plants.

THANK YOU!  
OBRIGADO!