Terms of Reference

Reference Number	**R4A/2023/R4M/02**
Title of the Project	Frugal Innovation for Grid Development

1. Background Information

a. Contracting authority

Born in 2012, RES4Africa (Renewable Energy Solutions for Africa) is a Foundation that works in support of Africa's just energy transition in order to achieve the SDG7, ensuring access to affordable, reliable, sustainable, and modern energy for all. It functions as a bridge between Europe and Africa: gathering a network of members from all over the clean energy sector from both continents and high-level international partnerships, we ensure constant dialogue between the most relevant energy stakeholders willing to mobilise investments in clean energy technologies.

b. Context

Advancing technology, falling costs, and ubiquitous connectivity are opening the door to new models of producing and consuming energy. Additionally, digitalization holds the potential to broaden the access to energy and accelerate the green energy transition in Emerging and Developing and Economies (EDEs).

Africa is the most rapidly urbanizing continent. As cities grow and countries develop, African distribution utilities face the challenge of expanding and modernizing the grid, managing a growing consumer base, and dealing with more complex system as cities become increasingly smart and distributed generation grows. All this requires significant investment which many African utilities are not able to fund. However, many low-cost technologies enabling digitalization in electricity grids have emerged in recent years and their use has proven crucial to create new possibilities to collect, manage, and analyse large amounts of data more accurately. When applied to the current structure and operation of grids, digital technologies can provide a series of improvements, helping to reduce production costs and enhance consumption efficiency.

In particular, when looking at the demand side of energy consumption, some emerging technologies for grids digitalization have the potential to produce technical and non-technical advantages, such as loss reduction, peak demand reduction and an improvement both in the quality of supply and in latent network capacity. For all types of power plants, as well as for transmission and distribution networks, digital technologies offer an array of opportunities to improve performance for the benefit of individual companies, the system as a whole, energy consumers and the environment.

The pace of digitalization in energy is increasing. Africa could, then, take advantage of new low-cost technologies available and benefit from the lessons learnt in Latin America or South Asia, taking steps towards universal energy access and a more sustained economic growth.

2. Scope of work and methodology

The study should highlight the necessity of grid digitalisation for the effective management of distribution grids. In doing so, the consultant should identify progress in this field by collecting known examples (and best cases) of low-cost digital solutions present (e.g., business model as a service), where they have been implemented and by whom, and provide a general overview of benefits of such a system and underlining that such investments will not and should not necessarily be an economic burden for already financially fragile utilities.

The study should then identify key issues impacting distribution grids, making reference to Africa (Morocco, Algeria and South Africa), Latin America (Mexico and Peru) and Asia (India and Philippines), and how these issues may have been solved and with what results. Finally, 3 business cases should be developed in which 3 key issues are paired with 3 existing low-cost digital solutions and each pairing is applied to a city or utility, showing how the solution can resolve the problem and bring wider benefits to the system. These 3 business cases should reflect main African cities.

The study could have a structure similar to the following:

1. **Current landscape (to be delivered by 15th December 2023)**: Grid digitalisation technologies can bring several technical and non-technical benefits, both on the demand side (short-term perspective) and on the infrastructure side (long-term perspective). A literature review or desk research should be carried out to collate and compare the reference regulatory framework by region and countries, analysing where and what extent government or regulatory incentives are applied to support the development of new low cost digital solutions, where and what are the revenues incentive schemes and, lastly, if there are innovative financing and/or other related support schemes (e.g. government guarantees) to unlock financing. Moreover, the comparison has to analyse the existing low-cost solutions currently present in Africa, Latin America, and Asia – with a focus on the countries mentioned above - and by whom they are produced with a focus in the following areas:
    a. Loss reduction: Smart Grid technologies can help minimise technical losses in transmission (e.g., addressing distribution losses through adaptive voltage control at substations). Non-technical losses can be addressed too through smart metering infrastructures.
    b. Peak demand reduction: demand response programmes can be implemented alongside digitalisation and can result in an overall 4% cost reduction.
    c. Quality of supply: digitalisation technologies can contribute to reducing costs of grid congestion, power outages and power quality disturbances by increasing reliability and quality of supply for consumers with high requirements (e.g. through increasingly efficient automated operations or Advanced Metering Infrastructure as employed in India).
    d. Latent network capacity: a more sophisticated asset management and operation can help enable the release of latent network capacity by building on advances in equipment monitoring and diagnostics.

2. **Distribution Grid Challenges (to be delivered by 15th February 2024)**: Main criticalities in Africa, Latin America, and Asia (specifically for the countries previously mentioned for these regions) and possible low-cost digital solutions, particularly in a short-term perspective (demand side), identify if there are similar criticalities in:

    a. Bill collection as it must be ensured and maximised in order to help power utilities recover the cost of supplying electricity and, consequently, make it affordable for low-income customers.
    b. Power Theft as number one cause of non-technical losses.

c. Service quality (efficiency and reliability).

3. **Business Cases (to be delivered by 15th February 2024)**: possible uses of low-cost digitalisation technologies in Africa and North Africa in which 3 key issues identified are each coupled with a low-cost digital solution. The problem and solution are then applied to a city to assess the benefits of the low-cost solution on the city's distribution grid. Examples of cities could be:

   a. Nairobi
   b. Casablanca
   c. Cape Town
   d. Algiers

Expected efforts from the consulting company/consultant:

- Periodic coordination meeting between RES4Africa and the selected consulting company/ consultant.
- Meeting with relevant stakeholders, with the assistance and facilitation of RES4Africa.

3. Deliverables and expected outputs

The output should be a **written report** following the structure outlined above (unless otherwise agreed upon by all parties), with an **accompanying slide set** summarising the findings of the report. A secondary output shall be the presentation of the study at an accompanying event either online or in-person.

The study and should follow the above structure, offering therefore an overview of the following points and for the countries already mentioned above:

1. At what point are the markets of interest in their digitalization pathway?
2. What available technology and other solutions are currently available in these markets?
3. Who are the producers of these solutions? (with the aim of identifying key players for cooperation)
4. What is the regulatory revenues scheme for DSOs in these countries?
5. Is there any mechanism of incentives of the government and/or the regulatory bodies for new technologies or regulatory indexes improvement (e.g. SAIDI/SAIFI, losses, etc)?
6. Are there innovative financing and/or other related support schemes (e.g. government guarantees) to unlock financing?

The business cases could foresee the implementation of technologies identified with support of Gridspertise.

Timing of deliverables:

Deliverable	Deadline
Draft of Chapter 1: Current Landscape	1 December 2023
Final Chapter 1: Current Landscape	15 December 2023
Drafts of Chapter 2: Distribution Grid Challenges and Chapter 3: Business Cases	15 February 2024

Draft of summary PPT	29 February 2024
Final report (incorporating feedback)	13 March 2024
Final PPT (incorporating feedback)	13 March 2024

4. Project management

a. Management structure

The supervision of the analysis will be managed by the RES4Africa Grids4AfricaTeam, who will also oversee the advancement of works. A coordination meeting will be held between RES4Africa and the selected consulting firm/consultant once every two weeks.

Communication among the consulting firm/consultant and local stakeholders will be facilitated, whenever possible, by RES4Africa.

5. Location and Timing

a. Location

Remote: the analysis will be carried out based on desk research, interviews with relevant stakeholders, meetings, and knowledge sharing with local partners of both RES4Africa and the consulting firm/consultant networks.

b. Start date and period of implementation of the contract

The intended start date is the signature date of the contract. The period of implementation of the contract will be 150 calendar days from the start date (including submitting the draft of first chapter, the draft of the second and third chapters, the final report incorporating feedback from peer reviewers, and the PPT presentation).

c. Deadline for submitting the offers

The deadline is **16 October 2023 at 17.00 CET Time**. Bids must be sent by email to secretariat@res4africa.org, copying fabrizio.bonemazzi@res4africa.org and iarina.ciceu@res4africa.org. The subject line shall read: "R4A/2023/R4M/01_Name of the applicant".

In case of postponement or suspension of the tender, RES4Africa will inform the consultant firm/consultant via email/website about the date/time of the rescheduled tender.

For any clarification, the consultant/firm is requested to send their questions by 4 October 2023 to fabrizio.bonemazzi@res4africa.org and iarina.ciceu@res4africa.org.

	DATE	**TIME**
Launching the TOR	27 September 2023	10:00 CET
Deadline for requesting clarification from the contracting authority	4 October 2023	17.00 CET
Deadline for submitting bids	18 October 2023	17.00 CET

Notification of award	24 October 2023	-
Contract signature	27 October 2023	-
Expected start date	Signature of the contract	-

6. Budget

The budget available for the required service is a maximum of 33,000 EUR plus VAT.

7. Requirements

a. Eligibility

This consultancy is open to reputable consultancy companies and/or individual consultants having proven experience in similar assignments.

b. Staff and key experts

Applicants' key experts have a crucial role in implementing the TOR. The applicant shall submit CVs for key experts and staff with experience in market analysis and feasibility assessment, regulatory frameworks and policy analysis. Experience in similar projects in Africa and/or with local Institutions will be considered as an advantage.

The key experts and staff profiles have to be included in the technical offer.

c. Previous experience

Applicants shall submit proof of the company's and staff's previous experience working on similar contracts and/or with the Client (RES4Africa). Moreover, the consultant company/consultant will demonstrate proven experience in dealing with the African context. The publication of similar reports related to the study will be considered as an advantage.

Previous relevant experiences related to the subject of the study and/or with RES4Africa have to be included in the technical offer.

8. Evaluation criteria

Applicants shall submit a technical and financial offer: the consultancy companies and/or individual consultants shall develop a proposal to answer the objectives, scope, and methodology of this ToR, elaborating it further. An implementation calendar shall be delivered. The financial offer should consider 1 day equal to 8 hours of work.

The scoring of the criteria of evaluation shall consider the lowest price offer subject to the positive outcome of RES4Africa evaluation of the technical offer. The technical assessment takes into account the methodology proposed to conduct the ToR, the timeframe to implement it, and the profile of experts involved in the implementation. The financial offer shall be in EURO and shall include VAT, taxes, expenses, contributions, and other due fiscal charges.

Tenderers are asked to submit their proposal as two separate files sent by email, in addition to the form attached in Annex I - Tender Submission Form. The first file must contain the technical offer, which only describes the qualitative elements of the tender, while the second file must contain the financial offer. The offer-evaluation process takes place in two steps, whereby the technical offer is evaluated first. In the second step, the evaluation committee evaluates only financial offers from tenderers whose technical offers passed the first step. RES4Africa may contact the candidates to

convene an interview to facilitate the evaluation. Any questions concerning the ToR should be addressed to fabrizio.bonemazzi@res4africa.org and iarina.ciceu@res4africa.org.

9. Selection and payment

The winning candidate will be notified by email. From that moment on, work can start according to the project calendar. Payments will be made after the submission of the final report and PPT presentation.

Annex I - Tender Submission Form

Reference Number	**R4A/2023/R4M/02**
Title of the Project	**Frugal Innovation for Grid Development**

SUBMITTED by

	Name(s) and address(es) of legal entity submitting this tender
Organisation/consultant	
Address	
Contact person	
E-mail	
Telephone	

Date of Submission

Signature and Stamp