Enabel

RESULTS REPORT

2021

RENEWABLE ENERGY FOR RURAL DEVELOPMENT PHASE 2 (RERD2) MOZAMBIQUE

Belgian development agency

enabel.be

Table of contents

Acronyms

ARENE	*Autoridade Reguladora Nacional da Energia* (National Energy Regulatory Authority)
BRILHO	Bringing Energy to Off-Grid Households and Businesses in Mozambique (FCDO funded project implemented by SNV)
CB	Capacity Building
CBMIREME	Capacity Building Ministry of Mineral Resources and Energy
CEO	Chief Executive Officer
CNELEC	*Conselho Nacional de Electricidade* (National Electricity Council)
DEP	*Divisão de Estudos e Planificação* (Research and Planning Division)
DMH	*Divisão de Mini-Hidricas* (Mini-Hydro Division)
DPCA	*Direcçao Provincial para a Coordenaçao da Acçao Ambiental* (Provincial Directorate for the Coordination of Environmental Action)
DPREME	Provincial Directorate of the Ministry of Mineral Resources and Energy
DSO	Dhistribution System Operator
DSSE	*Divisão de Sistemas Solares e Eolicos* (Solar and Wind Systems Division)
EDM	*Electricidade de Moçambique* (Mozambican Power Company)
Enabel	The Belgian development agency
ENE	The National Electrification Strategy
EPC	Engineering, Procurement and Construction
ESWG	Energy Sector Working Group
EUR	Euro
FCDO	Foreign, Common Wealth and Development Office of the United Kingdom (ex-DFID)
FNDS	*Fundo Nacional de Desenvolvimento Sustentavel* (National Fund for Sustainable Development)
FUNAE	*Fundo de Energia* (National Energy Fund)
GIS	Geographical Information System
HCB	*Hidroeléctrica de Cahora Bassa*
HQ	Headquarters

HR	Human Resources
IM	Intervention Manager
IMU	Intervention Management Unit
INIR	National Institute of Irrigation (*Instituto National de Irrigação*)
IPP	Independent Power Producer
IT	Information Technology
ITA	International Technical Assistant
JE	Junior Expert
MADER	*Ministerio de Agricultura e Desenvolvimento Rural* (Ministry of Agriculture and Rural Development)
MDG	Millennium Development Goals
MEF	*Ministerio de Economia e Finanças* (Ministry of Economy and Finance)
MIC	*Ministerio de Inductria e Comercio* (Ministry of Industry and Commerce)
MITADER	*Ministério da Terra , Ambiente E Desenvolvimento Rural* (Ministry of Land , Environment and Rural Development
MIREME	*Ministério dos Recursos Minerais e Energia* (Ministry of Mineral Resources and Energy)
MO	Market Operator
MONOP	Operational Monitoring report of the Country
MOPRH	*Ministério das Obras Públicas, Habitação e Recursos Hídricos* (Ministry of Public Works, Housing and Water Resources)
MTR	Midterm Review
MW	Megawatt
M&E	Monitoring and Evaluation
n/a	not available
NGO	Non-governmental organization
PAYG	Pay-As-You-Go systems
PPP	Public Private Partnership
PSI	Provincial Services of Infrastructure (previously DPREME)
PV	(Solar) Photovoltaic

RE	Renewable Energy
RES	Renewable Energy Sources
RERD1	Renewable Energy for Rural Development Phase 1
RERD2	Renewable Energy for Rural Development Phase 2
SA	Specific Agreement
SC	Steering Committee
SE4All	Sustainable Energy for All
SNV	Netherlands Development Organisation
RR	Resident Representative
TA	Technical Assistant
TFF	Technical and Financial File (=Project Document)
ToR	Terms of reference
TSO	Transmission System Operator
UGEA	Unidade Gestora Executora De Aquisições (*Procurement Executing Unit*)
UM (O&M)	*Unidade de Manutenção* (Operations and Maintenance Unit)
VAT	Value Added Tax

1 Intervention at a glance (max. 2 pages)

1.1 Intervention form

Intervention title	Renewable Energy for Rural Development Phase 2 (RERD2)
Intervention code	MOZ 15 034 11 / DGD Code 3016524
Location	Mozambique
Total budget	22.000.000 EUR (12.000.000 EUR for RERD2 plus 10.000.000 additional EUR for RERD2+)
Partner Institution	Fundo de Energia (FUNAE)
Start date Specific Agreement	16 March 2018 (7 years)
Date intervention start / Opening steering committee	1 July 2018
Planned end date of execution period	31 December 2024 (78 months)
End date Specific Agreement	- Initial end date of the RERD 2 Specific Agreement: 15th of March 2024 = 6 years (72 months) - New end date of the RERD 2 Specific Agreement covering the additional component: 15th of March 2025 = 7 years (84 months)
Target groups	FUNAE, rural population in intervention provinces who do not have access to reliable and adequate energy services (households, institutions and small businesses)
Impact[1]	Contribute to rural economic and social development by increased sustainable access to energy
Outcome	Increase access to energy in rural areas by investments in renewable energy systems and support mechanisms ensuring sustainability[2]
Outputs	1. Mini-grids provide reliable and adequate energy services
	2. Technical and financial sustainability of existing systems is improved
	3. The capacity of FUNAE in planning and project management is improved
	4. Pro memoria, technical budget line for VAT
	5. The new legal framework is influenced by FUNAE
	Added outputs RERD2+ (addendum to the TFF formulated in Q3-Q4 2020)
	6. Sustainable solar powered irrigation systems are taken up by selected farmers in 2 provinces
	7. The technical and financial capacities of farmers, institutional partners and market actors for a sustainable use of solar powered irrigation systems are enhanced
	8. Initiatives to foster an enabling environment for private and public investments in the irrigation sector are supported
Year covered by the report	2021

[1] Impact refers to global objective, Outcome refers to specific objective, output refers to expected result

[2] With the extra RERD2+ component on Solar Powered Irrigation Systems (SPIS, see further below) the addition to the specific objective is in italics in the following specific objective statement "Increase access to energy - *for irrigation purposes (or productive water)* - in rural areas by investments in renewable energy systems and support mechanisms ensuring sustainability

1.2 Self-assessment performance

1.2.1 Relevance

	Performance
Relevance	**A**

The Mozambican government's 2020-2024 five-year plan prioritizes the development of economic and social infrastructure as a strategy to stimulate national productive activity and economic growth. Energy plays a key role in the development of productive and income-generating activities and as such the Mozambican government launched an ambitious plan for 'Energy for All' in 2030, in which renewable energy will play an important role.

With its objective of increasing access to energy in rural areas through public and private investments in renewable energy and support for mechanisms to ensure sustainability, the RERD2 /RERD2+ project is well aligned with public policies and responds to the needs of beneficiaries.

The RERD2 partner institution, FUNAE, is engaging in a new strategy (2020-2030). In November 2020 its new organic structure was gazetted. The project is firmly anchored in FUNAE and continues to support the organization in accomplishing its - partly new - mission. The project intervention logic is still appropriate. It is geared at (a) the development of mini-grids, b) improving technical and financial sustainability of systems and c) improving planning and management capacity. The context changed somewhat as regards the relevance of 'follow up' on first phase (RERD1) investments. FUNAE transferred many of its small solar systems to sectoral ministries. This changed the orientation of several RERD2 actions, as compared to the RERD2-TFF. The project remains highly relevant however.

This is also true for a new project component RERD2+ of 10M€, approved by the Belgian Minister of Development Cooperation in December 2020. The extra component of introduction of solar powered irrigation systems (SPIS) is an excellent example of productive use of renewable energy (and water) and in line with the national irrigation strategy defined in 2012 that plans to double the amount of land under irrigation (with particular focus on Zambezia and Manica provinces, both considered to be high agricultural productive zones of the country). The RERD2+ component is also well integrated to the government policy priorities defined under the national irrigation plan approved in 2015 which underlines the need to strengthen community resilience to climate change through innovative irrigation solutions. The RERD2+ component is implemented in partnership with a new national partner, the Mozambican Irrigation Institute (INIR).

The legal context of the renewable energy domain continues to require attention from the government and FUNAE. This is further detailed in the section on sustainability. The project remains highly relevant.

1.2.2 Effectiveness

	Performance
Effectiveness	**B**

The institutional anchoring of RERD2 staff in FUNAE HQ facilitates collaboration with

the counterpart. Participation of counterpart staff is assured in all field missions. The international rural development expert leading RERD2+ working closely with the province based national irrigation and agronomy experts are all firmly integrated within INIR. The embedding of the implementation team in national partner organisations has increased effectiveness in terms of coordination and potential to provide prompt backstopping support for partner institutional capacity strengthening and market positioning.

Until March 2020 the RERD2 team worked in FUNAE while the Admi-Fin support was, and still is, based in the Enabel representation. FUNAE offices have poorly ventilated small spaces. This presented, and still presents, COVID health challenges for FUNAE employees as well the embedded technical assistance. As such the pandemic obliged the project early 2021 to rent extra office space outside FUNAE, and outside the representation that also lacked space. Where face-to-face meetings are required, staff now moves between three offices. These three offices however are all relatively close to the centre of Maputo, keeping the situation manageable. Less face-to-face meetings has given a real boost to the use of MS Teams for meetings and this has proved to be very effective. FUNAE remains a compartmentalized and centrally run organization with a lot of bureaucracy. Lines of communication remain long and less important decisions are easily passed on to the CEO. As such decisions tend to take a lot of time. Moreover, RERD2 is only one out of many externally funded renewable energy projects and has, at times, to 'compete' for the attention of FUNAE's leadership. As regards investments in infrastructure, a change in FUNAE's strategy means that the project is now fully focusing on solar mini-grids while it also concentrates its sustainability-oriented actions on those systems. FUNAE indeed requested the project to shift its attention which it was still giving to isolated solar power systems to existing and newly to be developed micro- and mini-grids. This is because most small solar power systems were recently transferred to sector ministries. The results obtained in 2021 indicate progression to the achievement of the project outputs and outcomes. The chances of achieving the specific objective remain real and significant.

1.2.3 Efficiency

	Performance
Efficiency	**B**

The management of the project's resources is generally satisfactory but financial execution remained low. This low rate of financial execution is mainly linked to an almost doubling of the budget in 2021 with an extra component, the RERD2 project logic that requires intensive study phases prior to investment decisions and the deferral of certain initiatives at the request of the counterpart (FUNAE) pending feasibility study results and completion of a new corporate strategy. Added to these were, in 2020, the handicaps associated with the co-management modality. Difficulties encountered by all (9) companies in preparing the administrative documents for an EPC tender, which the project had launched in co-management (Mozambican law) in 2020, and the subsequent need to cancel the tender, prompted the project to propose to the Steering Committee a €6.86 million transfer from co-management to regie. The December 7, 2020 Steering Committee approved this budget revision. In 2021 the commitment of FUNAE and the Ministry of Economy and Finance to pay directly for VAT and duties (approx. 1.5 Mio Euro) allowed the project to foresee the building of five instead of four mini-grids. In order

to fully fund the 5th mini-grid a budget modification was still needed and proposed to the steering committee and swiftly approved on 15 November 2021.

The newly recruited ITA, who joined the project on the 1st of May to lead the new project component on irrigation resigned and left on 30 September. His replacement was contracted on the 15th of October but suffered delays in the granting of his entry visa to Mozambique. As such precious implementation time in the RERD2+ component was lost in 2021.

Despite these setbacks, there are no signs that the outputs will not be reached in the electrification (RERD2) component of the project. The approval of the aforementioned additional irrigation component actually also added some budget for mini-grids and importantly also extended project duration. On the under hand the RERD2+ component needs to accelerate to catch up on lost time as several inception and project take-off activities that were supposed to have been concluded in 2021 have been extended for completion in 2022.

1.2.4 Potential sustainability

	Performance
Potential sustainability	**B**

Regarding sustainability of off-grid energy projects, like RERD2, the Government of Mozambique made an important step by approving, in the Council of Ministers, by Decree, the new Regulation for Off-Grid Energy Access. This regulation is the result of the Government's efforts to recognise the importance of the sector to catalyse rural socio-economic development, leveraging private sector investment and improving the living conditions of notably Mozambique's rural folk. Putting in place a regulatory framework will provide greater clarity to all actors in the off-grid energy sector. It will ensure the necessary conditions for the private sector to develop its activities and protect investments in a diverse set of technologies applicable to the off-grid context such mini-grids. This regulation is the result of committed work of the Government of Mozambique, with special reference to all the institutions involved, namely the Ministry of Mineral Resources and Energy (MIREME), the Energy Regulatory Authority (ARENE), and the National Energy Fund (FUNAE). The approval of this regulation represents a big step and sets high expectations for the sector. This sentiment is reflected in the positive reactions from the different key stakeholders in the sector.

In the RERD2 project sustainability remains dependent on whether innovative approaches involving the private sector can be developed for the management of the 5 mini-grids that will be commissioned early 2023. The legal and regulatory framework have indeed significantly improved but continue to require informed attention from the government so that important conditions such as (a) the adoption of the new Electricity Law, (b) a well-defined strategy for private sector participation and investment in the renewable energy sector and (c) the removal or reduction of import taxes for renewable energy equipment are in actual fact achieved.

The sustainability of RERD2+ activities require tailored support to be provided to INIR to secure sufficient human and operational capacity to be able to steer irrigation investments in the country. In this respect, an institutional capacity building plan is being

developed to ensure that at project end, INIR will have been supported to secure requisite skills to promote the sustainable growth of the SPIS sector. RERD2+ will also support interventions designed to promote an enabling environment for SPIS sector growth. This will have to be achieved through local level, provincial and national dialogue platforms bringing together sector stakeholders. Key issues that require attention include level of import taxes for equipment sourced outside Mozambique, risk sharing incentives to promote increased public - private sector investments and footprint in project locations as well as SPIS demand activation through tailored awareness campaigns and educational partnerships.

1.3 Conclusions

Below is a summary of the main highlights of this report:

- RERD2 continues assisting FUNAE with data collection and studies to prepare the Nintulo hydro plant's executive project. The preliminary results of measurements (2019-2020) and studies point to a capacity of 3 to 3.5 MW instead of the originally estimated 11.2 Mw. The investment for realizing this SHPP may be about one-third of the originally estimated amount of 23 million EUR.
- The December 2020 steering committee decision to move away from the co-management modality to 100% own management (regie) laid the foundation for a new two-stage tendering procedure for the construction of five mini-grids that was successfully completed by the end of 2021 (see below).
- The undertaking of 20 mini-grid pre-feasibility and 5 feasibility studies resulted in the selection of 5 locations in two provinces eligible for project investment. A call for expression of interest for building these mini-grids was launched in March 2021. Twenty-two (22) companies expressed interest and four (4) companies were shortlisted. Two contracts of a total of 8.768,166 Euro were awarded on 2 Dec. 2021. Official start of works was set at 10 January 2022. Four mini-grids are to be built in 365 days, one in 425 days. Commissioning of 5 mini-grids is therewith foreseen for early 2023.
- Important steps have been taken with FUNAE's Research and Planning Department and its GIS unit so that its work evolves from "simple" geo-referencing of existing systems to real and meaningful off-grid energy planning. Seminars in the provinces to validate the GIS planning have been added to the workplan for the remaining project period.
- The transfer of ownership of small isolated solar power systems - many of which were funded by the first phase project RERD1 – from FUNAE to sector ministries and the increased focus of FUNAE on micro and mini-grids also prompts a stronger focus of project activities towards micro - and mini-grids.
- The year 2021 registered major investments in the training of FUNAE headquarters and delegation staff. To date a total of 104 FUNAE technicians benefitted of 23 different types of training. The project's *'cumulative number of hours of training of FUNAE staff'* reached a value of 6,704 person-hours by the end of 2021. Training by the project as well as contracted parties were accompanied by complete training manuals. The remaining balance of the FUNAE HQ training budget is reserved for the formulation of an institutional capacity development plan in 2022. Budget for delegations is still available.

- With the development and approval of an additional project component (RERD2+) the National Irrigation Institute (INIR) was added as a partner and the project budget was increased with EUR 10 million. Three expected results were added to the logical framework, the number of staff was increased with one international and two national experts assisted by 2 drivers. The duration of the project has been extended to December 2024.
- The RERD2+ baseline report was produced and integrated into the RERD2 baseline report, for presentation to the next steering committee (adjourned from Dec. 2021). Therefore, the indicator "Values year N 2021" in this report still correspond to the "Baseline values". Progress in the indicators is expected from the year 2022 onwards.
- Some implementation time, notably in the RERD2+ component, was lost in 2021 due to COVID-19 induced constraints, the unexpected departure of a newly recruited ITA and delays related to the recruitment of his replacement. The 2022 workplan therefore has been structured to ensure that RERD2+ secures increased presence in the programme locations in order to protect stakeholder confidence and commitment to the programme. The increased effort to accelerate implementation of the programme activities will however be balanced with the critical need to ensure the technical integrity of all interventions in terms of technical best practice.

Enabel execution official[3]
 Mark Hoekstra

[3] Name and signature

2 Results Monitoring[4]

2.1 Evolution of the context

2.1.1 General context

Mozambique remains in debt distress and on a subdued growth trajectory. Progress has been made in debt restructuring, but the outlook remains unknown. Early February 2022 the Mozambican government and the IMF announced discussions for "a possible financial programme" after the suspension in 2016 following the hidden debts scandal.

The surge in violent conflict in Cabo Delgado which dominated most of 2021 resulted in the displacement of local populations in the province. Although the violence by the armed groups has not spread to the RERD2/RERD2+ program locations, this conflict, if it continues, will embed a negative perception of Northern Mozambique as an unsafe investment destination which might limit private sector appetite to invest in the program locations. While the country continues to struggle and cope with numerous security-, economic- and social challenges, particularly the security situation will need to be continually monitored in 2022

On the positive side, the signature of a Peace and National Reconciliation Agreement in 2019 (between FRELIMO and RENAMO) has brought stability and more security to the central provinces of Manica and Sofala. Manica is one the provinces, besides Zambezia, where the new RERD2+ project component is working on renewable energy for productive use i.e. solar powered irrigation.

The Government of Mozambique introduced various COVID-19 containment measures throughout 2021 including total and partial lockdowns. These measures-imposed restrictions on some RERD2 regular and RERD2+ start up activities which required travel including the formal presentation of the program activities to stakeholders in Manica and Zambezia, start-up preparatory studies which involved consultative engagements with target beneficiaries and trainings. As such, some key inception activities which had been scheduled for implementation in 2021 were pushed to 2022. Recently the country has started to slowly opening up although a return to normality can only be expected by Q2 2022.

In the - renewable - energy sector recent regulatory and policy announcements have taken place, with the most relevant being:

- Decree 101/2020 of November 12th that adjusts the mandate, management mechanisms, budget arrangements, tutelage, organization and operation of FUNAE, which is the project counterpart (see 2.1.2. below).
- Resolution 35/2021 of December 1st that approves the new organizational structure of FUNAE.
- Decree 93/2021 of November 10th approves the access to energy regulations for off-grid areas, by establishing the principles and norms for energy services associated to off-grid activities and mini-grids of up to 10 MW.

[4] Impact refers to global objective, Outcome refers to specific objective, output refers to expected result

- Ministerial Diploma 17/2020 of April 14th, approves the internal regulations of the Energy Regulator – ARENE
- Additional to these, draft instruments are being prepared and their approval is expected to happen in 2022. Here special mention must go to the FUNAE draft strategic plan 2021-2030.

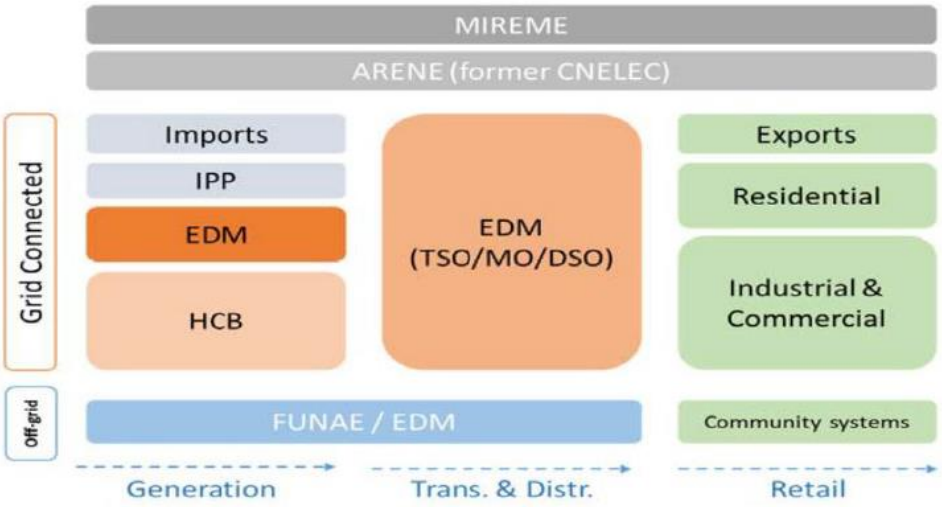
Although announcements of important changes in sector policies and partner institutions were reconfirmed in 2020 and 2021 most still await concrete implementation. Approval of some relevant legislation is pending parliamentary approval of proposed changes to the legal framework.

In a general sense the lack of progress on the electricity law remains among the main preoccupations of the intervention as it complicates the projects quest for cooperation on innovative business models for mini-grids. Even if the President of Mozambique has recently stated that he wants the electricity law approved it remains difficult to stipulate at this stage in how far delays of adoption of the electricity law will have a negative influence on the intervention.

2.1.2 General and Institutional context

In terms of the Institutional set up[5] the following diagram summarizes the role and names of the key entities.

Institutional set up of the Energy Industry and regulatory bodies



The Ministry of Mineral Resources and Energy (MIREME)

The Ministry of Mineral Resources and Energy (MIREME) is responsible for national energy planning, policy formulation and overseeing the operation and development of the energy sector. The ministry remains committed to boost the development of renewable energies and diversification of sources in the national energy matrix, thus contributing to the achievement of the (new) Integrated Master Plan and the National Electrification Strategy objectives. One of the major objectives is to achieve the target of universal access to energy by 2030. There are signs that it is reasonable to assume that new policies and

[5] that stems from the current regulation of the sector

legislation developed in the last two years will evolve and become reality in the present term of government, thus paving the way for innovative solutions in mini-grids as foreseen by the project.

Establishment of the National Energy Regulatory Authority (ARENE)
ARENE (created by law in 2017) was quite inactive in 2018 and for most of 2019 due to delays in the nomination of the chairman of the board. The appointment of the CEO in November 2019 marked the real start of ARENE's operationality. In 2020, 2 Technical Assistants were appointed to assist Arene's Economic Regulation and the Market Division and 1 to assist the Planning and Cooperation Department. More reinforcement, notably in the area of promotion and regulation of renewable energy, regulatory instruments and IT is foreseen for the coming year. Significant progress was made in drafting regulatory measures for off-grid energy. This required coordination by Arene of the various donors and multiple stakeholders involved. In the above-mentioned areas ARENE - as well as MIREME - continue to be supported by the Belgium funded Enabel CB-MIREME project.

Master Plan for Electricity
In October 2018 government approved the Integrated Master Plan for electricity infrastructure (2018-2043). This plan aims at increasing the country's capacity to generate, consume and export electricity over the next 25 years. The plan (US$34 million) seeks to ensure diversification of energy sources including hydropower, natural gas and coal. $18 billion will be invested in energy generation.

Review of Electricity Law
A proposal for a new Electricity Law (to replace the 1997 law) aims to promote the efficiency of the electricity sector in accordance with internal, regional and international markets and includes, among others, encouraging participation of the private sector and redefinition of the role of FUNAE. The law will include a series of specialized regulations, rules and standards on topics such as mini-grids, solar home systems, storage, self-generation and net-metering rules for incorporating isolated grids into the national grid. The public consultation process is completed. MIREME's legal team has been working on the adaptation of the text to the current legislative norms and templates and on the identification of subjects that should not be part of the law but instead of Ministerial decrees or inferior legal figures to avoid any further revision of the law in the short to medium-term. Legal advisors are also looking at the alignment of the Electricity Law with other existent laws (PPPs, Land, Water, Public companies, etc.) to avoid conflicts amongst them. The law has been approved by the Council of Ministers and it has been sent to parliament. After review by the parliamentary committees the law should be approved by the National Assembly.

The National Energy Fund (FUNAE)
The Energy Fund (*Fundo de Energia*, FUNAE) – the project's counterpart organization - is a public body subordinated to MIREME with the aim of promoting the development and use of different forms of low-cost energy and the sustainable management of energy resources. Initially setup as a fund, FUNAE today mostly implements off-grid access projects.

Until recently, FUNAE conformed to the rules established in the Basic Law of 2012 (Law No. 7/2012 of February 8) and Decree No. 41/2018 of July 23, which approved the rules for the allocation, autonomy, budget regulation, organization and operation of

institutions, foundations and public funds. Decree No. 41/2018 of July 23 however required that the organic structure be adjusted[6] to ensure compliance with the objectives set by the Government for the sector in general and under the National Energy for All Program in particular. As such, a new decree adjusting FUNAE mandate, management mechanisms, budget arrangements, tutelage, organization and operation has been enacted (Decree 101/2020 of 12 November). In addition, FUNAE is undergoing some restructuring to adjust to new challenges and opportunities it faces (Resolution 35/2021 of December 1st)

FUNAE (public fund) is now a legal entity of public law, category A, with legal personality and administrative, financial and **patrimonial autonomy**. Under the previous status patrimonial autonomy was missing. The new decree now allows FUNAE to own shares in companies. In the new decree, FUNAE's competences are more broadly defined as: *Implementation and management of electrification projects based on renewable energy solutions, expansion of the rural fuel network, mobilization of funding at the level of internal and external partners (financing) and energy efficiency - and other energy - services*.

Under new decree the Board of Directors is composed of three executive directors (as opposed to one - the CEO - under the previous decree). One of the executive directors is the CEO. The CEO is appointed by the Council of Ministers upon the proposal of the Minister overseeing the energy domain. The implementation of the decree has resulted in a new organizational chart where the O&M unit has not been made a division (as is foreseen in the RERD2 TFF). The O&M unit is now expected to become a unit under the "Electrification division". The other - three - divisions are the "Fuels Division", the "Financing and Private Sector Service Division" and the "Studies and Mobilization Division".

Electricidade de Moçambique

EDM is the government-owned electricity utility established in 1995 as national electrical utility, responsible for the generation, transmission, distribution and sale of electricity throughout the country. But EDM is mostly a transmission and distribution company with few generating assets. EDM has recently created a renewable energy business planning and development portfolio with a Directorate of Renewable Energy and Energy efficiency that is to address renewable energy sources (RES) investments. Doubts have however been expressed as to the feasibility of EDM pursuing such investments when it has to rely on its own corporate funding.

The National Electrification Strategy 2018 (ENE)

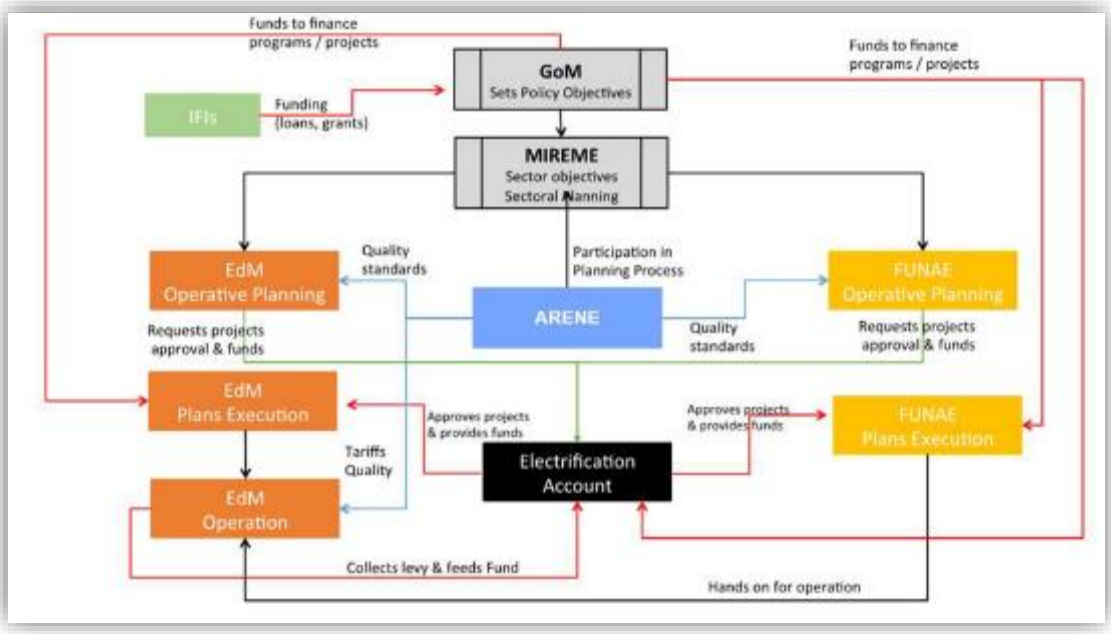
The National Electrification Strategy (NES) represents a key milestone in reaching all Mozambicans with electricity access by 2030. The strategy distinguishes between Expansion Areas (AEPs) and Subsidized Expansion Areas (AES). Its roadmap proposes that EDM takes the lead in identifying and implementing on-grid projects following project prioritization criteria and electrification schemes, while FUNAE focuses on the implementation of off-grid solutions. Once a system is installed, FUNAE will transfer it to EDM for operations. EDM may in turn outsource to private operators or communities. FUNAE projects will, besides other sources, be financed by an Electrification Account without the obligation to reimburse. FUNAE and EDM should coordinate efforts on

[6] under the provisions of Article 11(d)

specific projects where their areas may overlap. The lack of such coordination affected the project at various times during the past two years and led to it having to change course at various occasions.

A schematic representation of the institutional relationship of the above-mentioned institutions is presented below.

Energy sector main institutions



National Institute of Irrigation (INIR)

Following ministers' approval of the additional SPIS component (RERD2+) INIR entered as a new project partner.

INIR was created in 2010 to ensure the efficient and sustainable planning, development and management of land and water resources for production. In line with the creation of INIR, a national irrigation strategy was defined in 2012 that plans to double the amount of land under irrigation (with a particular focus on Zambezia and Manica provinces) and a national irrigation plan was formulated in 2015 which sets the short, medium and long-term goals in the irrigation sector. INIR oversees the promotion, the rehabilitation, the construction and the maintenance of irrigation infrastructures, as well as the establishment of water users' associations. INIR is also responsible for implementing and supervising integrated water resources management plans.

A new General Director for INIR[7] was appointed in March 2021 replacing the previous incumbent[8]. The new General Director at INIR is largely considered to have more political capital and more policy oriented having worked previously as the National Director of

[7] Dr. Delfim Vilissa

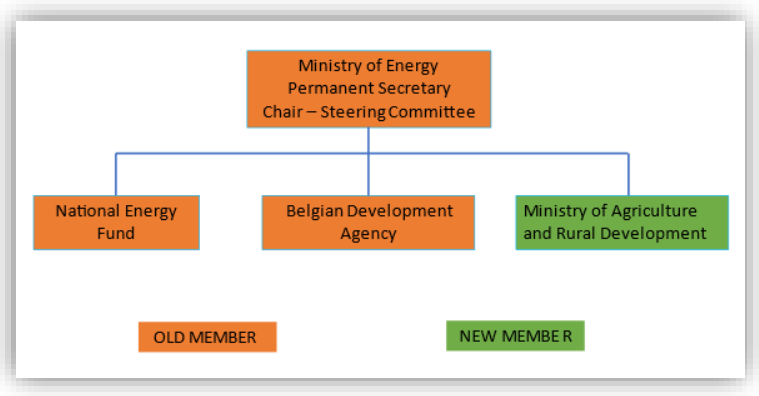
[8] Dr. Paiva Munguambe

Planning and International Cooperation in the Ministry of Agriculture and Rural Development.

The Government of Mozambique intends to reposition INIR as a public company with a legal mandate to provide revenue generation services in the irrigation sector. This development is largely viewed by stakeholders as an effort by the Mozambican authorities to reduce INIR dependence on the shrinking national budget. While this development is not expected to directly affect the implementation of RERD2+, Enabel needs to monitor the transition process to ensure that planned exit strategies anchored on empowering INIR as a key actor in the irrigation sector are not affected by the changes in mandate/operational which are likely to be affected. A key concern for most stakeholders is the likely conflict of interest that might ensue when INIR, being a regulatory agency, is also allowed to offer commercial services for irrigation development in the country.

2.1.3 Management context

RERD2(+) is supported by a steering committee which acts as the supreme strategic management arm guiding the technical and operational delivery of the programme. The steering committee is chaired by the permanent secretary in the Ministry of Energy. A strategic decision has been made to include a representative from the Ministry of Agriculture and Rural Development as a member of the RERD2(+) Steering Committee.



This follows the addition of the SPIS component to the RERD2 program. The permanent secretary in the ministry of energy has sent a formal letter to MADER to nominate a suitable representative to sit on the steering committee meetings starting in 2022.

2.1.3.1 Partnership modalities

FUNAE remains the government entity responsible for the intervention. The FUNAE Chief Executive Officer (CEO) is designated as sponsor, responsible for achieving the results and the specific objective of the intervention. The CEO equally acts as Authorizing officer, who is responsible for authorizing and liquidating expenditure following the modalities as laid down in the project document. Co-managed procurement was to be used for all works involving the appropriation of results by FUNAE after the end of the project. For co-managed acquisitions, the Mozambican legislation was to be used, as it applied to acquisitions financed by the government. These specifically concerned acquisitions under the following activities; 'Development of mini-grids' (6 Mio Eur), 'Implementation of Remote Monitoring Systems (360k Eur) and 'Implementation of Payment Systems' (500k

Eur). The December 7, 2020 steering committee approved a project proposed 180-degree turnaround from co-management to regie to circumvent the handicaps of the co-management modality.

INIR / MADER seconded an additional Mozambican counterpart and since May 2021 provides an office with water and electricity services, internet security, etc. in Maputo.

2.1.3.2 Operational modalities

The modalities of operational management of the additional component are aligned to RERD2, including the reporting requirements.

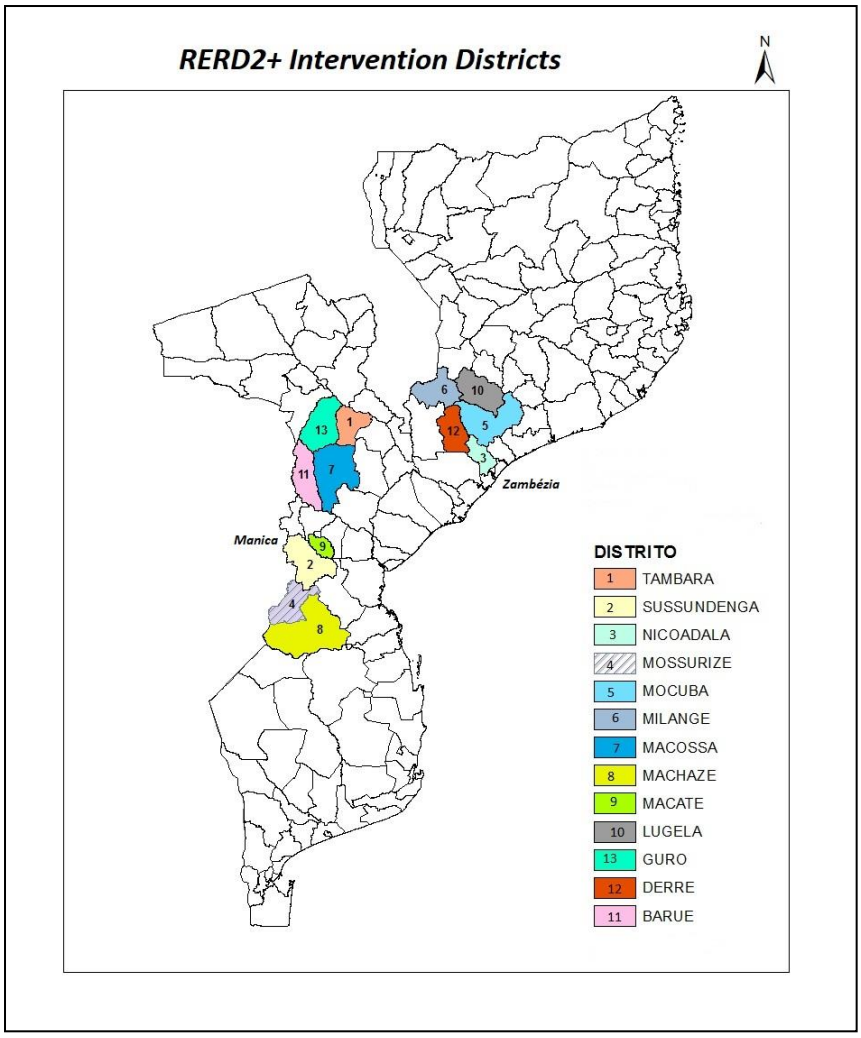
From the point of view of contracting tools, the implementation of the project continues to take the following forms:

- Direct implementation by Enabel (mainly via technical assistance employment contracts);
- Subcontracting via public (services, works and supplies) contracts where Enabel maintains its contracting authority role;
- Usage of Cooperation Framework Agreements concluded between Enabel and Belgian or European public-law entities; and
- The awarding of Grants to public entities or private not-for-profit organizations in which case Enabel will have the contracting authority role.

2.1.3.3 National and Field Level Anchoring

To ensure the successful take-off of the RERD2+ program – effort was mainly applied on talent acquisition during the reporting period. The International Rural Development Expert has been embedded within the National Irrigation Institute in Maputo to lead the technical delivery of RERD2+. The two national experts have also been integrated within the provincial Ministry of Agriculture and Rural Development offices in Chimoio and Quelimane. The two national experts are however expected to switch to the provincial delegations of the National Irrigation Institute (INIR) as soon as they are operational in the first quarter of 2022. A key action during the reporting period was the selection of program locations in both Manica and Zambezia provinces.

The map below shows specific districts that were approved by the Government of Mozambique as target locations for the RERD2+ program:



A total of 8 districts were approved in Manica province while 5 districts were also approved in Zambezia province as the formal areas where RERD2+ interventions will be concentrated. The national experts placed focus on the introduction of the program interventions in these districts including relationship building with other actors to promote synergies and collaboration.

2.1.3.4 Inception studies

During these first months of activities, the RERD2+ component focused on the preparation of intervention procedures and modalities: a) identification and selection of beneficiaries / intervention sites, b) refinement of allocation, financing and contracting mechanisms for the acquisition of SPIS facilities and c) preparation of processes for grants allocation to implementing partners (see chapter: Performance of the corresponding outputs).

2.2 Performance outcome

2.2.1 Progress of indicators

Outcome: Access to energy in rural areas is increased by investments in renewable energy and in support mechanisms to ensure sustainability.					
Indicators	**Baseline value**	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Access to electricity in rural areas	5,97% of rural population (Global Tracking framework)	na	na	na	7,97% of rural population of Zambezia province
Total - cumulative - number of connections	0	0	0	0	3,500 (from 5 mini-grids)
Total installed and operational capacity from renewable energy (kWp)	0	0	0	0	820 kWp
Fee collection rate (payment rate) in mini-grids	0	0	0	0	80%*)
Total installed and operational capacity from renewable energy (kWp) (for irrigation) **)	0	n/a	0	0	750 kWp
Total irrigated area under sustainable practices (ha)	0	n/a	0	0	900
Number of farmers applying best irrigation and agronomical practices	0	n/a	0	0	1,010
Total food production is increased	0	n/a	0	0	25%
Total food production is diversified	0	n/a	0	0	50%
Reduction of energy costs for production (medium and big farmers)	0	n/a	0	0	50%
Percentage of functioning SPIS installations	0	n/a	0	0	>= 75%
Satisfaction index of beneficiary producers	n/a	n/a	n/a	n/a	>= 80%

Note: *) Installing pre-paid meters means 'no pay no electricity', it is however estimated that 20% of electricity will be lost (non payment). The exact definition and measurement of this indicator will be done end 2022.

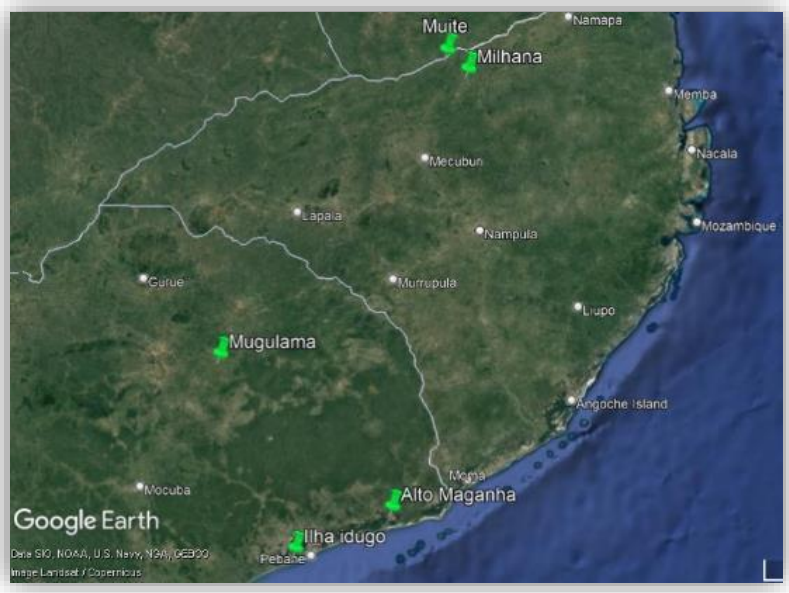
**) a conservative estimate based on figures from GGGI (2021), "Mobilizing Investments in Solar Powered Irrigation Projects in Zambezia Province, Mozambique" indicates that 1.2 kWp needs to be installed to irrigate 1 (one) hectare of land.

2.2.2 Analysis of progress made

The logic of the project and in particular the (a) stringent selection criteria for mini-grid locations and (b) the importance of proper sizing of these mini-grids forced the project to invest considerably in studies, which logically took the necessary time. After the (pre)feasibility studies were completed and the 5 sites received the final greenlight from the Steering Committee, tenders were published which resulted in the award of two contracts, with a combined total value of €8,768,166, for the design, procurement and construction of these 5 mini-grids. As most of the construction will take place in 2022, it

is clear that the project so far had no impact on the above-mentioned energy access outcome indicators.

The - green - pins on the map below indicate the locations of the five mini-grids.



Regarding the measurement of the 'access to electricity' outcome indicator, there were two reasons not to invest in a - costly and time-consuming - data collection system similar to the SE4ALL Global Tracking Framework study from which the above indicator was drawn. The first argument was avoiding overkill of project studies due to the considerable research already - foreseen to be - undertaken (site screening, pre-feasibility and feasibility studies, …). Secondly the Mozambican Energy Ministry and the National Institute of Statistics are in partnership with the Norwegian Water Resources and Energy Directorate (NVE) working on improving analytical capacity in the energy sector. Measurement of the 'electricity access' indicator is foreseen in this partnership. The project decided not to duplicate efforts and remains in contact with this initiative. Verification of the above indicator will therefore continue to mainly rely on secondary sources.

Due to 2021 being the baseline year of the RERD2+ component the outcome indicators above are at their baseline values.

2.2.3 Potential Impact

The potential impact of the electrification component of the project is significant, not only as a result of the construction of 5 mini-grids with some 3,500 connections serving over 17,000 beneficiaries - including 184 businesses - but also because of the medium-term prospects for the realization of a grid connected hydroelectric power plant of approximately 3-3.5 MW for which the dossier continuous to be prepared by the project.

The potential impact of the additional irrigation component is also high due to the installation of solar powered irrigation systems irrigating 900 ha of land under

sustainable practices and the consequent impact on farmer incomes, food security and general wellbeing.

2.3 Performance output 1 Mini-grids provide reliable and adequate energy service

2.3.1 Progress of indicators

Output 1: Mini-grids provide reliable and adequate energy service					
Indicators	**Baseline value** (from TFF)	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Cumulative number of RE productive use locations identified and suitable for the installation of hydro- or solar mini-grids (reinforcing the FUNAE pipeline)	0	9	36 *) (30 in Zambezia & 6 in Nampula)	15	36
Number of reviewed, revised and updated feasibility and baseline studies	13 existing studies on PV and hydro	1	0	0	1 to 3 studies revised and updated
Number of pre-feasibility on-site assessments of FUNAE pipeline locations for mini-grids.	0	19	0	0	20
Number of RERD2 funded and completed comprehensive feasibility studies for solar (hybrid) mini-grids	0	5	0	0	5
Number of awareness and stakeholders consultations in targeted mini-grid communities per year	0	5	5	5	25 consultations
Cumulative number of hybrid solar mini-grids commissioned, operational and properly maintained	0	0	0	0	5 solar mini-grids
Publication for result dissemination	0	0	0	0	Minimum one publication

*) This is the number of locations both **identified** by the GIS unit **and confirmed** by telephone interviews by the FUNAE 'Area Social'. The total number of sites identified by GIS so far was 77 sites, but 41 sites could not yet be confirmed through telephone interviews. In addition to this GIS identification process, 7 mini-grid locations were proposed by local authorities.

2.3.2 Progress of main activities

Progress of main activities [9]	**Progress:**			
	A	B	C	D
1 Review and update of existing feasibility and baseline studies and site selection in view of productive uses of energy (socio economic surveys)		X		
2 Awareness and stakeholder consultations for each site including the private sector		X		
3 Mini-grid development with productive uses of energy			X	
4 Result dissemination		X		

[9] A: The activities are ahead of schedule

2.3.3 Analysis of progress made

Among the first steps of development of mini-grids is research on their possible locations in function of a number of criteria. Criteria will vary in function of the project promotor that can be public or private. Key however is knowledge on whether and when the location is going to be close to - and thus possibly connected to - the national grid. Such analysis best takes place with the help of a geographical information system (GIS). The most recent analysis undertaken by the FUNAE GIS unit, assisted by the project, indicates a total of 77-potentially interesting mini-grid locations in Zambezia and Nampula province (i.e. both provinces combined). The '*area social*' of the research and planning division is still following up and researching some 41 locations with the help of telephone interviews. In function of the results of the telephone interviews further in-depth surveys (also referred to further above) will be undertaken.

The FUNAE GIS unit of the planning division continues to apply the RERD2 promoted methodology for identification of, mainly hybrid-solar, mini-grid sites. As this work evolves the need arises to organize missions to the provinces to ground truth the methodology and validate the identified areas for off-grid development with provincial entities such as SPI, EDM and FUNAE. The quantitative targets of this work were re-confirmed with FUNAE in the M&E update workshop on 14 September.

As to *revised and updated studies*, the technical work undertaken - notably the work in Nintulo - was explained in earlier Annual Reports. Data collection on waterflow and rainfall at this potential future Small Hydro Power Plant site is ongoing. Regular missions to Nintulo continue to either; a) solve technical issues with the measuring equipment, b) download data from the rain Gauge (obligatory when the instruments lose the 3G connection through which it normally transmits the data) and / or c) to coordinate regular road repair works to keep the site to the measuring weir accessible. The first annual report on collected data was developed by FUNAE and reviewed by the project's energy engineers. This interim measurement campaign report indicated a lower potential than estimated in the Nintulo Small Hydro Power Plant (SHPP) feasibility study of 2019. Measurement will continue at least until May 2022. Unfortunately, the tropical storm Ana of January 2022 destroyed parts of the measuring dam and gauges, such that reliable measurements are impossible until they are repaired. Fortunately, the project already disposes of a solid waterflow dataset and will decide until when it will continue measurements.

B The activities are on schedule
C The activities are delayed, corrective measures are required.
D The activities are seriously delayed (more than 6 months). Substantial corrective measures are required.

In November 2021 the first phase of a power off-take and gridlines study for the future Nintulo SHPP[10] was undertaken by the company MARGE under the energy framework contract BX1762. After successful training of the FUNAE Hydro Division by the junior expert earlier in 2021 the mission was broadened to include theoretical and field training of 4 FUNAE technicians from the Hydro Division.

Various options for the Nintulo power plant are still under study but it is likely that in the medium term this work will significantly contribute to electricity supply in the north of Mozambique through a grid-connected power plant realized via a co-financing partnership between government, development agencies/banks and the private sector. Enabel is in a unique position to play a proactive role in the realization of this project.

Based on a project developed master table of 59 hydro sites holding information on 24 key parameters (geography, hydrology, costs, …) the FUNAE hydro division submitted a document to the project that indicates FUNAEs views on the most interesting hydro power locations and suggestions to replicate the positive Nintulo flow measurement experience. Technicians from the Hydro Division and the junior expert, visited the potential hydro site of Mutala (Zambezia) early October 2021. It was concluded that although a measuring dam, as used in Nintulo, was not feasible here due to the width of the river the best opportunity for further work remains this potential hydroelectric power plant site in Mutala. The type of measuring equipment to be acquired has already been identified. Following exploratory discussions between FUNAE, RERD2 and the company '*Central Hydro-Solar de Mutala Lda*' a proposal for cooperation between these three entities on the collection of river flow data in Mutala has been sent to the company and is awaiting feedback.

In 2019 and 2020 the project invested considerably in studies. A total of 19 prefeasibility and 5 comprehensive financial and technical feasibility formed the basis for the EPC tenders published early 2021.

Consultations with target communities in Zambézia (Idugo Island, Alto Maganha, Mugulama) and Nampula (Milhana, Muite) took place in the context of detailed energy needs assessments and the physical inventory phase of the feasibility studies.

Assuming that the project would have to pre-finance the VAT, expectations were that the project would initially build four mini-grids and after being refunded the VAT, a fifth mini-grid. The commitment of FUNAE (in August 2021) to pay for VAT and duties allowed the project to foresee the building of five mini-grids. In order to be able to fully fund five

[10] ToR approved by FUNAE and EDM

mini-grids a budget modification was proposed to the steering committee and swiftly approved on 15 November 2021.

The expression of interest (EOI) phase of the tender for EPC of the 5 mini-grids led to responses from 22 companies. 18 candidacies were rejected. Out of the 4 shortlisted companies only 3 submitted a proposal (one of the bidders didn't submit any proposal for Lot5). The tender entered the negotiation phase on the 11th of October. Contracts for a total of 8,768,166 Mio Euro were awarded on 2 December 2021 to two consortia; ESI/EnGreen plus Daker for Lot1 Milhana, Lot2 Muite and Lot5 Mugulama (Total 4,322,407 Euro) and ENERSOL-Azimut plus TECNEL for Lot3 Alto Maganha and Lot4 Idugo (total 4,445,759 Euro). These values are excluding VAT that will be paid by the national partner FUNAE. The partner commitment to pay VAT and duties is an achievement in itself and shows that FUNAE is committed to agreements with Enabel / Belgium. The official starting date of the work (for both companies) was set at 10 January 2022. The execution period was settled at 425 days for Idugo and 365 days for the other 4 mini-grids.

The tender for the supervision of the 5 EPCs was cancelled twice because of irregularities. A third tender was launched on 20 January 2022, this time under a "Negotiated Procedure without Prior Publication". The tender was closed on the 31st of January. At the time of drafting this report the project was in the final stages of negotiations.

Most of the construction will take place in 2022 and the mini-grids will be commissioned early 2023.

Publications for results dissemination have not been produced to date. As to communication products please refer to chapter 3.10.

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2.4 Performance output 2: Technical and financial sustainability of existing systems is improved

2.4.1 Progress of indicators

Output 2: Technical and financial sustainability of existing systems is improved					
Indicators	**Baseline value** (from TFF)	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Nr of RERD1 funded hydro mini-grids investigated (with report) on functioning and operational status	0	0	0	0	3 (Majua, Sembezeia and Muhoa)
Nr of RERD1 funded solar systems investigated and reported on operational status	0	0	0	0	377
GIS implemented beyond a static database and used for asset management purposes	GIS is static database and not used for asset management purposes	same as baseline	Improvements in GIS are being developed	Improvements in GIS are being developed	GIS fully used for asset management purposes
Degree of connectivity / sharing GIS database with other departments	No sharing with other departments	Improve-ments are developed	Execution of improvements	Execution of improvements	Excellent degree of connectivity
Cumulative number of RERD1 purchased meters and pre-payment systems installed and operational	726*) meters and pré-payment systems purchased but not operational yet \ 0% of systems operational	440	685	590	726
Use of tablets in data collection campaigns and missions of the Operation and Maintenance (O&M) unit	Not yet used	Staff trained in preparing and transferring questionnaires to tablets	Used in 7 missions	Pilot use in selected missions	Systematic use at HQ and delegations level
Percentage of new (RERD2) mini-grid connections equipped with pre-paid meter	n/a	n/a	n/a	n/a	100%
Percentage of FUNAE pre-paid meters served by a remote sales system using mobile money	0%	0%	0%	0%	100%
Cumulative number of FUNAE-managed PV mini-grids - over 20 kWp - that are remotely monitored (facilitating full maintenance)	0	0	0	0	23

*) Actually, a total of 726 meters (incl. 3 payment system computers) were purchased in October 2016. All meters were intended for use in 3 hydro mini-grids funded by RERD1. Until February 2021 FUNAE had installed 685 pre-paid meters in Muoha, Sembezeia and Majaua. In 2021 Muhoa was connected to EDM's national grid as such 78 pre-paid meters were removed and installed in other FUNAE projects. The remaining 41 meters are planned to be installed in Majaua in 2022.

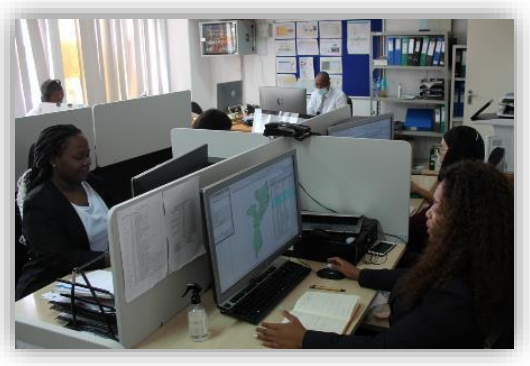
2.4.2 Progress of main activities

Progress of main activities [11]	Progress:			
	A	B	C	D
1 Planning, operation and maintenance processes are strengthened		X		
2 Strengthening of Information systems		X		
3 Remote metering and monitoring systems allow for more efficient maintenance of the systems.		X		
4 Implementation of payment systems (metering, fee collection, pre-payment)			X	

2.4.3 Analysis of progress made

Earlier annual reports already described the examination of the operation and functioning of the three RERD1-funded hydro-mini-grids of Majaua, Sembezeia and Muhoa and the field study on 377 individual solar energy systems also funded by RERD1.

To prevent GIS technicians of FUNAE sitting idle at home doing nothing because of the COVID19 imposed work rotation (May 2021) 5 laptops were purchased for these technicians[12]. Later in the year a tender was launched for the purchase of another 25 laptops exclusively for FUNAE technical divisions. Due to delays in production caused by the international shortage of microchips, only 11 laptops were initially delivered in August. The delivery of the remaining 14 laptops took place mid-October.



The implementation of the project induced GIS improvement plan is beyond the direct control of the project, but FUNAE suggesting inclusion of concrete progress indicators of off-grid energy planning in the - updated - M&E matrix, explicitly agreed by DEP staff, is encouraging.

The effectiveness of earlier training of GIS (and DSSE) staff in automatic and manual drone piloting has been confirmed as the unit now autonomously undertakes aerial surveys assisted by the RERD2 provided drone. Because of competition for its use FUNAE recently expressed the wish that - preferably - all technical divisions be equipped with their own drone.

FUNAE continues to actively use the project purchased ArcGIS online subscription for the publication of maps as such making information available to the general public and, importantly, the private sector. This is a significant achievement but the project continues to stress that strict data quality remains necessary before information is made available

[11] A: The activities are ahead of schedule
B The activities are on schedule
C The activities are delayed, corrective measures are required.
D The activities are seriously delayed (more than 6 months). Substantial corrective measures are required.

[12] FUNAE had so far always preferred desktop computers which are not easy to move around.

online. Implementation of the actions included in the aforementioned GIS improvement plan will significantly contribute to this.

The above indicates that the analytical capabilities of GIS are being actively and increasingly used. However, the use of GIS for asset management remains absent or very limited. This lack of attention is linked to FUNAE's policy of transferring decentralized individual solar systems to sector ministries (notably health and education).

Regarding the indicator on the installation of RERD1 pre-paid meters, we report that 81% of the meters are now installed while the remaining 41 meters are expected to be installed in FUNAE mini-grids in 2022.

Despite persisting challenges posed by the COVID19 pandemic during the first three quarters of the year the FUNAE Operations & Maintenance unit made impressive efforts in Q4 in the undertaking of 7 - project supported - missions (i.e. 100% of the missions planned) to perform tablet-based data collection on micro- and mini-grids spread all over the national territory. The analytical report however is still pending. The '*area social*' of the planning division participated in all these missions to field test their new - and now also tablet based - socio-economic questionnaires (see also below).

Regarding the installation of pre-paid meters and remote sales system services, the project supported FUNAE's O&M unit in market research on such systems for installation in future RERD2 mini-grids and the implementation of a centralized sales system that can receive remittances from mobile money accounts. Contacts with PAYG companies continue on hold because it is not clear what kind of solution (cloud or on a local server) FUNAE is willing to implement. There are indications that FUNAE intends to test and possibly take over the system used by EDM but FUNAE is not updating the project on this matter.

The project and the O&M unit also jointly conducted market research on cloud-based remote monitoring systems for FUNAE's mini-grids, incl. the five foreseen – project funded - mini-grids. Four companies specialized in remote monitoring systems shared a document with a technical proposal and an estimated budget for the monitoring of 20+ hybrid mini-grids. The technical options were discussed between the project and the O&M unit and decisions incorporated in the tender documents for the purchase of such a system. The tender documents containing all technical specifications for this complex tender were submitted to headquarters in Brussels in September 2021. Following comments, the document was finalized and resubmitted to headquarters in November. Final approval from HQ is pending and launch of the tender is foreseen for February 2022.

Lastly it needs mention that remote metering in, and monitoring of, mini-grids are in their early infancy in Mozambique. The project therefore, apart from continuing work on these systems, intends to be inspired by experiences in the southern and eastern Africa region through exchange visits in 2022 the COVID-19 situation allowing.

2.5 Performance output 3: The capacity of FUNAE in planning and project management is improved

2.5.1 Progress of indicators

Output 3: The capacity of FUNAE in planning and project management is improved					
Indicators	**Baseline value** (from TFF)	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Capacity building (CB) plan available and executed	No plan for capacity building	same as baseline	ToR under develop-ment	ToR and launch of tender for CB plan	Agreed plan for capacity building available and executed according to plan
Cumulative number of different types of training for FUNAE staff administered		15	23	20	30
Cumulative number of trained FUNAE staff	0	58	104	90	125
Cumulative number of hours of training of FUNAE staff (HQ/Delegation, M/F)	0	1,312	6,704	4,300	7,000
Number of - internal - technical support documents drafted and distributed within FUNAE		8	9	9	15
Quality of socio-economic survey methodology	No standard method for socio-economic surveys	Improve-ments carried through	Improve-ments carried through in digital tools	Improve-ments carried through in digital tools	Improved standard template for surveys stored on tablets being used for these surveys
Processes and working procedures for maintenance and mini-grid site-selection (GIS) improved	Working processes and procedures for maintenance and site selection not sufficiently functional	FUNAE start to develop work procedures for mainte-nance and site-selection	Develop-ment of (improved) working procedu-res ; start implement-tation	Develop-ment of (improved) working procedu-res ; start implement-tation	Clear processes and tools for maintenance and site selection
Cumulative number of provinces with mini-grid sites selected and validated		0	1 selected 0 validated	2 selected, 1 validated	11 selected, 11 validated

2.5.2 Progress of main activities

Progress of <u>main</u> activities [13]	**Progress:**			
	A	B	C	D
1 Project management is improved at FUNAE central level		X		
2 Capacity of selected delegations of FUNAE are strengthened in sector planning and coordination			X	
3 Technical assistance		X		
4 Surveys, field trips workshops and seminars, study tours		X		

2.5.3 Analysis of progress made

[13] A: The activities are ahead of schedule
B The activities are on schedule
C The activities are delayed, corrective measures are required.
D The activities are seriously delayed (more than 6 months). Substantial corrective measures are required.

In the second half of 2021 FUNAE picked up on a project proposal to contract consultancy services for the preparation of a capacity development plan but after initial cooperation in drafting of the terms of reference, this work was suspended pending finalization of FUNAE's new corporate strategy.

The project developed a 'training database' where it registers all project in-house and outsourced training activities. From project start to date it registered a total of 6,704 '*person training hours*' for 104 different technicians. 68 training hours were administered in 2019, 1,312 in in 2020 and 5,324 in 2021. Some 66% of trained technicians was male and 34% female. 81% of trained technicians were from FUNAE headquarters and 19% from delegations. Below is a short overview of training by broad category so far.

Number of trained technicians per type of training, sex and year.

Type of training	Female 2019	Female 2020	Female 2021	Total Female 2021	Male 2019	Male 2020	Male 2021	Totaal Male 2021	Grand total
1. Data collection		3	1	4	1	16	1	18	22
2. Design mini-grids							29	29	29
3. Drone and photogrammetry							3	3	3
4. English (different levels)			13	13			13	13	26
5. Formação NEBOSH			1	1			1	1	2
6. GIS and hydro design	1		3	4	2	3	4	9	13
7. GIS and planning		3	13	16		1	9	10	26
8. GIS Topography and planning	2	3		5	2	10		12	17
9. Hybrid mini-grid design						4		4	4
10. MS Office Excel		13	12	25		14	13	27	52
11. Project Management			6	6					6
12. PV System design					2			2	2
13. PV System design and planning					1			1	1
14. Misc. subjects (see brochure)		1		1		10		10	11
Total	**3**	**23**	**49**	**75**	**8**	**58**	**73**	139	**214 *)**

*) Note: total exceeds 104 [i.e. # of technicans trained] because a good number of technicians benefit from more than one training.

Apart from the above 2 technicians from MIREME and 2 technicians from EDM were invited to receive training specifically on the use of 3 modules on how to use GIS i.e. '*How to use ArcGIS in your organization*', '*Data collection and Management with Arc GIS*' and '*Creation of Story Maps with ArcGIS*'.

In 2021, one comprehensive technical document (No. 9 below) was prepared as part of intensive training activities of FUNAE Hydro division staff in workshop as well as in the field.

Below is a list of all technical documents / manuals - all in Portuguese – developed by the project so far.

RERD2 Technical documents

1. *Analise de consumo das mini-redes geridas pelo FUNAE, 2020, 56 pag.*
2. *Manual para coleta de dados do caudal e precipitação em Nintulo, 2020, 43 pag.*
3. *Plano GIS, Recomendações para a estratégia GIS no [ambito da FUNAE e feedback sobre o plano GIS da FUNAE, 2020, 9 pag.*
4. *Manual do Drone. Documento com a informação necessária para a utilização de drone para a produção de mapas, 2020, 12 páginas.*
5. *Manual Kobotoolbox. Utilização de kbotoolbox para recolha de dados de campo. Adaptado da documentação oficial. 72 slides, 2020.*
6. *Fluxo de trabalho da Kobotoolbox. Documento que descreve o fluxo de trabalho recomendado para utilização da kobotoolbox dentro da Dep. De Estudos e Planeamento (DEP/FUNAE), 4 pag.*
7. *Metodologia de préselecção de locais com teledetecção, 2020*
8. *Templates inquéritos socio-economicos readaptadas em colaboração com DEP, 2020*
9. *Análise em remoto o potencial de locais hídricos: manual, 2021, 133 pag.*

All of the above capacity development activities relate to work that needs to be done routinely by FUNAE technicians. As such, they are reflected in the indicators under output 3 "Improved FUNAE planning and management capacity".

In response to persistent requests from FUNAE, the project also sponsored English language courses for 26 technicians. The training institute submitted its results report early October. Most technicians feel the need to further develop their skills and raise their levels and this is clearly encouraged by FUNAE's top management. This results in a very high demand for English language training and the project will have to decide whether to honor further requests from FUNAE to set aside budget for this purpose.

Seven field missions to test the improved[14] socio-economic questionnaires (transferred to tablets) for FUNAE-led energy needs assessments took place in late 2021. These missions could only take place after the lifting of travel restrictions. The survey design and tools have now been confirmed and can be considered fully developed and standard for FUNAE going forward with this type of work.

The effectiveness of earlier training of DEP and DSSE staff in automatic and manual drone piloting has been confirmed as staff of these divisions now autonomously undertake aerial surveys with the project purchased drone.

The RERD2 energy engineer prepared a training session on Homer-Pro and proposed it to the DSSE and DEP staff but did, to date, not receive any answer.

A second, follow-up, training on PV Sol was considered interesting for DSSE. The training was supposed to take place in March 2021, but was adjourned due to COVD19 measures. Recently, after conclusion of a *RES4Africa* training on mini-grid design, DSSE technicians demonstrated interest again in PVSol training.

A complete and detailed final version of a manual on site identification for mini-grids, destined for the FUNAE GIS unit, was finalized in January 2021. The project encourages the GIS unit to apply the proposed methodology and to produce a database and pipeline

[14] Improvements imply, among others, working in three distinct phases of a project process: (i) remote assessment via telephone for follow up site identification; (ii) a 1-day on field survey and (iii) an extensive energy need assessment campaign. The improved survey questionnaires were transferred to tablets. Actual field surveys - normally carried out by the "area social" of DEP - were put on hold in the course of the year because of travel restrictions imposed by the COVID19 pandemic.

for the development of mini-grids projects in the provinces where this analysis has not yet taken place i.e., all except Zambezia and Nampula. As the GIS unit was constrained by the computing power of their outdated (32-bit) desktop computers the project purchased powerful (64-bit) laptops so as to enable the testing and application of these new routines for off-grid energy planning. The methodology was described in an article entitled '*Rural electrification in Mozambique: how to find the right villages?*'. The techniques now used in the GIS unit seem to be successful. This is well reflected in a new indicator suggested by the GIS unit during the M&E update workshop on 14 September where progress is measured by means of the indicator *"Cumulative number of provinces with mini-grid sites selected and validated"*.

Remote, online training for 14 delegation and 15 HQ technicians on mini-grid design, optimization and battery use administered by RES4Africa took place from 20 October to 16 November.

The project funded a full course for seven (7) technicians from the FUNAE planning division, two (2) from MIREME and 2 (two) from EDM on: a) how to put ArcGIS to use across their organizations, b) field data collection and management and c) the use of ArcGIS to inform audiences, engage stakeholders and inspire a targeted audience via so-called StoryMaps. The acquired knowledge is applied in regular updates of maps on the FUNAE website, open to the public and importantly the private sector.

Capacity building of Hydro Division staff on the use of GIS software for the identification of river catchments areas was already described in chapter 2.3.3 and needs no repetition here.

The analysis of existing management and support processes at the provincial level (Zambezia) by the Quelimane based capacity building expert have until now remained at a very modest level. The departure of the province-based expert in May 2020 has only underlined the gap in this work. Most COVID-19 restrictions recently lifted now allows the project junior to spend extended periods in 2 provincial FUNAE delegations allowing for work on this subject.

Practical training of FUNAE and PSI (Provincial Service of Infrastructure) staff continues during field missions in preparation of the Nintulo SHPP. Currently under discussion is the extension of flow measurement work to a future SHPP site in Mutala, where the project could join forces with a private sector operator who is already in contact with FUNAE about this.

The terms of reference for a training course on the operation and maintenance of small hydropower plants for local operators and delegations were drafted and approved by FUNAE and EDM. The project is encouraging FUNAE to work with EDM to further train their technicians working in FUNAE hydro power plants. It took some time for EDM's top management to formally give the green light, but the activity obtained approval in October. FUNAE/RERD2 and EDM discussed most of the practical aspects of the training. The project subsequently supported the preparation of the training course by funding trips for three EDM engineers to three FUNAE-operated hydropower plants in November to study the facilities. They prepared their report and proposed a curriculum. The training course is scheduled to take place in April 2022 at EDM's training institute in Chimoio.

The project funded a full online training course - at a high level - on 'NEBOSH-certified health and safety' for two FUNAE staff members; the head of the O&M unit and a technician from the environment division.

Also funded was a full online course for six (6) technicians from DEP on "Introduction to Project Management".

Planned exchange visits to learn from the region (Kenya, Rwanda, South Africa, ..) on digital instruments and services for off-grid energy monitoring (cadaster, monitoring of the energy balance, etc.) had to be canceled due to COVID19 travel restrictions.

Contacts with international institutions specializing in remote sensing, mentioned in previous reports, in particular VITO (Belgium) and Spotitt (UK), were put on hold and could be resumed once the GIS unit makes significant progress with the off-grid energy planning work mentioned above. We note, however, that earlier suggestions for cooperation with these institutions lost some significance after the discovery of new, publicly available open-source datasets on population distribution such as Wordpop (population and settlements), Grindfinder (grid infrastructure estimation), Openbuildings (building footprints by Google), Villageinfrastructure (to be released shortly including data about infrastructures and possibly settlements)

Lastly in this paragraph on capacity building we mention that the transition to the "Regie" modality, with the active involvement of FUNAE technicians in the new (Enabel regie) tenders, has allowed them to understand laws and procedures different from those of Mozambique. The technicians acknowledge that these procedures are an interesting reference for an institution such as FUNAE, which is regularly invited to contribute to the evaluation of Mozambican procurement procedures and invited to suggest improvements. In doing so, the project plays a role in informing the FUNAE procurement unit (UGEA) by proposing procedures that guarantee more flexibility, price control and bid quality. On the more technical side, FUNAE benefits from the project team approach. It is motivated to introduce innovative technological solutions, such as containerized solutions, reduced IP protection of some components - if there is no real need - and different inverter configurations. (IP = Ingress Protection, an international protection standard of effectiveness of the sealing of electrical enclosures against intrusion from foreign bodies such dirt, dust, moisture ..). This allows FUNAE to test solutions that are different from those that were previously considered 'FUNAE standards' and paves the way to reduce construction costs, improve the quality of mini-grids and open up the market to brands that are not yet present in Mozambique.

2.6 Performance output 4: pro memoria, technical budget line for IVA (VAT)

This additional technical budget line was created to keep track of VAT movements in the former Enabel accounting system.

Regarding the treatment of VAT; in the first quarter of 2021 both parties agreed on and ratified an addendum to the specific agreement (SA) involving the Ministry of Economy and Finance to facilitate direct VAT payments. In August, and at the explicit request of

the project to provide 100% clarity on the practical/administrative handling of VAT and duty payments during the execution of the EPC contracts, FUNAE signed a letter stating that the payment of VAT and duties would be fully handled by FUNAE in accordance with the terms set out in the special agreement and its addendum. In September, and based on the financial data from the feasibility studies, the project informed FUNAE of the amount to be allocated for these payments in the state budget. The inclusion of the needed amount in FUNAE's 2022 budget eliminated the need for pre-financing VAT and import duties and allowed the project to commit to the construction of five mini-grids instead of four[15].

2.7 Performance output 5: The new legal framework is influenced by FUNAE

2.7.1 Progress of indicators

Output 5: The new legal framework is influenced by FUNAE					
Indicators	**Baseline value** (from TFF)	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Number of discussion / position papers on legal frameworks for renewable energy developed by FUNAE, and shared with decision-makers.	0	0	0	1	4
Number of meetings organised by decision-makers (MIREME, ARENE) attended by FUNAE in which legal frameworks are discussed.	0	0	0	1	4

Earlier reports explained the addition of result 5 *"The new legal framework is influenced by FUNAE"* to the original project logical framework. FUNAE and the project have been working with different donor initiatives trying to overcome these difficulties. The project, as well as other stakeholders, submitted their comments on a draft regulatory framework developed by MIREME and ARENE in cooperation with a group of national and international experts early 2021. The new decree regulating the off-grid energy sector (**Regulation for Energy Access in Off-Grid areas in Mozambique**) was approved by the council of ministers in September and published in December laying an important foundation for future private sector investments in off-grid energy installations. These recent and very important steps in the legal framework reduced the need for the project to maintain resources for the foreseen activities (position papers, meetings, …). The recent developments now urge FUNAE to evolve into an institution that functions as a genuine fund and less as a utility (as it has been doing up to now). As such the project deemed it essential to reorient activities under this result and propose to FUNAE the recruitment of a national expert who can support the organization in its transition into an agile and innovative fund with knowledge of blended finance models and climate finance. The proposal was well received and the national expert is on board since 22 October and for

[15] At the time of drafting this report, the exact procedures had yet to be fully clarified by the Ministry of Economy and Finance. Pending 100% clarity on this, the project is blocked in informing the EPC companies – in the meantime contracted - on how and to whom exactly they should address their invoices in order to allow FUNAE to comply with its obligations.

most of his time based in FUNAE. In the meantime, the project manager continues to contribute to events that promote private sector interest in the off-grid energy sector (see Chapter 3.10 on communication).

2.8 Performance output 6: Sustainable solar powered irrigation systems are taken up by selected farmers in 2 provinces

Implementation of the RERD2+ component commenced mid-2021. A baseline workshop was held from 15 to 17 September to revise the RERD2+ component indicator matrix and to specify the baseline, final and intermediate target values. FUNAE and INIR technicians participated in this workshop. The RERD2+ baseline report was produced and integrated into the RERD2 baseline report, for presentation to the next steering committee. Therefore, the indicator "Values year N 2021" still correspond to the "Baseline values". First progress is expected from the year 2022 onwards.

2.8.1 Progress of indicators

Output 6: Sustainable solar powered irrigation systems are taken up by selected farmers in 2 provinces					
Indicators	**Baseline value**	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Cumulative number of farmers informed and sensitized in the provinces about SPIS	0	n/a	0	0	>= 2.000 (minimum 50% of women)
Total irrigated area (ha) under SPIS installations by the project	0	n/a	n/a	0	900
Number of reports on lessons learned disseminated and published	n/a	n/a	n/a	n/a	3

2.8.2 State of progress of the main activities

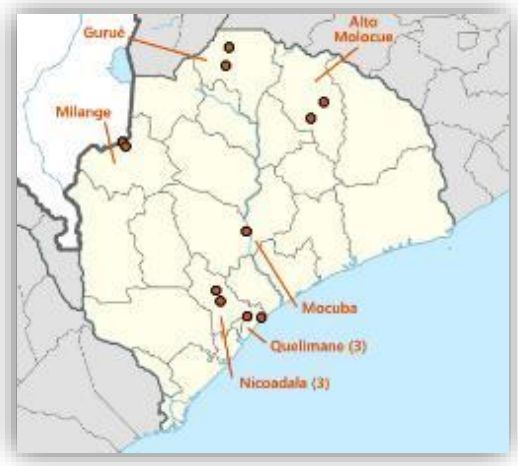
Progress of main activities [16]	**Progress:**			
	A	B	C	D
1 Sites selection and preparatory actions		X		
2 IEC of beneficiaries and partners on SPIS		X		
3 Technical participatory analysis and identification of most promising SPIS options		X		
4 Support acquisition and implementation of SPIS through existing financing mechanisms and actors		X		
5 Continuous learning and adjustment & dissemination of results		X		

2.8.1 Analysis of progress made

[16] A: The activities are ahead of schedule

Sites selection, technical analysis, and identification of most promising SPIS options

In 2018, a feasibility study was commissioned by FUNAE to assess opportunities and constraints of SPIS systems installation in the province of Manica. This study was conducted by the Global Green Growth Institute (GGGI) and served as the basis for the formulation of the irrigation component of the RERD2 project. When Enabel Mozambique secured indications that the irrigation component would be added to the RERD2 program, GGGI was contracted for a second technical study to review the feasibility of SPIS installations in Zambezia. The final results of the Zambezia study were delivered in May 2021. As a result, a) a long list of potential sites has been produced for each province (65 sites in Manica and 78 sites in Zambezia), b) a short list of priority sites has been produced for each province (9 sites in Manica and 12 sites in Zambezia).



Eligibility criteria applied in the selection of sites	
• Category of farmers (S/M/L) • Priority geographical area • Land occupancy • Availability of water • Height difference from river • Population density • Access to Business Dvpt Services • Potential for Youth Inclusion • Potential for Matching Investments	• Status of the beneficiary • Farm accessibility • Soil quality • Distance to water source • Favourable topography • Agricultural labour availability • Potential for Women Inclusion • Experience with irrigation • Access to input and output markets

The first visits to potential sites were carried out by the national experts from September onwards. A digital form (ODK solution based on the Kobo Toolbox platform) is used by the team for collecting onsite data necessary to assess the feasibility and viability of SPIS in line with the above eligibility criteria. During the field visits, irrigation systems have

B The activities are on schedule
C The activities are delayed, corrective measures are required.
D The activities are seriously delayed (more than 6 months). Substantial corrective measures are required.

been mapped using handheld devices such as GPS and tablets to show current and potential irrigation areas.

Mapping of the irrigable areas

Currently, the database contains information from all the 13 program districts. A total of 383 farmers have been identified as possible RERD2+ beneficiaries in the two provinces collectively with a total of 665 potentially irrigable ha.

Reservoir

Molocue river

Overview of the valley

RERD2+ has initiated discussions with the National Fund for Sustainable Development (FNDS) on the procedure that will be applied for the selection of beneficiaries. A first draft of the "Manual for SPIS Kit Procurement" has been prepared. This manual sets out the procedure for identifying beneficiaries, awarding grants and monitoring the implementation and follow-up of co-financed SPIS contracts.

IEC of beneficiaries and partners on SPIS and support for equipment acquisition

A call for proposal has been prepared for a grant(s) to national and/or international NGOs to introduce and promote SPIS technology among producers in pre-selected rural areas. The NGO partner(s) will create awareness and support demand activation for SPIS amongst target farmers. More than 2,000 farmers (including minimum 50 % of women) will be informed and sensitized in the provinces around SPIS (disaggregated per category of farmer, per gender, per province/district). Procurement for the required NGO partner is expected to be completed during the second quarter of 2022.

2.9 Performance 7: The technical and financial capacities of farmers, institutional partners and market actors for a sustainable use of solar powered irrigation systems are enhanced

2.9.1 Progress of indicators

Output 7: The technical and financial capacities of farmers, institutional partners and market actors for a sustainable use of solar powered irrigation systems are enhanced					
Indicators	**Baseline value**	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Number of people trained in new practices for sustainable irrigation and sustainable agriculture	0	n/a	0	0	100% of extensionists, >= 50% of members of associations, 100% of the medium and big individual farmers (including 50% of women)
Satisfaction of end-users regarding the quality of available services on solar pumping irrigation (%)	n/a	n/a	n/a	n/a	>= 80%
Number of appropriate solar powered irrigation technology and practices identified and disseminated	0	n/a	0	0	8 (minimum 2 irrigation practises for each category of crop = 2X4)
Level of knowledge and quality of the maintenance of SPIS by users	n/a	n/a	n/a	n/a	>= 80% with score "A"

2.9.1 State of progress of the main activities

Progress of main activities [17]	Progress:			
	A	B	C	D
1 Support for implementation and use of SPIS and strengthening maintenance		X		
2 Improving sustainable irrigation and agronomic practices linked with SPIS's use		X		
3 Strengthening suppliers distributors and service suppliers of SPIS		X		
4 Build local expertise on SPIS through collaboration with Research centers and learning centers		X		
5 Capacity building of institutional partners with a focus on the provincial and local level		X		

2.9.1 Analysis of progress made

Preliminary visits to research and learning institutions were made during the reporting period with a view to establishing collaborations for learning dissemination to SPIS sector stakeholders. A total of 5 education institutions were engaged as indicated below:

Manica Province	Zambezia Province
Instituto Superior Politécnico de Manica (ISPM)	Instituto Agrária de Milange (IAMI)
Instituto Instituto Agrário de Chimoio (IAC)	University Licungo in Mocuba
Instituto de Investigação Agrária de Moçambique (IIAM)	

Partnership Agreements are currently being finalised with ISPM and IAMI for the establishment of centres of excellence that will be used for training and extension provision to stakeholders in the two provinces.

RERD2+ has prepared a ToR to support engagement of an Expert Consultant to conduct a skills audit of the different SPIS value chain actors. The skills audit will determine actors' current capacity and skills limitations to provide sustainable SPIS services. The final report with full recommendations is expected for mid-April 2022 and will be critical for defining training policy priorities for the sector.

[17] A The activities are ahead of schedule
B The activities are on schedule
C The activities are delayed, corrective measures are required.
D The activities are seriously delayed (more than 6 months). Substantial corrective measures are required.

2.10 Performance 8: Initiatives to foster an enabling environment for private and public investments in the irrigation sector are supported

2.10.1 Progress of indicators

Output 8: Initiatives to foster an enabling environment for private and public investments in the irrigation sector are supported					
Indicators	**Baseline value**	**Value year N-1 2020**	**Value year N 2021**	**Target year N 2021**	**End Target**
Financial mechanism that stimulates investment in SPIS in place	n/a	n/a	n/a	n/a	Financial Mechanism Promoted to be replicated by other market actors
Number of coordination meetings at provincial level with public and private stakeholders from the water, energy and agriculture sector	0	n/a	0	0	12

2.10.2 State of progress of the main activities

Progress of main activities [18]	**Progress:**			
	A	B	C	D
1 Supporting platforms to exchange and coordinate the actions of different actors		X		
2 Support institutional actors in creating an enabling environment for SPIS uptake and dissemination		X		

2.10.3 Analysis of progress made

This result focuses on creating an enabling environment for SPIS's uptake. Main overall challenges that hamper the wider dissemination of SPIS are: (i) lack of coordination between actors and information sharing, (ii) lack of structural finance solutions for end users and (iii) lack of business development services for further growth.

Preliminary contacts have been made at provincial level for the revitalisation of platforms to exchange and coordinate the interventions of the different actors. A first meeting conducted through the provincial platforms is scheduled in Q1 of 2022.

The Terms of Reference for a Specialist Consultant required to support the development of a full enabling environment strategy have been finalized. This assignment which is expected to be completed in Q2 of 2022 will support mapping of sector actors who are involved in lobbying for an enabling environment for the SPIS sector. The results and

[18] A: The activities are ahead of schedule
B: The activities are on schedule
C: The activities are delayed, corrective measures are required.
D: The activities are seriously delayed (more than 6 months). Substantial corrective measures are required.

recommendations from this study will provide a base for the identification of best fit partners with whom RERD2+ will work with under this output.

RERD2+ has also initiated work to identify options/opportunities required to support the design of dedicated public subsidies to SPIS and integration into wider public schemes. Contact has also been initiated with FNDS with a view to operationalise a matching investment facility which will include:

1. Provision of a grant subsidy to selected farmers (between 60 – 80%) of the investment required to purchase and install SPIS.

2. Farmer's payment of a matching investment contribution (between 20 – 40%) of the investment required to purchase and install SPIS. This contribution must be paid either in the form of cash or through a credit facility which the beneficiary must secure.

RERD2+ has commenced procurement of a Financial Expert who will support the full development of the RERD2+ access to finance strategy and action plan. This work will also explore alternative public and private credit facilities that may be available on the market which may be utilised to enable the farmers to adopt SPIS at their farms. The alternative credit options may be through financial institutions and/or through market actors involved in commercial distribution and/or retail of SPIS technologies in the country. This work is expected to be completed by end of March 2022.

2.11 Transversal Themes

The narrative below provides a summary of work performed to facilitate the embedding of transversal themes in the implementation of the RERD2(+) program.

2.11.1 Gender

Subsequent to the study of international literature focusing on identification of differential gender impacts of electricity access reported in 2019, the project worked with the FUNAE gender group[19], that had presented a rather general sketchy plan of FUNAE based gender related activities. In work with this group the project makes a distinction between;

1) FUNAE's own actions that are not necessarily connected to the RERD2 project, and
2) gender actions that fit "firmly" within the logic and plan of the project e.g., those implemented in communities where RERD2 will fund the building of mini-grids.

Themes in the plan, commented and discussed included:

[19] a group of female technicians

- community sensitization on energy - not just electricity - and gender issues.
- ensuring that FUNAE project beneficiary surveys explicitly disaggregate by gender.
- FUNAE technicians general training on gender equality.
- promotion of gender mainstreaming in all ToRs of studies and trainings in order to keep a perspective on the needs and interests of different target groups, and
- exchange of experiences with other institutions on gender issues.

Rural women and youth are also targeted as a priority for improved access to knowledge and information, including capacity building for skills development in SPIS and sustainable agricultural practices. The approach developed considers gender issues at all stages of the project cycle, from participatory assessment and analysis to design, implementation of interventions, monitoring and evaluation. The project has integrated the prioritization of female/youth smallholder farmer entrepreneurs among the eligibility criteria considered for support under the program. The following achievements have been secured during the reporting period:

- Gender Focal Points have been identified and confirmed in the partner institutions (INIR and FUNAE). The focal points will work closely with the RERD2+ Management team to ensure that gender considerations are embedded in all program interventions.

- Procurement for an expert required for the development of a full RERD2+ gender strategy and action plan for 2022 has been initiated. This work is expected to be completed within the first quarter of 2022.

The project is also exploring the possibility of granting preferential conditions to women and women's groups for accessing funding for the acquisition of SPIS equipment.

2.11.2 Environment

Environmental impact studies for hydro- and solar on- and off-grid projects are mandatory by law.

Regarding the hydropower component of the project, it was reported earlier that the feasibility study on the Nintulo hydropower plant collected and systematized all necessary information for the preparation of the hydropower project's environmental impact study[20]. It also conducted a preliminary environmental impact assessment. The final report listed the positive and negative environmental impacts and mitigation measures of the project.

[20] In accordance with Decree 45/2004 of 29 September.

Similar to the hydro feasibility study, the 5 solar mini-grid feasibility studies included a preliminary environmental & social impact assessment to assess risks arising during plant construction and operations. According to the World Bank and FUNAE guidelines, solar mini-grids fall under category "B", meaning only local impacts are expected, with minor negative effects on the surrounding areas and easy to prevent. Indeed, according to the Decree 45/2004, regulating the Environmental Impact Assessment procedures in Mozambique, all solar/hybrid mini-grids projects fall under category "B", requiring only a Simplified Impact Assessment outlining main project features, to be submitted to the DPCA (*Direcção Provincial para a Coordenação da Acção Ambiental*) for authorization. Whereas all the technical features to be highlighted (according to article N° 13 of the Decree 45/2004) are dealt with in the technical chapters of the feasibility reports the section on preliminary environmental impact assessment highlights the mitigation measures for the environmental (and social) aspects. The documents also include a section on environmental monitoring that are and will be guiding work during the preconstruction period and construction foreseen to start in the third quarter of 2022 following the design and procurement phase during the first half of the year.

Given their limited resilience, most farmers in the Manica and Zambezia provinces have an economic and social vulnerability to climate change. The additional component focuses on environmental sustainability and climate change resilience which will be enhanced by testing and adapting options for solar powered irrigation and sustainable agricultural practices improving soil health, water use efficiency, biodiversity, microclimate, and reduced consumption of fuel.

2.11.3 Digitalization

The work on digitalization is partly described in chapter 2.4.3. In order to be complete, we indicate in the box below the applications, instruments, tools and resources applied in the implementation of the project with FUNAE:

- ***QGIS*** and ***drones for river basin analysis*** for hydropower generation
- ***Tablets***, combined with ***Kobo Toolbox***, for data collection (and database feed-in) for Monitoring, Evaluation and Learning
- ***WhatsApp*** groups to pass on data collected in the field on a weekly basis (this also allows for timely verification that data collection is taking place and continuous).
- ***Open-source datasets*** on; - population distribution such as ***Wordpop*** (population and settlements), - ***Gridfinder*** (grid infrastructure estimation), - ***Openbuildings*** (building footprints by Google), - ***Villageinfrastructure*** *and* - ***remote sensing*** for site identification for off-grid energy project planning
- ***Drones for topographic surveys*** and village mapping (for RE locations, hydro and solar) **ArcGIS online** for dissemination of information to the public and private sector

Forthcoming is the installation of a mini-grid remote monitoring system. The ToR have been fully developed for a tender to be launched early 2022.

From March 2019 to the end of February 2021, the project benefitted from the services of a Junior Expert in digital data management. His skills have been highly relevant for the project notably in 'Strengthening of information systems', 'Implementation of remote monitoring systems', 'Implementation of [mobile] payment systems' and 'capacity building' in these areas. The Junior Expert not only contributed to innovative digital data collection in the field, but was also a driving force in improving the functioning of FUNAE's GIS unit and the implementation of measures to pave the way for a future link between the current stand-alone databases in the organisation such as those of the GIS - and the Operations and Maintenance Unit.

His last document '*Metodologia para a identificação de locais adaptados para a construção de mini-redes*'[21] is worth mentioning again in this context because it laid the foundation for FUNAE's capacities in what is undoubtedly one of the most important future tasks of FUNAE's new "Studies and Mobilization Division" i.e. the identification of locations for off-grid electrification projects.

The project Energy Engineer continues to be active and appreciated members of Enabel's 'Digital Believers' group. The objective of this group is to be a community of practice of colleagues interested in digitalization / digital for development and to co-create the operational approach of Enabel in Digital Development.

In the irrigation component the registration and data collection for the identification of priority intervention sites uses digital questionnaires developed in KOBO Collect for real-time processing and immediate compilation of data at national level. During field visits, plots are mapped using GPS and tablets, for both the current and potential irrigation areas, by tracking the extent of the system and fields, and later extracting the areas with simple GIS software.

[21] Methodology for the identification of suitable sites for the construction of mini-grids

The project envisages the implementation of an interactive web application for the cartographic presentation of infrastructure and equipment installed in the field and the rapid visualization of program indicators.

RERD2+ is also in consultation with INIR to explore the possibility of using drones to monitor irrigated areas in the target communities. This work is expected to gain traction during 2022.

2.12 Risk management RERD2 and RERD2 Plus

Risk Identification			Risk analysis			Risk Treatment			Follow-up of risk	
Description of Risk	Period of identify-cation	Risk category	Proba-bility	Potential Impact	Total	Action(s)	Resp.	Deadline	Progress	Status
Instability due to presidential elections in 2019 leads to insecurity in the provinces, which would hamper the implementation of activities and project quality	TFF	OPS	Medium	Medium	Medium	The geographical concentration will be adapted to the security situation. The focus will be on two provinces.	FUNAE	Nov19	Four provinces were initially chosen: Zambezia, Niassa, Nampula and Manica. The Steering committee of May 2018 assigned Zambezia as the project only target province.	**Closed**
						Close monitoring of events in provinces in the run-up to the elections	RR, PMT	Through-out the project period	-	**Closed**
Difficult access to sites due to natural occurrences (heavy rains) which block roads	TFF	OPS	Medium	Medium	Medium	In the planning of activities, consider the period from December – February as months not suitable for works/rehabilitations but for other activities (procurement/acquisition of goods, trainings, etc.)	PMT	Through-out the project period	- For successful actions in 2019 and 2020 see earlier PILOT reports. The current EPC for 5 mini-grids is planned such that the design will take place during the rainy season and the procurement, transport and construction during the dry season of 2022. - Accessibility to the sites is one of the criteria for selection of beneficiaries for Irrigation	In progress
Slow pace of intervention due to procurement procedures	TFF	OPS	Medium	Medium	Medium	Optimized implementation modalities based on lessons learned from RERD1	Enabel / FUNAE	Through-out the project period	The steering committee of December 2019 adopted a RERD2 proposal to transfer funds to a co-management budget line to a regie line to speed up (hydro and solar) feasibility studies	**Closed**

Idem as above	Idem	Idem	Idem	Idem	Idem	Projects will build on existing studies developed by RERD1	Enabel /FUNAE	Through-out project period	(done but because of choices made by FUNAE the number of locations so far was limited to only one location studied by RERD1.	**Closed**
Idem as above	Idem	Idem	Idem	Idem	Idem	All travel, study tours and surveys in Enabel management mode.	Enabel	Through-out project period	Done so far and will continue.	**Closed**
Idem as above	Idem	Idem	Idem	Idem	Idem	Vehicles purchased on RERD1 must be made available to the project staff when needed	Enabel	Through-out project period	Available / in progress	In progress
Idem as above	Idem	Idem	Idem	Idem	Idem	Within the IMU: Procurement expert for the program	Enabel	Through-out project period	Procurement expert available	**Closed** (is on board)
Idem as above	idem	idem	idem	idem	idem	Within the IMU: Support from international RAFi	Enabel	Through-out project period	RAFI available	**Closed** (is on board)
Resistance to change in FUNAE	TFF	OPS	Medium	Medium	Medium	Full-time long term technical assistance with adequate profile regarding capacity reinforcement and change management (see budget line A03 05)	Enabel	Through-out project period	Project recruited 2 ITAs in October 2018 in addition to the one already based in Zambezia province since July 2018. Contract of the Quelimane (province) based capacity building expert, ended on 30 May 2020, was not renewed. The RERD2+ ITA Rural Dvt. started his assignment on 1 May 2021, left 30 September and was replaced by a new ITA on 15 Oct. (but only arrived in Maputo on 6 Dec. 2021)	In progress (the baseline workshop suggested to delete this statement on resistance from this risk managemen t table
Idem as above	idem	idem	idem	idem	idem	Budget for activities and support devoted to sustain change processes (see Z03 04 Missions cost)	Enable	Through-out project period	Available	
Idem as above	idem	idem	idem	idem	idem	Involve FUNAE staff on change processes and build on the high degree	Enabel	Through-out	In progress	

						of openness showed by the management of FUNAE.		project period		
Low private sector interest for operating mini-grids	TFF	DEV	High	High	Very High	The intervention works on several axes, including with other actors than the private sector.	Enabel / FUNAE	Through-out project period	Being undertaken.	In progress
Idem as above	idem	idem	idem	idem	idem	Create enabling conditions for private sector interest in mini-grids, including receptiveness of FUNAE (activity R1.A2 , R3.A4)	Enabel / FUNAE	Through-out project period	On 14 September 2021 the GoM approved a Decree on the Regulation for Off-Grid Energy Access. It is a major milestone, providing clarity to all stakeholders and ensures the necessary conditions for the private sector to develop its activities and protect its investments. The regulation defines the framework and principles on all relevant topics for mini-grids, Solar Home Systems and Improved Cooking Stoves. The Decree will be accompanied by specific regulations.	In progress
Idem as above	idem	idem	idem	idem	idem	Start with outsourcing only operation and maintenance (O&M)	Enabel /FUNAE	Through-out project period	To date there is no outsourcing of O&M -	In progress
Idem as above	idem	idem	idem	idem	idem	Make a thorough economic feasibility study and attract private sector with interesting business models	Enabel / FUNAE	Through-out project period	All feasibility studies undertaken so far (for hydro and solar based mini-grids) contain advice on business models.	In progress
Idem as above	idem	idem	idem	idem	idem	Involve private sector from the start and build a sustainable model for public-private partnership for the operation of grids.	Enabel / FUNAE	Through-out project period	Pending approval, a new legal framework (notably adoption of the new electricity law) and in order to -already attract the private sector the project collaborates with other donor initiatives aimed at the preparation and ministerial approval of special	In progress

									exemptions for the private sector in close cooperation with the Ministry of Energy.	
Idem as above	idem	idem	idem	idem	idem	Envisage other management modes than the private sector	Enabel / FUNAE	Through-out project period	The project placed a national expert in FUNAE in October 2022 with a contract of two years to, among others, assist FUNAE moving forward in thinking about alternative business models. However more traditional management models are for the time being likely to be applied in the RERD2-funded mini-grids	In progress
Idem as above	idem	idem	idem	idem	idem	Small mini-grids can be clustered for operation & maintenance to form an attractive package	Enabel / FUNAE	Through-out project period	Clustering of mini-grids has effectively been proposed to FUNAE (to date one inland / agriculture area cluster and one coastal / fishing area cluster).	**Closed**
Idem as above	idem	idem	idem	idem	idem	Make a careful selection of sites and target large sites with economic potential	Enabel / FUNAE	Through-out project period	Sites have been rigorously screened in 2019 resulting in selection of 25% of the FUNAE proposed Zambezia project pipeline. Exhaustion of the Zambezia project pipeline and requests from the partner (FUNAE) have led to inclusion of 2 sites in the neighboring Nampula province in a feasibility study completed in November 2020. A new GIS/satellite imagery assisted methodology and a concrete identification of 27 areas for further study were proposed in September 2020. FUNAE is works on follow-up.	**Closed**
Financial sustainability of the	TFF	DEV	High	High	Very High	Better estimation and budgeting of OM costs I Feasibility studies	Enabel / FUNAE	Through-out	Estimation of OM costs are included in all ToR for mini-grid feasibility studies and will	In progress

systems is problematic								project period	be / are included for SPIS studies.	
Idem as above	idem	idem	idem	idem	idem	Continue implementation of preventive maintenance (reducing OM Costs)	Enabel / FUNAE	Through-out project period	This action is handicapped by limited operational budget of FUNAE imposing travel restrictions of OM staff	**Closed**
Idem as above	idem	idem	idem	idem	idem	Make a strong users awareness campaign on correct use of systems (PV) to lower OM costs (reducing OM Costs)	Enabel / FUNAE	Through-out project period	A Junior expert proposal to work - among others - on this aspect - has been positively received in HQ Brussels. The new junior (the 2nd) was selected early July 2020 and arrived / took up his duties in mid-April 2021 and now for extended periods in the field / target communities..	In progress
Idem as above	idem	idem	idem	idem	idem	Inform the authorities on real OM costs of mini grids and advocate for government subsidies (increasing OM resources)	Enabel / FUNAE	Through-out project period	Indicative (high) OM cost have been demonstrated through some field missions to selected mini-grids in the provinces of Manica and Niassa. Reports were distributed among division heads in FUNAE.	In progress
Idem as above	idem	idem	idem	idem	idem	Propose a well-studied adapted tariff structure (increasing OM resources)	Enabel / FUNAE	Through-out project period	This subject was included in the ToR of all mini-grid feasibiliy studies sofar and remains key object of collaboration between different donor projects in the RE domain.	In progress
Idem as above	idem	idem	idem	idem	idem	Increase revenue collection by generalizing use of pre-payment systems (R2 A3) (increasing OM resources)	Enabel / FUNAE	Through-out project period	Different prepayment systems are being studied by the project in collaboration with FUNAE's operations and maintenance unit.	In progress
Idem as above	idem	idem	idem	idem	idem	Involve local authorities at the planning stage and define their role in the project to increase willingness to pay (increasing OM resources)	Enabel / FUNAE	Through-out project period	Local authorities of 5 communities were consulted in August / Sept 2020 in the context of feasibility studies. Involvement of authorities in Nintulo (fydro site) were	In progress

									reported in the 2019 annual report.	
Idem as above	idem	idem	idem	idem	idem	Design the project in a rural development perspective that promotes economic uses of energy to increase ability to pay (thus increasing OM resources)	Enabel / FUNAE	Through-out project period	Economic use is at the core of all discussions on site selection and decision and the reason why 80% of the pipeline sites were rejected	In progress
Lack of policy and regulation for mini-grids hampers private sector interest. No operational independent regulator.	TFF	DEV	Medium	Medium	Medium	Planned establishment of ARENE as independent regulator	ARENE	Through-out project period	ARENE's CEO was (finally) nominated in November 2019.	**Closed**
Idem as above	idem	idem	idem	idem	idem	Support from CBMIREME to ARENE on regulatory functions	Enabel	Through-out project period	Significant progress has been made in a joint effort between MIREME, ARENE and specialists from different donors (including RERD2) to propose a new regulatory framework for minigrids that was adopted by the end of Dec. 2021. The new regulatory framework in Mozambique paves the way for increased private sector activity in the RE sector.	In progress
Idem as above	idem	idem	idem	idem	idem	Undertake seminars targeted at the private sector on regulatory issues	Enabel / FUNAE / ARENE	throughout project period	In 2020 the RERD2 intervention manager was part of a ALER web conference on private sector involvement. In April 2021 21 the RERD2 intervention manager moderated an international RENPOWER RE webinar session on this subject. Both mentioned	In progress

									webinars involved a few hundred webinar participants. These action continued in 2021 incl. FACIM in Sept. 2021 and continue in 2022 (ALER/AMER webinar, ...)	
High numbers of non-functioning RERD1 installations	TFF	REP	High	High	Very High	Capacity building, monitoring systems and reinforcement of FUNAE Delegations (R2; R3)	Enabel / FUNAE	Through-out project period	A project report on a Sept. 2019 sample survey of 377 RERD1 systems indicates 61.7% as functional - against 50% as indicated in the project document, 22.6% out of service and 15.7% as problematic. Approximately 70 % of the breakdowns are due to problems with the batteries (38%) and/or the inverter (32%). In the meantime, FUNAE is phasing out maintenance of small systems after transfer of systems to sectoral ministries (education and health)	**Closed**
Technical failure or low quality of mini-grid construction	TFF	REP	Medium	High	High	Strong ITA; review of feasibility studies (R1 A1)	Enabel	Through-out project period.	The feasibility study on 5 solar mini-grids was carried out by a reputable company with a wealth of international experience. The EPC tender will also have to result in the selection of (a) renowned Engineering, Procurement and Construction company (companies).	**Closed**
Import taxes exemption not granted	TFF	FIN	High	Low	Medium	Request (import and VAT) tax exemption for the importation of quality PV systems	Enabel	Through-out project period	VAT and tax exemption has been on the agenda of every steering committee and an exchange of letters (with a solution) has been successful. Mozambique and FUNAE have committed in 2021 to DIRECTLY paying VAT and duties which led the project to award five instead	In progress

									of four minigrid EPC contracts.	
Idem as above	idem	idem	idem	idem	idem	Cooperation with other donors to put reduction of fiscal barriers as a priority	Enabel	throughout project period	Actions are coordinated within the Energy Sector Wide Group (ESWG) of donors.	In progress
Idem as above	idem	idem	idem	idem	idem	Use locally produced TUV certified PV panels	Enabel / FUNAE	Through-out project period	-	**Closed**
Low value for money of bids for construction contracts	TFF	FIN	High	High	Very High	Publish tenders in English; publish internationally	Enabel / FUNAE	Through-out project period	Tenders for 'Engineering, Construction and Design' (EPC) published in July 2020 and in March 2021 were published in Portuguese and English and nationally and internationally..	**Closed**
Idem as above	idem	idem	idem	idem	Very High	Make feasibility studies of high quality (R1.A1)	Enabel	Through-out project period	The project's first feasibility study on a hydro installation in Nintulo, Zambezia province is of high quality while representing very good value for money. The first PV hybrid feasibility study tender resulted in 18 offers of which 8 passed the selection stage resulting in the evaluation of 8 quality offers of which the best (value for money) proposal was selected. The resulting study of 5 sites was of high quality.	**Closed**
Idem as above	idem	idem	idem	idem	idem	Tender in euros	Enabel	Through-out project period	Tender documents state that all prices must be given in EUR (euros) or MZN (Mozambican Meticais) while 'similar services' are to be given in EUR equivalent(s).	**Closed**
Idem as above	idem	idem	idem	idem	idem	Split tenders for power plant and for distribution network	Enabel / FUNAE	Through-out	Splitting tenders for power plant and for distribution network makes sense in the	**Closed**

								project period	case of hydro plants but not in the case of solar/hybrid mini-grids under 400-500 kW. Splitting the tenders increases costs and management problems (delays) because the project would need to coordinate 2 companies on the field, manage 2 contracts, etc. Since the project will only invest in hybrid solar mini-grids and not anymore in hydro plants splitting tenders has become irrelevant	
Establishment of capital controls on foreign currency accounts in Mozambique	TFF	FIN	Low	High	Medium	Derogation to have a DB EURO account in co-management	Enabel	Through-out project period	See status	**Closed**
Forced conversion of foreign currency accounts into local currency	TFF	FIN	Low	High	Medium	Derogation to have a DB EURO account in co-management	Enabel	Through-out project period	See status	**Closed**
Devaluation of the local currency	TFF	FIN	Medium	High	High	Derogation to have a DB EURO account in co-management	Enabel	Through-out project period		In progress
Delayed refund of VAT	TFF	FIN	High	High	Very	Continue with the existing set up for VAT compensation as in RERD1	Enabel / FUNAE	Through-out project period	Is on the agenda of each Steering Committee to date. Awaiting conclusive action from government.	In progress
Idem as above	idem	idem	idem	idem	Idem	After the first two years of project execution, make an assessment of VAT refund.	Enabel	Through-out project period		In progress
Idem as above	idem	idem	idem	idem	idem	Exchange of letters ongoing with the support of the diplomatic office so	Enabel	Through-out	MEF signed amended SC and FUNAE committed to paying VAT and duties	**Closed**

						that the MEF is involved as a signatory to the Specific Convention (not the case only MAE which gave the mandate to the technical Ministry to sign the Specific agreement. The MEF is responsible for the reimbursement of VAT since 2015.		project period	directly causing the project to award contracts for five mini-grids instead of 4.	
Poor public contract and action plan execution performance owing to the COVID Pandemic	Q1 2020	OPS	High	Medium	High	Extend deadline of submission of tender offers.	Enabel	Through-out project period	Deadline of submission of offers on the "Feasibility study for hybrid mini-grids in Zambézia and Nampula, Mozambique" was extended with 1 week . The deadline for submission of expressions of interest for the EPC tender of March 2021 was extended with 1 week.	**Closed**
Idem as above	idem	idem	idem	idem	idem	Extension of the period the tender is open.	Enabel	Through-out project period	Tender period was extended with two weeks because of the COVID19 outbreak.	**Closed**
Idem as above	idem	idem	idem	idem	idem	Foresee addenda of the contract if COVID19 (travel) restrictions hamper implementation of the feasibility study.	Enabel	Through-out project period	Addenda was not necessary. Study was completed within deadline.	**Closed**
Idem as above	idem	idem	idem	idem	idem	Postpone (training) activities	Enabel	Through-out project period	- 6th ARE, Energy Access Investment Forum (18-19 March) postponed - MGA (Micro Grid Academy) training (16-20 March) 11 FUNAE staff completed - Excel Training of 27 FUNAE staff completed	**Closed**
Idem as above	idem	idem	idem	idem	idem	Organise trainings online	Enabel	As long as needed	Since mid-2020 a maximum possible of number of courses / training sessions (either internal or with external service	In Progress

									providers) take place online. This appears quite successful as it results in high(er) participation rates. In this context it has been important to provide necessary means to the partner that was only using desktops. Laptops provide for more flexibility / mobility.	
10002/10003 Late award of contract for the EPC (co-management) of the mini-grids of Alto Benfica and Mungalama due to a slow negotiation process with FUNAE on selection and exclusion criteria.	Q2 2020	OPS	Medium	Medium	Medium	Contact FUNAE CEO as soon as advice is obtained from the Deloitte auditors.	CEO FUNAE	Q2/3 2020	Deloitte has been approached to provide advice on legality of FUNAE selection and exclusion criteria. Deloiitte's advice was extremely useful and project 'won' on all fronts in negotiations with the partner on potentially) problematic issues in tender text. In the meantime, the SC of 7 Dec 2020 decided to implement all EPCs under regie. This risk is closed and not anymore classified as PRIORITY.	**Closed**
10002/10003 Late start of contract execution of the EPC (co-management) of the minigrids of Alto Benfica and Mungalama due to delays in the advice from the public prosecutor office and/or	Q1	OPS	Medium	Medium	Medium Risk	If after 54 days the administrative court has not answered FUNAE concerning the submitted contract the RERD2 intervention manager will ask the FUNAE project co-Director and UGEA/FUNAE to send a letter to the administrative court stating that the legal period of 54 days has passed and that FUNAE will proceed with the execution of the contract.	FUNAE Change Manager	Q2/3 2020	In the meantime, the SC of 7 Dec 2020 decided to implement all EPCs under regie	**Closed**

the administrative court's position.										
Limited access to the field and/or limited availability of national and international expertise due to Covid19 restriction	Q1	OPS	Medium	Medium	Medium	• Boost use of digital communication means • Pay special attention to Terms of reference for assignments • Foresee additional NTA at provincial levels additionally to ITA	Enabel	Through-out project period		In progress
Irrigation component : Limited interest and/or resistance to change	Q1/'21	OPS	Medium	High	High	Full-time long term technical assistance with adequate profile regarding capacity reinforcement and change management	Enabel			**Closed**
Idem	Idem	Idem	Idem	Idem	idem	Budget for activities and support devoted to sustain change processes	Enabel	01/01/22	IEC of beneficiaries and partners on SPIS : CSub / grant NGO in preparation	In progress
Idem	Idem	Idem	Idem	Idem	Idem	Involve partners in change processes	Enabel	01/09/21		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Reinforced presence of technical assistance at provincial level	Enabel	01/08/21	2 ATN in place in provinces	**Closed**
Irrigation component : Depletion of water resources	Q1/21	OPS	Low	High	Medium	Choice of provinces with abundant water resources	Enabel			**Closed**
Idem	Idem	Idem	Idem	Idem	Idem	Inclusion of a specific criteria related to surface water availability for sites/landscape selection	Enabel		Water availability is one of the criteria for selection of beneficiaries	**Closed**
Idem	Idem	Idem	Idem	Idem	Idem	Research action to strengthen water resource monitoring at landscape level	Enabel			Planned

Idem	Idem	Idem	Idem	Idem	Idem	Diffusion of best irrigation and agricultural practices	Enabel			Planned
Irrigation component : Land tenure insecurity	Q1/21	OPS	High	Low	Medium	Consider land registrations before installing irrigation schemes	Enabel	01/09/21	Status of the beneficiary / association is one of the criteria for selection of beneficiaries	**Closed**
Idem	Idem	Idem	Idem	Idem	Idem	Introduce a criteria related to land and conflict (no implementation of activities in conflict prone areas)	Enabel	01/09/21	Risk of conflicts is one of the criteria for selection of beneficiaries	**Closed**
Irrigation component : Low private sector interest for investing in solar powered irrigation	Q1/21	DEV	Medium	High	High	Create enabling conditions for private sector interest in solar irrigation, including receptiveness of FUNAE	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Start with outsourcing only operation and maintenance	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Undertake a thorough economic feasibility study and attract private sector with interesting business models	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Make a careful selection of sites and target sites with economic potential	N/A	N/A		In progress
Irrigation component : Low sustainability of capacity building activities of state partners (high staff turnover...)	Q3/21	DEV	Medium	Medium	Medium	Mobilize national and/or international NGO's through grants	N/A	01/01/22		Planned

Idem	Idem	Idem	Idem	Idem	Idem	Promoting PPP	N/A	N/A		Planned
Irrigation component : Complexity of implementing micro-projects scattered over a very large area	Q3/21	DEV	High	Medium	High	Start with a small number of priority districts and gradually expand the intervention	Enabel	01/10/21	Prioritization of districts underway with the support of provincial partners	**Closed**
Irrigation component : High numbers of non-functioning SPIS installations	Q1/21	REP	High	High	Very High	Capacity building, monitoring systems and reinforcement of provincial actors and Delegations	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Reinforced technical assistance in the field	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Ensure a sustainable access to SPIS material, spare parts and advice by strengthening local suppliers and distributors of SPIS	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Close monitoring by project staff	N/A	N/A		Planned
Irrigation component : Technical failure or low quality of SPIS construction	Q1/21	REP	Medium	High	High	Strong technical assistance	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Review of feasibility studies	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Appropriate technical specifications	N/A	N/A		Planned

Idem	Idem	Idem	Idem	Idem	Idem	Requirements for the acquisition of quality equipment and materials	N/A	N/A		Planned
Irrigation component : Large number of thefts / vandalism	Q2/21	REP	High	High	Very High	Community outreach work	N/A	N/A		Planned
Idem	Idem	Idem	Idem	Idem	Idem	Anti-burglary infrastructure	N/A	N/A		Planned
The energy crisis in the EU and the tightened GHG targets and COVID in China lead to increased demand for, and slower delivery, of essential PV components for mini-grids shifting the end dates for the completion of mini-grids.	Q1/21	OPS	High	High	Very High	Allow the companies to vary their BAFO's i.e. accept alternative brands more available on the market	Enabel			Planned

3 Steering and Learning

3.1 Strategic re-orientations

Below the narrative on strategic re-orientations of the RERD2 mini-grid component and the RERD2+ irrigation component,

3.1.1 Mini-grid electrification component

The partner's initial strategy prioritizing the development of one particular hydro based mini-grid in Nintulo and the outcome of the feasibility study in this location (referred to in Chapter 2.3.3) led on the one hand to the identification of a highly attractive hydro project but at the same time excluded the realization of this or any other hydro mini-grid within the timeframe of the project. Work on hydro energy continues at the request of the steering committee but only as preparation of the dossier for the construction of a grid connected hydro power plant of a downwardly revised potential of 3-3.5 Megawatt. The provisional timetable for implementation indicates that this plant could be completed by 2027.

Regarding solar mini-grids, the project was initially guided by FUNAE's renewable energy atlas and the organization's project pipeline. This pipeline indicated the sites to be further explored through pre-feasibility and feasibility studies. More than twenty locations were investigated on site. On the basis of the criteria listed in the TFF the project selected the most interesting locations for further investigation. Some locations were removed from the list, sometimes at quite an advanced stage (even after approval of the steering committee), because it became clear at some point that EDM was going to electrify the sites. This was the case for Naburi and Alto Benfica. Others were dropped because after the feasibility study it was clear that the location no longer met the selection criteria. This was the case for Namanla. The process led to the project exhausting all potential locations in Zambezia, reason why it opened up for another province[22].This extra province became Nampula. After finalization of all comprehensive technical and financial feasibility studies and award of contracts in December 2021 the project will proceed with the construction of **mini-grids** in **two clustered inland locations** in the North of **Nampula**, **two clustered coastal locations** in **Zambezia**, and – considering FUNAE's commitment to directly pay VAT and duties - **a fifth location** inland in Zambezia.

The transfer of small solar energy systems, 698 of which were financed by RERD1, to sector ministries (notably those of education and health) means that FUNAE can no longer claim income from these systems and refrains – at least partly – from maintaining them. This has led to a reorientation of work of the operations and maintenance unit and the GIS unit, and consequently their needs for support from the project. Both units are now more focused on micro- and mini-grid operations and on off-grid energy planning than on asset management of small systems.

[22] It is worth recalling that the project document (TFF) proposes to focus geographically on a maximum of two provinces, to be chosen from Zambezia, Nampula, Niassa and Manica. The first steering committee of May 2018 however had chosen only one province, namely Zambezia.

With the above in mind and since the approval of the new regulation for energy access in off-grid areas[23] in Mozambique and the fact that FUNAE is currently at a crossroads, where decisions taken today will affect the institutional future for a long time to come, the time has also come to question whether developing O&M capacity within the current FUNAE organisation is the right way forward.

The upcoming changes in the FUNAE organisation chart, the addition of an extra irrigation component and partners (MADER and INIR) and a doubling of the budget have an impact on the operation of the project going forward. The RERD2+ component will reach cruising speed by the time the project as a whole reaches its midpoint in 2022. The challenge will be to propose strategic (re)orientations for the remaining three years of project implementation, to be validated in the upcoming mid-term review.

3.1.2 Solar powered irrigation component (SPIS)

Acceleration of programme implementation

RERD2+ notes that some implementation time was lost particularly in 2021 due to COVID-19 induced constraints which limited activity in the target locations. Delays related to the recruitment of key personnel also compromised the speed of programme delivery. The 2022 workplan therefore has been structured to ensure that RERD2+ secures increased presence in the programme locations. The effort to ensure speedy implementation of scheduled work in the programme locations is also intended to protect stakeholder confidence and commitment to the programme. The increased effort to accelerate implementation of the programme activities will however be balanced with the critical need to ensure the technical integrity of all interventions in terms of technical best practice.

Strengthening programme transparency and accountability

RERD2+ has prioritised the need to enhance accountability systems during programme delivery. This will include operationalisation of an auditable beneficiary selection and contracting process, refining the programme Monitoring, Evaluation and Learning (MEAL) systems. This will also include programme reporting to stakeholders at defined intervals to ensure programme performance management and positioning on the market. RERD2+ will recruit two Junior Experts who will focus on MEAL.

Coordination of RERD2+ SPIS component activities with Partners

RERD2+ acknowledges that sustainable rural development in the target programme locations will require coordinated, complementary efforts with other actors/programmes such as the United Kingdom Foreign Commonwealth Office (FCDO) funded BRIHLO initiative, World Bank supported IRRIGA and SUSTENTA programmes. In this respect, the 2022 workplan and implementation approach is engineered to ensure that platforms for cross fertilisation of efforts and learning are promoted to ensure increased complementarity with other programmes.

[23] paving the way for increased private sector investments in mini-grids

Embedding cross cutting themes

RERD2+ acknowledges the crucial importance of cross cutting themes such as gender, youth and sustainable protection of the environment. The 2022 workplan includes development of a clear gender strategy and action plan to guide programme implementation. The Expert Consultant who will be engaged is expected to work closely with the gender experts at FUNAE and INIR to promote peer learning and cross fertilisation of practical implementable ideas between the technical experts. The 2022 workplan has also prioritised provision of gender specific training to the RERD2+ implementation team and partner institutions to strengthen the skills set within the team.

Public Private Partnerships

RERD2+ acknowledges the importance of public-private partnerships in the promotion of SPIS in Mozambique. To ensure the sustainability of these partnerships, the 2022 workplan has prioritised creation of platforms for stakeholder dialogue on SPIS sector constraints and opportunities. This will include engagement on policy bottlenecks and promoting solutions that promote achievement of win – win scenarios for the stakeholders involved in the sector. Working closely with the Netherlands Development Organisation (SNV), RERD2+ will seek to promote private sector investments in SPIS for demand activation, product retailing and technical backstopping

3.2 Recommendations

Recommendations	Actor	Deadline
Continue with the Nintulo SHPP studies leading to the formulation of an EPC tender	IM/RERD2/FUNAE	2023
Build 2 mini-grids in Nampula (Muite and Milhana) and 3 mini-grids in Zambezia (Mugulama, Alto Maganha and Idugo island)	IM/RERD2/FUNAE	Q1 2023
Finalize negotiations and award a contract for the supervision of the building of 4 to 5 mini-grids	PM/RERD2	Q1 2022
For the coming years y+1 (2021, 2022…) include in the FUNAE budget the equivalent total VAT amount for the construction of mini-grids and the purchase of associated equipment (meters, prepaid system, remote monitoring system);	FUNAE	2022, 2023, 2024
Continue to support the O&M and the GIS units in their work on micro- and mini-grids and off-grid energy planning	IM/RERD2	2022, 2023, 2024
Develop a capacity building plan for FUNAE including tailored trainings to staff adapted to new FUNAE needs.	IM/RERD2	2022
Continue to support FUNAE in its process to evolve into a genuine fund.	IM//RERD2/FUNAE	2022, 2023, 2024
Formally invite a representative of the Ministry of Agriculture and Rural Development (MADER) to	MIREME	Q1 2022

the RERD2(+) steering committee after having shared the RERD2+ document with all institutions involved and after having obtained all necessary Mozambican and Belgian approvals. (MADER) in the Steering Committee RERD2 (+).		
Conduct an SPIS skills audit to determine capacity building requirements in the SPIS sector and align training courses to identified skills requirements of market actors	IM/RERD2+	Q2 2022
Develop a clear strategy to guide engagement with education institutions for SPIS demand activation and formulation of training courses for stakeholder capacity strengthening.	IM/RERD2+	Q2 2022
Develop implementation strategy for the promotion of an enabling environment for the SPIS sector including mapping of potential partners and identification of policy bottlenecks that require attention	IM/RERD2+	Q2 2022
Develop a capacity building plan for INIR including tailored trainings to staff to enhance partner operational capacity in preparation of RERD2+ exit.	IM/RERD2+	Q2 2022
Undertake a project Mid-Term Review	PM/RERD2	Q3 2022

3.3 Lessons Learned

Hereunder we list the lessons learned to date.

Lessons Learned	Target group
Involving communities in - data collection for - project preparation (such as in Nintulo) results in excellent community buy-in but increases the need for managing the community's 'revolution of rising expectations'	Enabel, FUNAE, beneficiary communities
The development of rural off-grid electrification projects requires continuous contact with the national on-grid utility, especially before launching a tender for mini-grids. Coordination between EDM (on-grid) and FUNAE (off-grid) should be ensured at ministerial level.	MIREME, FUNAE, EDM, projects in the off-grid energy domain
Before investment decisions are taken, mini-grid projects require pre-feasibility studies, followed by comprehensive socio-economic and technical feasibility studies and, due to their complexity, carefully considered tendering procedures, especially in a context like Mozambique where there is little or no experience with mini-grids to date.	Enabel & mini-grid projects developed under public funding
The co-management modality in Mozambique discourages international companies from bidding on public tenders for relatively important infrastructural works as all documentation must be submitted in Portuguese, stamped by a sworn translator, while, in addition, some of the documentation to be submitted is of a distinctly Mozambican administrative nature and not necessarily in possession of the tenderer.	Enabel, FUNAE, public sector

Enabel lacks instruments that provides scope for project assistance to private actors willing to take risks in investing in mini-grids. If Enabel wants to work on innovative ways for private sector development in the energy domain, or another field, it must equip itself with tools such as for example catalytic grants and/or results-based financing. In line with the above it is important that Enabel develops capacity in supporting partners for blended finance for large infrastructural works financed through a combination of grants, loans and private capital.	Enabel, private sector
In a country the size of Mozambique, geographical concentration and clustering of project activities and investments is necessary to increase the effectiveness of project operations and thus have a tangible impact on socio-economic development.	Enabel
Private sector companies such as SolarWorks have started operationalising Pay As You Go (PAYG) schemes designed to improve farmer's financial capacity to purchase SPIS equipment in Mozambique. The effectiveness of these PAYG facilities as an alternative method of SPIS equipment financing seems to be encouraging but there is need to further review results from the model.	SPIS public and private sector stakeholders in Mozambique.
Private sector agribusiness companies in Mozambique are the main users of irrigation solutions in the country. The linkage however between these agribusiness companies and INIR remains very weak. There is need to explore mechanisms to strengthen collaboration between the agribusiness firms and INIR to promote more inclusive cooperation for sector growth.	INIR, private agribusiness companies
Only 40% of private sector companies are providing after sales services to farmers who would have purchased SPIS solutions to support correct installation and use of the technologies. There is need to explore how more companies can be incentivised to provide full package of services (including after sales support) to SPIS users.	SPIS public and private sector stakeholders in Mozambique.

Annexes

3.4 Quality criteria

1. RELEVANCE: The degree to which the intervention is in line with local and national policies and priorities as well as with the expectations of the beneficiaries					
In order to calculate the total score for this quality criterion, proceed as follows: 'At least one 'A', no 'C' or 'D' = A; Two times 'B' = B; At least one 'C', no 'D'= C; at least one 'D' = D					
Assessment RELEVANCE: total score		**A**	**B**	**C**	**D**
		X			
1.1 What is the present level of relevance of the intervention?					
X	**A**	Clearly still embedded in national policies and Belgian strategy, responds to aid effectiveness commitments, highly relevant to needs of target group.			
	B	Still fits well in national policies and Belgian strategy (without always being explicit), reasonably compatible with aid effectiveness commitments, relevant to target group's needs.			
	C	Some issues regarding consistency with national policies and Belgian strategy, aid effectiveness or relevance.			
	D	Contradictions with national policies and Belgian strategy, aid efficiency commitments; relevance to needs is questionable. Major adaptations needed.			
1.2 As presently designed, is the intervention logic still holding true?					
	A	Clear and well-structured intervention logic; feasible and consistent vertical logic of objectives; adequate indicators; Risks and Assumptions clearly identified and managed; exit strategy in place (if applicable).			
X	**B**	Adequate intervention logic although it might need some improvements regarding hierarchy of objectives, indicators, Risk and Assumptions.			
	C	Problems with intervention logic may affect performance of intervention and capacity to monitor and evaluate progress; improvements necessary.			
	D	Intervention logic is faulty and requires major revision for the intervention to have a chance of success.			

2. EFFICIENCY OF IMPLEMENTATION TO DATE: Degree to which the resources of the intervention (funds, expertise, time, etc.) have been converted into results in an economical way					
In order to calculate the total score for this quality criterion, proceed as follows: 'At least two 'A', no 'C' or 'D' = A; Two times 'B', no 'C' or 'D' = B; at least one 'C', no 'D'= C; at least one 'D' = D					
Assessment EFFICIENCY : total score		**A**	**B**	**C**	**D**
			X		
2.1 How well are inputs (financial, HR, goods & equipment) managed?					
X	**A**	All inputs are available on time and within budget.			
	B	Most inputs are available in reasonable time and do not require substantial budget adjustments. However, there is room for improvement.			
	C	Availability and usage of inputs face problems, which need to be addressed; otherwise results may be at risk.			
	D	Availability and management of inputs have serious deficiencies, which threaten the achievement of results. Substantial change is needed.			

2.2 How well is the implementation of activities managed?		
	A	Activities implemented on schedule
X	**B**	Most activities are on schedule. Delays exist, but do not harm the delivery of outputs
	C	Activities are delayed. Corrections are necessary to deliver without too much delay.
	D	Serious delay. Outputs will not be delivered unless major changes in planning.
2.3 How well are outputs achieved?		
	A	All outputs have been and most likely will be delivered as scheduled with good quality contributing to outcomes as planned.
X	**B**	Output delivery is and will most likely be according to plan, but there is room for improvement in terms of quality, coverage and timing.
	C	Some output are/will be not delivered on time or with good quality. Adjustments are necessary.
	D	Quality and delivery of outputs has and most likely will have serious deficiencies. Major adjustments are needed to ensure that at least the key outputs are delivered on time.

3. EFFECTIVENESS TO DATE: Degree to which the outcome (Specific Objective) is achieved as planned at the end of year N				
In order to calculate the total score for this quality criterion, proceed as follows: 'At least one 'A', no 'C' or 'D' = A; Two times 'B' = B; At least one 'C', no 'D'= C; at least one 'D' = D				
Assessment EFFECTIVENESS: total score	**A**	**B**	**C**	**D**
		X		

3.1 As presently implemented what is the likelihood of the outcome to be achieved?		
	A	Full achievement of the outcome is likely in terms of quality and coverage. Negative effects (if any) have been mitigated.
X	**B**	Outcome will be achieved with minor limitations; negative effects (if any) have not caused much harm.
	C	Outcome will be achieved only partially among others because of negative effects to which management was not able to fully adapt. Corrective measures have to be taken to improve ability to achieve outcome.
	D	The intervention will not achieve its outcome unless major, fundamental measures are taken.
3.2 Are activities and outputs adapted (when needed), in order to achieve the outcome?		
	A	The intervention is successful in adapting its strategies / activities and outputs to changing external conditions in order to achieve the outcome. Risks and assumptions are managed in a proactive manner.
X	**B**	The intervention is relatively successful in adapting its strategies to changing external conditions in order to achieve its outcome. Risks management is rather passive.
	C	The intervention has not entirely succeeded in adapting its strategies to changing external conditions in a timely or adequate manner. Risk management has been rather static. An important change in strategies is necessary in order to ensure the intervention can achieve its outcome.
	D	The intervention has failed to respond to changing external conditions, risks were insufficiently managed. Major changes are needed to attain the outcome.

4. POTENTIAL SUSTAINABILITY: The degree of likelihood to maintain and reproduce the benefits of an intervention in the long run (beyond the implementation period of the intervention).		
In order to calculate the total score for this quality criterion, proceed as follows: At least 3 'A's, no 'C' or 'D' = A ; Maximum two 'C's, no 'D' = B; At least three 'C's, no 'D' = C ; At least one 'D' = D		
Assessment POTENTIAL SUSTAINABILITY : total score	**A**	
		X
	B	
	C	
	D	
4.1 Financial/economic viability?		
	A	Financial/economic sustainability is potentially very good: costs for services and maintenance are covered or affordable; external factors will not change that.
	B	Financial/economic sustainability is likely to be good, but problems might arise namely from changing external economic factors.
X	**C**	Problems need to be addressed regarding financial sustainability either in terms of institutional or target groups costs or changing economic context.
	D	Financial/economic sustainability is very questionable unless major changes are made.
4.2 What is the level of ownership of the intervention by target groups and will it continue after the end of external support?		
	A	The steering committee and other relevant local structures are strongly involved in all stages of implementation and are committed to continue producing and using results.
X	**B**	Implementation is based in a good part on the steering committee and other relevant local structures, which are also somewhat involved in decision-making. Likeliness of sustainability is good, but there is room for improvement.
	C	The intervention uses mainly ad-hoc arrangements and the steering committee and other relevant local structures to ensure sustainability. Continued results are not guaranteed. Corrective measures are needed.
	D	The intervention depends completely on ad-hoc structures with no prospect of sustainability. Fundamental changes are needed to enable sustainability.
4.3 What is the level of policy support provided and the degree of interaction between intervention and policy level?		
	A	Policy and institutions have been highly supportive of intervention and will continue to be so.
X	**B**	Policy and policy enforcing institutions have been generally supportive, or at least have not hindered the intervention, and are likely to continue to be so.
	C	Intervention sustainability is limited due to lack of policy support. Corrective measures are needed.
	D	Policies have been and likely will be in contradiction with the intervention. Fundamental changes needed to make intervention sustainable.
4.4 How well is the intervention contributing to institutional and management capacity?		
	A	Intervention is embedded in institutional structures and has contributed to improve the institutional and management capacity (even if this is not an explicit goal).
X	**B**	Intervention management is well embedded in institutional structures and has somewhat contributed to capacity building. Additional expertise might be required. Improvements in order to guarantee sustainability are possible.
	C	Intervention relies too much on ad-hoc structures instead of institutions; capacity building has not been sufficient to fully ensure sustainability. Corrective measures are needed.
	D	Intervention is relying on ad hoc and capacity transfer to existing institutions, which could guarantee sustainability, is unlikely unless fundamental changes are undertaken.

3.5 Decisions taken by the steering committee and follow-up

Decision					Action			Follow-up	
Decision	**Period of identification**	**Timing**	**Source**	**Actor**	**Action(s)**	**Resp.**	**Deadline**	**Progress**	**Status**
Composition and management of Joint Steering Committee	Q2 2018	Immediate	JLCB		Directors of *Direcção de Planificação e Cooperação* and of *Direcção Nacional de Energias Novas e Renováveis* will be invited members of the Steering Committee on a permanent basis	JLCB	Next steering committee	Noted	**CLOSED**
					Joint Steering Committees of CB MIREME and RERD2 will be held jointly; additional Steering Committees may be held for each project individually if need be	JLCB	Next steering committee	Noted	ONGOING
TFF's reference to CNELEC applies to ARENE	Q2 2018	Immediate	JLCB		-	-	-	Noted	**CLOSED**
CB MIREME and FUNAE to provide more detailed activity planning until end of 2018	Q2 2018	Immediate	JLCB		After planning sessions formulate more detailed planning	PM	-	FUNAE provided a plan for 2018 which was integrated in the 2019 operational plan.	**CLOSED**
RERD2 result report 2018 and operational plan and budget 2019 are approved.	Q1 2019	Immediate	JLCB		N.A.	N.A.	N.A	Noted	**CLOSED**

On the basis of a list of RERD2 pre-selected sites decide on those that merit further studies in view of project investment.	Q1 2019		JLBC		Proposed by the project in the JLCB of 4 December 2019	PM / JLBC	Dec. 2019	Sites to advance with EPCs and in-depth feasibility studies.	**CLOSED**
Approval of the following sites for building solar mini-grids: 1. Naburi, 2. Alto Maganha and 3. Namanla in Pebane district; 4. Mungulama in Ile district and 5. Alto Benfica in Mocuba	Q4 2019	Immediate	PM/ JLBC		Organize complete technical and economic feasibility studies of selected / approved locations	OM	Q2-Q4	Full mini-grid feasibility studies of 5 locations completed by Q4 2020	**CLOSED**
Financial reinforcement of the direct management budget line R1A1 "Review and update of existing studies", to speed up the process of contracting solar feasibility studies.	Q4 2019	Immediate	PM/JLBC		Proposed by the project in the JLCB of 4 December 2019	PM	Q1 2020	JLCB approved. Budget line increased by the additional RERD2+ budget.	**CLOSED**
Include a 4th result in the project logical framework denominated "The new legal framework is influenced by FUNAE" with a budget line "R4A1 Carrying out specialized studies to strengthen the legal framework".	Q4 2019	Immediate	PM/JLBC		Proposed by the project in the JLCB of 4 December 2019	PM	Q1 2020	4th result added to logical framework. Budget line funded from the extra RERD2+.	**CLOSED**
The 2020 Results Report is adopted	Q4 2020	Immediate	JLCB		Submit to Enabel	PM	Q1	Report submitted	**CLOSED**
Nampula and Manica are included as beneficiary provinces of the RERD2(+) project.	Q4 2020	Immediate	JLCB		Recruit ATI and national staff and start up project activities	PM	Q1/Q2	ATI identified and selected. INIR briefed and mobilized to prepare for ATI arrival	**CLOSED**

Continue with the construction of solar-hybrid mini-grids in the Administrative Posts of Muite and Milhana in the province of Nampula and in the Island of Idugo, Alto Maganha and Mugulama in Zambezia province	Q4 2020	Immediate	JLCB		Prepare EOI, EPC and supervision tenders for construction of 4 to 5 mini-grids	PM	Q1	Contracts for 5 mini-grids awarded to 2 companies for a total value of 8,768,166 Euro	**ONGOING**
For the coming years y+1 (2021, 2022...) the inclusion in the FUNAE budget of the equivalent total VAT amount for the construction of mini-grids and the purchase of associated equipment (meters, prepaid system, remote monitoring system)	Q4 2020	Immediate	JLCB		FUNAE	CEO	Q2-Q3 / 2021, 2022, 2023, 2023	Register mini-grid works at the Procuradoria da Repblica and insert VAT values in yearly FUNAE budget	ONGOING
5. Approval of budget transfers from the following Co-management lines: A0103 (Mini-Grid Development) of EUR 6,000,000.00 (actually EUR 5,999,950.00), line A0203 (Implementation of Remote Monitoring Systems) EUR 360,000.00 and line A0204 (Implementation Of Payment Systems) of EUR 500,000.00 to Regie in order to accelerate the construction of mini-grids and the acquisition of associated equipment.	Q4 2020	Immediate	JLCB		Request approval budget revision at Enabel HQ in Brussels	RAFI / Enabel	Q1	Budget revision approved by JCLB of 15 November 2021	**CLOSED**
The agreement between the Ministry of Foreign Affairs (MINEC) and MIREME on VAT to be sent to the Diplomatic Bureau of Belgium so that the Ministry	Q4 2020	ASAP	JLCB		Send agreement between the Ministry of Foreign Affairs (MINEC) and MIREME on VAT to Diplomatic Bureau of Belgium	MIREME	Q1	Adenda to the SC was signed	**CLOSED**

of Finance can acknowledge VAT refunds, under its responsibility since 2015.									
Formal invitation of a representative of the Ministry of Agriculture and Rural Development (MADER) to the RERD2(+) steering committee after having shared the RERD2+ document with all institutions involved and after having obtained all necessary Mozambican and Belgian approvals. (MADER) in the Steering Committee RERD2 (+).	Q4 2020	Timely before next JLCB meeting	JLCB		Send invitation	Permanent Secretary MIREME	Q1 and / or Q4	Pending	ONGOING
Approval of budget transfers from the following budget lines: A0101 Review and updating of existing feasibility and baseline studies A0201 Planning, operation and maintenance A0202 Strengthening of information systems A0205 Implementation of payment systems A0302 Provincial Delegations capacity building X0101 Contingencies (COGEST) to budget line A0103 Development of mini-grids - incl. monitoring - (€950,000) and budget line A0501 "Studies to strengthen the legal framework" (€60,000) as indicated in Annex 1. This allows to	Q4 2021	Immediate	JLCB		Integrate new budget in Enabel financial management system	Intervention Manager / RAFI	Q1/2022	Done	CLOSED

proceed with the construction of the 5 mini-grids, the acquisition of equipment associated with the mini-grids and to strengthen FUNAE's capacity to raise funds for off-grid projects.									
Annex 1 of the minutes of meeting of the 15 Nov 2021 Steering Committee detailing budget changes allowing to build 5 (instead of 4) mini-grids was approved and is declared integral part of the minutes.	Q4 2021	Immediate	JLCB			Intervention Manager	Nov. 2021	Noted	CLOSED
Decided to award the contracts for the construction of solar hybrid mini-grids in the Administrative Posts of Muite and Milhana in Nampula province and the Island of Idugo, Alto Maganha and Mugulama in Zambézia province.	Q4 2021	immediate	JLCB		Award contract for EPC of 5 mini-grids to 2 companies	Intervention Manager	Dec. 2021	Done	CLOSED

3.6 Updated Logical framework

General Objective	Indicators	Means of verification	Base values	Target	Assumptions
Rural Economic and Social Development is promoted by increased sustainable access to energy	• Poverty indicators of target area	• Government statistics (INE - Instituto Nacional de Estatistica) • UNDP	•Zambezia: 70.5% •Nampula 54.7% •Niassa 31.9% •Manica 55.1% •Nat. average 54.7% (UNDP 2019 Report on MDGs)	•Zambezia: 69.5% •Nampula 53.7% •Niassa 30.9%	• Successful integration of the RERD2 intervention with other interventions promoting productive uses of energy
	• Cumulative number of productive businesses electrified by RERD2 mini-grids	• Feasibility Survey Report & Energy needs Assessment & Post-electrification study	0	154	
	• Cumulative number of NEW businesses established after the electrification of the village	• Feasibility Survey Report & Energy needs Assessment & Post-electrification study	0	30	
Outcome	**Indicators**	**Means of verification**	**Base values**	**Target**	**Assumptions**
Access to energy in rural areas is increased by investments in renewable energy and in support mechanisms to ensure sustainability	• Access to electricity in rural areas	• Existing multi-tier framework surveys (SE4All) • Household surveys	5,97% of rural populations (Global Tracking framework)	7,97% of rural population of one province	• No extreme climatic event • No major insecurity in the targeted provinces • No major impact of Covid 19 restrictions
	• Total – cumulative – number of connections	• Feasibility Survey Report & Energy needs assessments & RERD2 report	0	3500	

	• Total installed and operational capacity from renewable energy (kWp)	• Feasibility Survey Report & Energy needs assessments & RERD2 report	Electrification: 0 Irrigation: 0	Electrification: 820 Irrigation: 750	
	• Fee collection rate (payment rate) in mini-grids	• FUNAE payment records	0	80%	
	• Total irrigated area under sustainable practices (ha)	• Project + SDAE	0	900	
	• Number of farmers applying best irrigation and agronomical practices	• Field assessment and survey (biophysical as well as socio-economic) reports	0	1.000	
	• Total food production is increased	• Project + SDAE	0	25%	
	• Total food production is diversified	• Project + SDAE	0	50%	
	• Reduction of energy costs for production (medium and big farmers)	• Project + SDAE	0	50%	
	• Percentage of functioning SPIS installations	• Project + SDAE	n/a	>= 75%	
	• Satisfaction index of beneficiary producers	• Household survey	n/a	>= 80%	

Result 1	Indicators	Means of verification	Base values	Target	Assumptions
Mini-grids developed for households, productive users and public infrastructure	• Cumulative number of RE productive use locations and identified and suitable for the installation of hydro- or solar mini-grids (reinforcing the FUNAE pipeline)	• RERD2-report	0	36	• At least 2 Quality EPC companies manage to submit technically and financially acceptable offers • No major security disruptions during construction of mini-grids in Zambezia and

		• Number of reviewed, revised and updated feasibility and baseline studies	• RERD2-report	13 existing studies on PV and hydro	1 to 3	Nampula • The FUNAE GIS unit stays motivated and carries through project promoted improvement plans and validates in office identified locations in the provinces
		• Number of pre-feasibility on-site assessments of FUNAE pipeline locations for mini-grids	• RERD2-report	0	20	
		• Number of RERD2 funded and completed comprehensive feasibility studies for solar (hybrid) mini-grids	• RERD2-report	0	5	
		• Number of awareness and stakeholder consultations in targeted mini-grid communities per year	• RERD2-report	0	25	
		• Cumulative number of hybrid solar mini-grids commissioned, operational and properly maintained	• RERD2-report	0	5	
		• Publication for result dissemination	• RERD2-report	0	1	
	Activities for R1	Actors involved	Estimated Budget			assumptions
	R1.A1: Review and update of existing feasibility and baseline studies and site selection in view of productive uses of energy (socio economic surveys)	Consultancy, NGOs, FUNAE, business associations, businesses, other donors, local authorities	€200.000	13 existing studies on PV and hydro	1 to 3 studies revised and updated	• Quality consultants are found • The existing FUNAE pipeline for mini-grids is relevant to the objective • Existing studies are of good quality
	R1.A2 : Awareness and stakeholder consultations for each site including the private sector	NGOs, FUNAE, business associations, businesses, local authorities	€50.000	0 campaigns	1 a 3 awareness campaigns performed on future sites	NGOs and actors with sufficient knowledge of local conditions can be found

	R1.A3: Mini-grid development with productive uses of energy	Private sector, FUNAE, consultants, NGOs, communities, local authorities	€ 6.120.000	3 large existing hydro mini grids (Sembezia, Murora, Majaua) and 3 large solar mini grids	1 to 3 additional large hydro mini-grids	• A financially sustainable management system for mini grid is agreed upon • Enforcement of payment for services • Sufficient ability to pay
	R1.A4 Result dissemination	FUNAE	€ 50.000	0 publications	Minimum one publication	

Result 2	Indicators	Means of verification	Base values	Target	Assumptions
Technical and financial sustainability of existing systems is improved	• Nr of RERD1 funded hydro-mini-grids investigated (with report) on functioning and operational status	• RERD2-report	0	3	• Continuity in management and continued openness to other stakeholders • Users are willing and able to pay for the energy services • FUNAE is open to a level of decentralization process giving more autonomy to the Delegations, including financial. • Agreement can be found on tariffs and subsidies
	• Nr of RERd1 funded solar systems investigated and reported on operational status	• RERD2-report	0	377	
	• GIS implemented beyond a static database and used for asset management purposes	• RERD2-report (according to joint self-assessment by the DEP and O&M-unit)	GIS is a static baseline and not used for asset management purposes	GIS is fully used for asset management purposes	
	• Degree of connectivity/sharing GIS database with other departments	• RERD2-report (self-assessment by DEP)	No sharing with other departments	Excellent degree of connectivity	
	• Cumulative number of RERD1 purchased meters and pre-payment systems installed and operational	• RERD2-report	726 meters and pre-payment meters purchased, but not yet operational – 0% of systems operational	726 – 100% of systems operational	

	• Use of tablets in data collection campaigns and missions of the Operation and Maintenance (O&M) unit	• RERd2-report (self-assessment by the O&M-unit)	Not yet used	Systematic use at HQ and delegations level	
	• Percentage of new (RERD2) mini-grid connections equipped with pre-paid meters	• RERD2-report	n/a	100%	
	• Percentage of FUNAE pre-paid meters served by a remote sales system using mobile money	• FUNAE records & RERD2-reports	0%	100%	
	• Cumulative number of FUNAE-managed PV-mini-grids – over 20 kWp – that are remotely monitored (facilitating full maintenance)	• FUNAE records & RERD2-reports	0	23	

	Activities for R2	Actors involved	Estimated Budget			assumptions
	R2.A1 Planning, Operation and maintenance	FUNAE with focus on maintenance unit, and other relevant divisions (solar, mini-hydro)	€ 200.000	Maintenance unit half functional 50%	Maintenance unit strengthened 90%	Integration with other departments is simulated Qualified human resources are kept in FUNAE
	R2. A2 Strengthening of Information systems	FUNAE maintenance unit and delegations	€ 200.000	Data base and GIS not connected Information not shared between departments 0%	GIS and data base connected and used for asset management, site identification and planning 100%	Integration with other departments is simulated Qualified human resources are kept in FUNAE
	R2 A3 Implementation of monitoring remote monitoring	FUNAE delegations in the provinces and relevant divisions	€ 360.000	8 systems installed; 3 different technologies	One technology chosen. Number of systems installed according to	Monitoring systems are adequate for the targeted systems.

	systems				budget	
	R2 A4 Implementation of payment systems (metering, fee collection, pre-payment)	FUNAE maintenance unit and Delegations in the provinces	€500.000	1000 Meters and pre-payment systems purchased but not operational yet 0 % of systems operational 1000	Pre- payment (for domestic users) and meters systematic on the mini-grids financed by RERD2 100% of mini-grids equipped with pre-payment systems	Users are willing and able to pay for services

Result 3	Indicators	Means of verification	Base values	Target	Assumptions
The capacity of FUNAE in planning and project management is improved	• Capacity building 'CB) plan available and executed	• RERD2-report	No capacity building plan	Agreed capacity building plan available and executed according to plan	• Continuity in management • Cooperation between divisions • FUNAE retains qualified human resources
	• Cumulative number of different types of training for FUNAE staff administered	• RERD2-report	0	30	
	• Cumulative number of trained FUNAE staff	• RERD2-report	0	125	
	• Cumulative number of hours of training of FUNAE staff (HQ/Delegation M/F)	• RERD2-report	0	7000	
	• Number of internal technical support documents drafted and distributed within FUNAE	• RERD2-report	0	15	
	• Quality of socio-economic survey methodology	• FUNAE records & RERD2-reports	No standard method for socio-economic survey	Improved standard template for surveys stored on tablets being used for these surveys	
	• Processes and working procedures for maintenance and mini-grid selection (GIS) improved	• FUNAE records and RERD2-reports	Working processes and procedures for maintenance and site selection not sufficiently functional	Clear processes and tools for maintenance and site-selection	

		• Cumulative number of provinces with mini-grid sites selected and validated	• FUNAE records & RERD2-reports	0	11 selected, 11 validated	
	Activities for R3	Actors involved	Estimated budget			Assumptions
	R3.A1 Project management is improved at HQ level	• FUNAE relevant divisions in HQ	€ 100.000	Processes and working procedures not updated	Clear processes and tools for project management	• Integration with other departments is simulated • • Qualified human resources are kept in FUNAE
	R3.A2. Capacity building of Delegations in sector planning and coordination	FUNAE maintenance unit and delegations	€ 200.000	Planning process with DIPREME unclear	Clear working processes and structure; Technicians better trained	• • Qualified human resources are kept in FUNAE • • More autonomy for FUNAE Delegation
	R3 A3 Technical assistance	Enabel	€2.250.000			• Experts with adequate profiles are found
	R3 A4 Surveys, field trips workshops and seminars, study tours	FUNAE and Enabel staff	€200.000			

Result 4	Indicators	Means of verification	Base values	Target	Assumptions
Pro memoria, technical budget line for VAT (IVA)	N/A	N/A	N/A	N/A	N/A

Result 5	Indicators	Means of verification	Base values	Target	Assumptions
New legal Framework influenced by FUNAE	• Number of discussions/position papers on legal frameworks for renewable energy developed by FUNAE and shared with decision-makers	• FUNAE records & RERD2-report	0	4	• Policy decision makers are receptive to suggestions from FUNAE and the project
	• Number of meetings organized by decision-makers (MIREMR, ARENE) attended by FUNAE in which legal	• FUNAE records & RERD2-report	0	4	

		frameworks are discussed				
	Activities for R5	Actors involved	Estimated budget			Assumptions
	R3.A1 Project management is improved at HQ level	• FUNAE relevant divisions in HQ	€ 100.000	Processes and working procedures not updated	Clear processes and tools for project management	• Integration with other departments is simulated • • Qualified human resources are kept in FUNAE
	R3.A2. Capacity building of Delegations in sector planning and coordination	FUNAE maintenance unit and delegations	€ 200.000	Planning process with DIPREME unclear	Clear working processes and structure; Technicians better trained	• • Qualified human resources are kept in FUNAE • • More autonomy for FUNAE Delegation
	R3 A3 Technical assistance	Enabel	€2.250.000			• Experts with adequate profiles are found
	R3 A4 Surveys, field trips workshops and seminars, study tours	FUNAE and Enabel staff	€200.000			

Result 6	Indicators	Meeans of verification	Base values	Target	Assumptions
Sustainable solar powered irrigation systems are taken up by selected farmers in 2 provinces	• Cumulative number of farmers informed and sensitized in the provinces about SPIS	• Project and partners reports	0	>= 2.000 (minimum 50% of women)	• Different wealth categories of households are well represented and willing to invest in SPIS • Sustainability of the set-up
	• Total irrigated area (ha) under SPIS installations by the project	• Field visits / survey reports • Project and partners database	0	900	
	• Number of reports on lessons learned disseminated and published	• Project and partners database	n/a	3	
	Activities for R6	Actors involved	Estimated budget			Assumptions
	R6.A1 Sites selection and preparatory actions	INIR at national and provincial level, DPAPZ, SDAE, SDPI	€ 220.000		Potential sites identified within Zambezia and Manica provinces for 900 ha	• Involvement of local technicians for the objective identification of sites
	R6.A2 IEC of beneficiaries and partners on SPIS	Local partners (NGO)	€ 60.000		Awareness among farmers about SPIS and	• NGOs and actors with sufficient knowledge of local conditions can be found

					renewable energies	
	R6.A3 Technical participatory analysis and identification of most promising SPIS options	INIR at national and provincial level, DPAPZ, SDAE, SDPI	€ 200.000		List of most promising SPIS options and systems	• Availability of technical solutions accessible to small producers
	R6.A4 Support acquisition and implementation of SPIS through existing financing mechanisms and actors	FNDS, existing mechanism, private sector	€2.220.000		900 small-scale farmers supported (kits of 0,5 to 2 ha) 100 medium-scale farmers supported (average of 5 ha / farmer) 10 large-scale entrepreneurial farmers supported (average of 20 ha / farmer)	• Opportunities for collaboration with FNDS or other existing mechanisms
	R6.A5 Continuous learning and adjustment & dissemination of results	INIR	€ 20.000			•
	R6.A6 Technical Assistance (ITA and NTA)		€ 1.008.000			• Experts with adequate profiles are found
	R6.A7 Training costs and short term expertise envelope		€ 74.000			•

Result 7	Indicators	Meeans of verification	Base values	Target	Assumptions
The technical and financial capacities of farmers, institutional partners and market actors for a sustainable use of solar powered irrigation systems are enhanced	• Number of people trained in new practices for sustainable irrigation and sustainable agriculture	• Field visits / survey reports	0	100% of extensionists, >= 50% of members of associations, 100% of the medium and big individual farmers (including 50% of women)	• Extension services relevant for irrigation and agriculture are willing to collaborate • Private sector interest for investing in solar powered irrigation materials and techniques is confirmed • International and national Research and knowledge centers timely available for fields research
	• Satisfaction of end-users regarding the quality of available services on solar pumping irrigation (%)	• Beneficiary survey	n/a	>= 80%	
	• Number of appropriate solar powered irrigation technology and practices identified and disseminated	• Research reports and studies	0	8 (minimum 2 irrigation practices for each category of crop = 2X4)	
	• Level of knowledge and quality of the maintenance of SPIS by users	• Beneficiary survey	n/a	>= 80% with score "A"	
Activities for R7	Actors involved	Estimated budget			Assumptions
R7.A1 Support for implementation and use of SPIS and strengthening maintenance	Local partners (NGO), INIR, DPAPZ, SDAE, SDPI	€ 200.000			• NGOs and actors with sufficient knowledge of local conditions can be found • Presence of local suppliers
R7.A2. Improving sustainable irrigation and agronomic practices linked with SPIS's use	Local partners (NGO), Agricultural extension, DPAPZ, SDAE, SDPI	€ 420.000			• NGOs and actors with sufficient knowledge of local conditions can be found
R7.A3 Strengthening suppliers distributors and service suppliers of SPIS	Private operators	€ 70.000			• NGOs and actors with sufficient knowledge of local conditions can be found • Presence of local suppliers • Involvement of the private sector
R7.A4 Build local expertise on	Research centres, Universities,	€ 667.500			• Opportunities for collaboration with institutes at

	SPIS through collaboration with Research centres and learning centres	Agrarian institutes				provincial level
	R7.A5 Capacity building of institutional partners with a focus on the provincial and local level	Institutional partners, private operators, NGO	€ 60.000			•
	R7.A6 National Technical Assistance		€ 240.000			• Experts with adequate profiles are found
	R7.A7 Training costs and short term expertise envelope		€ 75.000			•

Result 8	Indicators	Meeans of verification	Base values	Target	Assumptions
Initiatives to foster an enabling environment for private and public investments in the irrigation sector are supported	• Financial mechanism that stimulate investment in SPIS in place	• Project report	n/a	Financial Mechanism Promoted to be replicated by other market actors	• Efficient collaboration with FUNAE, MADER, INIR, FNDS etc. • No restrictions of the government for setting-up financial mechanisms
	• Number of coordination meetings at provincial level with public and private stakeholders from the water, energy and agriculture sector	• Project report	0	12	
Activities for R8	Actors involved	Estimated budget			Assumptions
R8.A1 Supporting platforms to exchange and coordinate the actions of different actors	Main institutional actors, private sector organizations, NGO, local authorities	€ 32.000			• Collaboration and involvement of institutional partners
R8.A2 Support institutional actors in creating an enabling environment for SPIS uptake and dissemination	National funds/subsidies, FNDS	€ 130.000			• Efficient collaboration with FNDS or existing mechanisms
R8.A3 Short term expertise envelope		€ 100.000			•

3.7 MoRe Results at a glance

Logical framework's results or indicators modified?	- The December 2019 steering committee agreed with a change in the Logical Framework (i.e., addition of a fourth result). - the December 2020 agreed with an extra component on Solar Powered Irrigation studies adding three results. - In 2021 the RERD2 and RERD2+ logical frameworks were merged. It is attached to this report. The baseline report (in English and Portuguese) explains all additions and - some - changes in progress indicators. The updated baseline report will be submitted for approval to the next steering committee (adjourned from December 2021).
Baseline Report registered on PIT?	No (see above, is pending approval of adjourned SC)
Planning MTR (registration of report)	MTR currently planned for October 2022 (registration of report in Q4 2022)
Planning ETR (registration of report)	Not yet determined
Backstopping missions since 01/01/2018	0

3.8 Evolution of the budget

Below are the budget modifications as approved by the Steering Committee of 15 November 2021.

Enabel									
			MOZ1503411 RERD 2		Budget evolution			
			Budget Execution/Activities	Modality	Budget	Budget (+)	Budget (-)	New Budget total
A			**Increase access to energy**		**19,106,500**	**1,010,000**	**- 910,000**	**19,206,500**
A	01		Mini-grids provide reliable and adequate energy services		8,770,000	950,000	- 100,000	9,620,000
A	01	01	Review and update of existing studies	REGIE	710,000		- 100,000	610,000
A	01	02	Awareness and stakeholder consultations	REGIE	150,000			150,000
A	01	03	Mini grid development	COGEST	-			-
A	01	04	Result dissemination	REGIE	60,000			60,000
A	01	05	Mini grid development	REGIE	7,800,000	950,000		8,750,000
A	01	06	Short term expertise envelope	REGIE	50,000			50,000
A	02		Technical and financial sustainability of existing systems is improved		1,260,000	-	- 760,000	500,000
A	02	01	Planning, operation and maintenance	REGIE	200,000		- 80,000	120,000
A	02	02	Strenghtening of information systems	REGIE	200,000		- 80,000	120,000
A	02	03	Implementation of remote monitoring systems	COGEST	-			-
A	02	04	Implementation of payment systems	COGEST	-			-
A	02	05	Implementation of remote monitoring systems	REGIE	360,000		- 100,000	260,000
A	02	06	Implementation of payment systems	REGIE	500,000		- 500,000	-
A	03		Capacity building of FUNAE in planning and project management		3,220,000	-	- 50,000	3,170,000
A	03	01	Project management at HQ level	REGIE	100,000			100,000
A	03	02	Capacity building of Delegations	REGIE	200,000		- 50,000	150,000
A	03	03	Technical assistance	REGIE	2,520,000			2,520,000
A	03	04	Surveys, field trips, workshops and seminars, study tours	REGIE	400,000			400,000
A	04		IVA		-	-	-	-
A	04	01	IVA	REGIE	-	-	-	-
A	04	02	IVA	COGEST	-	-	-	-
A	05		New legal framework influenced by FUNAE		60,000	60,000	-	120,000
A	05	01	Carrying out specialised studies to strengthen the legal framework".	REGIE	60,000	60,000		120,000
A	06		R6 Sustainable solar powered irrigation systems are taken up by selected farmers in 2 provinces		3,802,000	-	-	3,802,000
A	06	01	Sites selection and preparatory actions	REGIE	220,000			220,000
A	06	02	IEC of beneficiaries and partners on SPIS	REGIE	60,000			60,000
A	06	03	Technical participatory analysis and identification of most promising SPIS options	REGIE	200,000			200,000
A	06	04	Support aquisition and implementation of SPIS through existing financing mechanisms and actors	REGIE	2,220,000			2,220,000
A	06	05	Continuous learning and adjustment & dissemination of results	REGIE	20,000			20,000

Enabel								
			MOZ1503411 RERD 2		Budget evolution			
			Budget Execution/Activities	Modality	Budget	Budget (+)	Budget (-)	New Budget total
A	06	06	Technical Assistance (ITA and NTA)	REGIE	1,008,000			1,008,000
A	06	07	Training costs and short term expertise envelope	REGIE	74,000			74,000
A	07		R7 The technical and financial capacities of farmers, institutional partners and market actors for a sustainable use of solar powered irrigation systems are enhanced		1,732,500	-	-	1,732,500
A	07	01	Support for implementation and use of SPIS and strengthening maintenance	REGIE	200,000			200,000
A	07	02	Improving sustainable irrigation and agronomic practices linked with SPIS's use	REGIE	420,000			420,000
A	07	03	Strengthening suppliers distributors and service suppliers of SPIS	REGIE	70,000			70,000
A	07	04	Build local expertise on SPIS through collaboration with Research centres and learning centres	REGIE	667,500			667,500
A	07	05	Capacity building of institutional partners with a focus on the provincial and local level	REGIE	60,000			60,000
A	07	06	National Technical Assistance	REGIE	240,000			240,000
A	07	07	Training costs and short term expertise envelope	REGIE	75,000			75,000
A	08		R8 Initiatives to support an enabling environment for private and public investments in the irrigation sector are supported		262,000	-	-	262,000
A	08	01	Supporting platforms to exchange and coordinate the actions of different actors	REGIE	32,000			32,000
A	08	02	Support institutional actors in creating an enabling environment for SPIS uptake and dissemination	REGIE	130,000			130,000
A	08	03	Short term expertise envelope	REGIE	100,000			100,000
X			**Contingencies**		**374,520**	**-**	**- 100,000**	**274,520**
X	01		Contingencies		374,520	-	- 100,000	274,520
X	01	01	Contingencies	COGEST	163,000		- 100,000	63,000
X	01	02	Contingencies	REGIE	211,520			211,520
Z			**General Means**		**2,518,980**	**-**	**-**	**2,518,980**
Z	01		Personnel Costs		1,284,600	-	-	1,284,600
Z	01	01	Regional Administration & Finance	REGIE	326,540			326,540
Z	01	02	Finance/admin/procurement staff	REGIE	958,060			958,060
Z	01	03	Driver	REGIE	-			-
Z	02		Investment costs		195,000	-	-	195,000
Z	02	01	IT equipment	REGIE	60,000			60,000
Z	02	02	Office refurbishing	REGIE	15,000			15,000
Z	02	03	Furniture and equipment	REGIE	15,000			15,000
Z	02	04	Vehicles	REGIE	105,000			105,000

Enabel								
			MOZ1503411 RERD 2		Budget evolution			
			Budget Execution/Activities	Modality	Budget	Budget (+)	Budget (-)	New Budget total
Z	03		Operating Costs		726,380	-	-	726,380
Z	03	01	Office consumable	REGIE	50,400			50,400
Z	03	02	Communication costs	REGIE	54,000			54,000
Z	03	03	Fuel and maintenance	REGIE	132,000			132,000
Z	03	04	Mission costs	REGIE	126,000			126,000
Z	03	05	Other operation costs	REGIE	5,000			5,000
Z	03	06	Office rental	REGIE	270,000			270,000
Z	03	07	Office renovation and maintenance	REGIE	22,000			22,000
Z	03	08	Marketing and representation costs	REGIE	32,000			32,000
Z	03	09	Training administrative staff	REGIE	20,000			20,000
Z	03	10	ICT Maintenance and UBW Costs	REGIE	10,980			10,980
Z	03	11	Financial transaction costs	REGIE	4,000			4,000
Z	04		Audit, Follow-up and Evaluations		313,000	-	-	313,000
Z	04	01	Audit	REGIE	95,000			95,000
Z	04	02	Mid-term and final evaluation	REGIE	140,000			140,000
Z	04	03	Follow-up and backstopping	REGIE	68,000			68,000
Z	04	04	Monitoring	REGIE	10,000			10,000
Z	99	98	Conversion rate adjustment	REGIE	-			-
				Total:	22,000,000	1,010,000	- 1,010,000	22,000,000
				COGEST	163,000	0	-100,000	63,000
				REGIE	21,837,000	1,010,000	-910,000	21,937,000
				Total:	**22,000,000.00**	**1,010,000.00**	**- 1,010,000.00**	**22,000,000.00**

3.9 "Budget versus current (y – m)" Report

Budget Execution/Activities MOZ1503411 RERD 2				Moda-lity	Budget (d)	Start to 2020 (a)	Expenses 2021 (b)	Total expenses c=a+b	Budget remaining d-c	Execution rate (%) c/d
A			**Increase access to energy**		**19,206,500**	**1,318,487**	**835,307**	**2,153,794**	**17,052,707**	**11.2%**
A	01		Mini-grids provide reliable and adequate energy services		9,620,000	351,302	109,259	460,561	9,159,439	4.8%
A	01	01	Review and update of existing studies	REGIE	610,000	351,290	88,234	439,524	170,476	72.1%
A	01	02	Awareness and stakeholder consultations	REGIE	150,000	-	-	-	150,000	0.0%
A	01	03	Mini grid development	COGEST	-	12	2	15	- 15	
A	01	04	Result dissemination	REGIE	60,000	-	5,843	5,843	54,157	9.7%
A	01	05	Mini grid development	REGIE	8,750,000	-	3,725	3,725	8,746,275	0.0%
A	01	06	Short term expertise envelope	REGIE	50,000	-	11,454	11,454	38,546	22.9%
A	02		Technical and financial sustainability of existing systems is improved		500,000	21,822.8	75,315.9	97,138.7	402,861.3	19.4%
A	02	01	Planning, operation and maintenance	REGIE	120,000	- 6,614.35	29,080.46	22,466.11	97,533.89	18.7%
A	02	02	Strenghtening of information systems	REGIE	120,000	28,375.00	45,574.44	73,949.44	46,050.56	61.6%
A	02	03	Implementation of remote monitoring systems	COGEST	-	62.16	656.18	718.34	- 718.34	
A	02	04	Implementation of payment systems	COGEST	-	-	4.84	4.84	- 4.84	
A	02	05	Implementation of remote monitoring systems	REGIE	260,000	-	-	-	260,000.00	0.0%
A	02	06	Implementation of payment systems	REGIE	-	-	-	-	-	
A	03		Capacity building of FUNAE in planning and project management		3,170,000	939,736	411,005	1,350,740	1,819,260	42.6%
A	03	01	Project management at HQ level	REGIE	100,000	12,430	42,520	54,950	45,050	54.9%
A	03	02	Capacity building of Delegations	REGIE	150,000	13,379	22,997	36,376	113,624	24.3%
A	03	03	Technical assistance	REGIE	2,520,000	907,148	325,429	1,232,578	1,287,422	48.9%
A	03	04	Surveys, field trips, workshops and seminars, study tours	REGIE	400,000	6,778	20,058	26,837	373,163	6.7%
A	04		IVA		-	5,626	15,289	20,916	-20,916	#DIV/0!
A	04	01	IVA	REGIE	-	3,541	0	3,541	-3,541	#DIV/0!
A	04	02	IVA	COGEST	-	2,085	15,289	17,374	-17,374	#DIV/0!
A	05		New legal framework influenced by FUNAE		120,000	0	9,846	9,846	110,154	8.2%
A	05	01	Carrying out specialised studies to strengthen the legal framework".	REGIE	120,000	0	9,846	9,846	110,154	8.2%
A	06		R6 Sustainable solar powered irrigation systems are taken up by selected farmers in 2 provinces		3,802,000	0	187,645	187,645	3,614,355	4.9%
A	06	01	Sites selection and preparatory actions	REGIE	220,000	0	18,584	18,584	201,416	8.4%
A	06	02	IEC of beneficiaries and partners on SPIS	REGIE	60,000	0	0	0	60,000	0.0%
A	06	03	Technical participatory analysis and identification of most promising SPIS options	REGIE	200,000	0	0	0	200,000	0.0%
A	06	04	Support aquisition and implementation of SPIS through existing financing mechanisms and actors	REGIE	2,220,000	0	0	0	2,220,000	0.0%
A	06	05	Continuous learning and adjustment & dissemination of results	REGIE	20,000	0	0	0	20,000	0.0%
A	06	06	Technical Assistance (ITA and NTA)	REGIE	1,008,000	0	169,061	169,061	838,939	16.8%
A	06	07	Training costs and short term expertise envelope	REGIE	74,000	0	0	0	74,000	0.0%
A	07		R7 The technical and financial capacities of farmers, institutional partners and market actors for a sustainable use of solar powered irrigation systems are enhanced		1,732,500	0	26,947	26,947	1,705,553	1.6%
A	07	01	Support for implementation and use of SPIS and strengthening maintenance	REGIE	200,000	0	104	104	199,896	0.1%
A	07	02	Improving sustainable irrigation and agronomic practices linked with SPIS's use	REGIE	420,000	0	0	0	420,000	0.0%
A	07	03	Strengthening suppliers distributors and service suppliers of SPIS	REGIE	70,000	0	0	0	70,000	0.0%
A	07	04	Build local expertise on SPIS through collaboration with Research centres and learning centres	REGIE	667,500	0	10,542	10,542	656,958	1.6%
A	07	05	Capacity building of institutional partners with a focus on the provincial and local level	REGIE	60,000	0	0	0	60,000	0.0%
A	07	06	National Technical Assistance	REGIE	240,000	0	16,301	16,301	223,699	6.8%
A	07	07	Training costs and short term expertise envelope	REGIE	75,000	0	0	0	75,000	0.0%
A	08		R8 Initiatives to support an enabling environment for private and public investments in the irrigation sector are supported		262,000	0	0	0	262,000	0.0%
A	08	01	Supporting platforms to exchange and coordinate the actions of different actors	REGIE	32,000	0	0	0	32,000	0.0%
A	08	02	Support institutional actors in creating an enabling environment for SPIS uptake and dissemination	REGIE	130,000	0	0	0	130,000	0.0%
A	08	03	Short term expertise envelope	REGIE	100,000	0	0	0	100,000	0.0%
X			**Contingencies**		**274,520**	**0**	**0**	**0**	**274,520**	**0.0%**
X	01		Contingencies		274,520	0	0	0	274,520	0.0%
X	01	01	Contingencies	COGEST	63,000	0	0	0	63,000	0.0%
X	01	02	Contingencies	REGIE	211,520	0	0	0	211,520	0.0%
Z			**General Means**		**2,518,980**	**485,301**	**314,292**	**799,593**	**1,719,387**	**31.7%**
Z	01		Personnel Costs		1,284,600	402,529	174,273	576,802	707,798	44.9%
Z	01	01	Regional Administration & Finance	REGIE	326,540	326,568	5,287	331,855	-5,315	101.6%
Z	01	02	Finance/admin/procurement staff	REGIE	958,060	75,961	168,986	244,947	713,113	25.6%
Z	01	03	Driver	REGIE	-	0	0	0	0	#DIV/0!
Z	02		Investment costs		195,000	15,926	86,792	102,717	92,283	52.7%
Z	02	01	IT equipment	REGIE	60,000	15,926	15,749	31,675	28,325	52.8%
Z	02	02	Office refurbishing	REGIE	15,000	0	274	274	14,726	1.8%
Z	02	03	Furniture and equipment	REGIE	15,000	0	1,469	1,469	13,531	9.8%
Z	02	04	Vehicles	REGIE	105,000	0	69,300	69,300	35,700	66.0%
Z	03		Operating Costs		726,380	60,472	53,546	114,017	612,363	15.7%
Z	03	01	Office consumable	REGIE	50,400	1,662	1,447	3,109	47,291	6.2%
Z	03	02	Communication costs	REGIE	54,000	5,686	2,691	8,377	45,623	15.5%
Z	03	03	Fuel and maintenance	REGIE	132,000	15,533	9,289	24,821	107,179	18.8%
Z	03	04	Mission costs	REGIE	126,000	6,413	3,196	9,609	116,391	7.6%
Z	03	05	Other operation costs	REGIE	5,000	3,796	9,836	13,632	-8,632	272.6%
Z	03	06	Office rental	REGIE	270,000	24,421	21,123	45,544	224,456	16.9%
Z	03	07	Office renovation and maintenance	REGIE	22,000	79	0	79	21,921	0.4%
Z	03	08	Marketing and representation costs	REGIE	32,000	0	391	391	31,609	1.2%
Z	03	09	Training administrative staff	REGIE	20,000	0	0	0	20,000	0.0%
Z	03	10	ICT Maintenance and UBW Costs	REGIE	10,980	2,882	5,572	8,455	2,525	77.0%
Z	03	11	Financial transaction costs	REGIE	4,000	0	0	0	4,000	0.0%
Z	04		Audit, Follow-up and Evaluations		313,000	6,374	-319	6,055	306,945	1.9%
Z	04	01	Audit	REGIE	95,000	0	0	0	95,000	0.0%
Z	04	02	Mid-term and final evaluation	REGIE	140,000	0	0	0	140,000	0.0%
Z	04	03	Follow-up and backstopping	REGIE	68,000	4,965	0	4,965	63,035	7.3%
Z	04	04	Monitoring	REGIE	10,000	0	0	0	10,000	0.0%
Z	99	98	Conversion rate adjustment	REGIE	-	1,409	-319	1,091	-1,091	#DIV/0!
				Total:	22,000,000	1,803,787	1,149,599	2,953,386	19,046,614	13.4%
				COGEST	63,000	2,159	15,953	18,112	44,888	28.7%
				REGIE	21,937,000	1,801,628	1,133,646	2,935,274	19,001,726	13.4%
				Total:	**22,000,000.00**	**1,803,787**	**1,149,599**	**2,953,386**	**19,046,614**	**13.4%**

Budget vs current summarized

	Budget (Euro)	Expenditure		Balance	Disburse-ment rate at the end of 2021
		Preceding years	Year covered by report (n) 2021		
Total	**22,000,000**	**1,803,787**	**1,149,599**	**19,046,614**	**13.42%**
Output 1	9,620,000	351,302	109,259	9,159,439	4.79%
Output 2	500,000	21,823	75,316	402,861	19.43%
Output 3	3,170,000	939,736	411,005	1,819,260	42.61%
Output 4 IVA	-	5,626-	15,289	- 20,916	
Output 5	120,000	-	9,846	110,154	8.21%
Output 6	3,802,000	-	187,645	3,614,355	4.93%
Output 7	1,732,500	-	26,947	1,705,553	1.56%
Output 8	262,000	-	-	262,000	0%
Contingencies	274,520		-	274,520	
General means	2,518,980	485,301	314,292	1,719,387	31.74%

3.10 Communication resources

To date two articles were published on the "Open Enabel" website: 1) 'Kick-starting the Baseline Study of the second phase of the Renewable Energy for Rural Development Project (RERD2)' and 2) 'Rural electrification in Mozambique: how to find the right villages?' This second article "Rural electrification: how to find the right villages" was also published on '*Diario Economico*' in Mozambique in English as well as Portuguese.

The proceedings of a webinar organized by the Mozambican Association of Renewable Energy (AMER) with the title "Private sector perspectives on renewable energy in Mozambique. Edition: mini grids", to which the RERD2 intervention manager was panel member, was published on **YouTube**[24]. The webinar extensively discussed the issue of the Mozambican legal framework and the role of the private sector.

The completion of 5 RERD2 feasibility studies by RLI/ENGREEN and the awards of two contracts for the construction of 5 mini-grids were published on **LinkedIn.** Generally, all project tenders and staff vacancies are published on project staff and Enabel LinkedIn accounts.

The final report of the GGGI study *"Mobilizing Investments in Solar Powered Irrigation Projects in Zambezia Province, Mozambique"* was delivered in June 2021.

In September, the RERD2 project manager and his FUNAE counterpart acted as panelists in a live televised session on off grid renewable energy at the 56th edition of the Maputo International Fair (FACIM) to, in view of the imminent changes in the legal framework, promote greater private sector participation in the off-grid energy sector. FACIM is the oldest multi-sector trade fair in Mozambique and promotes business opportunities with various brands, services and products exhibiting.

Two Enabel project information pamphlets were produced: one for the electrification component, one for the irrigation component (A4 folded in 3). The pamphlets will be shared with stakeholders that require more information on the program.

[24] https://www.youtube.com/watch?v=Ggu4DWBELyg&t=4003s

The intervention manager participated as speaker in the **SE4A-2021 conference on Sustainable Energy for Africa**, co-organized by the Benin National Academy of Sciences, Arts and Letters (ANSALB) and the Royal Academy for Overseas Sciences of Belgium (ARSOM KAOW). On the second day of the conference (9 November 2021) he presented a project paper entitled ***'Renewable energy and productive water for irrigation purposes in the provinces of Manica and Zambezia (Mozambique)'***.

A professional photography mission took place in November 21 to provide quality images to ensure the communication / visibility of the project and Enabel.