**Expression of Interest (EOI**

**Collecting electrical system information and load data at industrial and commercial sites in Burundi for project pre-development services**

**Cosoft: 83415401**

# Background

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a federally owned international cooperation enterprise for sustainable development with worldwide operations. GIZ has worked in Rwanda for over 30 years. The primary objectives between the Government of Rwanda and the Federal Republic of Germany are poverty reduction and promotion of sustainable development. To achieve these objectives, GIZ Rwanda is active in the sectors of Decentralization and Good Governance, Economic Development and Employment Promotion, Energy, and ICT (Information and Communications Technology).

# Context

## GET.invest

GET.invest is a European programme that aims at mobilising investments in decentralised renewable energy projects. It supports private sector business, project developers, financiers and regulators in building sustainable energy markets. In doing so, it contributes directly to the interlinked development (SDG) as well as climate change objectives (Paris Agenda). It was launched in early 2019, building on its predecessor, the Africa-EU Renewable Energy Cooperation Programme (RECP). With an extended geographical focus beyond the African continent, GET.invest delivers by mobilising the private sector and by building a pipeline of viable investment projects. GET.invest Burundi country window specifically targets getting decentral renewable energy projects access to finance.

GET.invest has identified a significant potential of Commercial & Industrial (C&I) investments, mainly solar rooftops in the commercial and industrial (C&I) sector in Burundi.

## Context

Provided that there are very limited projects developed due to the immaturity of the market, GET.invest has identified the need to engage in stimulation of demand and actively generate business leads in the C&I segment. This activity implies scouting for renewable energy investment opportunities, providing estimates of its viability and then preparing project descriptions that can be taken over by industrial clients and/or interested project developers.

In order to carry out proper project sizing for hybrid photovoltaic (PV) / storage systems aimed at self-consumption, good quality electrical load measurements of the commercial/industrial loads are fundamental. Therefore, GET.invest is looking to hire a consultant carry out electrical load measurements at commercial/industrial/agricultural facilities as identified by GIZ.

# Tasks to be performed by the contractor

The objective of this assignment is to acquire high quality data of the electric power of a site of the commercial or industrial sector (normally a production facility of a local or international company):

1. Verification on the site’s electrical system configuration
2. Quantitative load measurements of the site

The resulting data shall serve as basis for the development of a renewable energy project (particularly photovoltaic) for the energy supply of the respective site.

The data shall be collected and checked by the contractor for plausibility and be prepared so that it is accurate, complete and reliable to serve its purpose:

* The data will be used for the preparation of a pre-feasibility study, which is intended to carry out a preliminary PV system sizing, usually designed for own consumption.
* The data will be used by project developers and suppliers as a basis for an analysis.
* The measured period shall be as far as possible representative for the annual load pattern. An annual load curve will be extrapolated from the data.

# Scope of Activities

Collection of information (listed below under 3.1 and 3.2) shall be carried out at different sites identified by GIZ across Burundi (mainly Bujumbura). The contract foresees a **maximum of up to 8 sites in Burundi** during the contract period.

GIZ shall notify the consultant at least 1 week ahead of planned commencement of load measurements. In case a site has two or more connection points to the grid/other generation sources, the measurement at all connection points must be carried out at the same time.

Corresponding to the number of sites foreseen, it is estimated that on average, three (3) parallel measurement points per site (up to 20 points measured in total) are required. Considering multiple sites might require measurements during the same period, GIZ requires that the contractor is capable of measuring and providing access to minimum of four (4) devices. Each measuring point is measured by one device, with one or more (3-phase) streams: one stream measures 3 channels, one channel per phase.

The actual number of measured points per site is likely to differ from the above. Therefore, the contract can include **up to a maximum of 8 sites** or **up to a maximum of 20 measurement points**.

The contractor is responsible for providing the following services:

## Electrical System Configuration

**Power Supply** (see Annex 1: Specification of Generators)

* + - Grid connection level and rated capacity (if connected),
    - Rated power of all Transformers
    - Generators (brand, model, fuel type, commissioning date, etc.)
    - UPS system (battery based): type, year of manufacturing, rated power, rated capacity
    - Existing PV

**Electrical Layout** (see Annex 2: Single Line Diagram)

* + - Mapping of all 3-phase consumers
    - Identified connection point(s) of data logger(s) for quantitative load measurements

*Please refer to the included annexes, the standard shown there must be followed.*

If for any reason some of the data required cannot be provided, the consultant shall discuss with the respective Country Representative (CR) and if needed the Country Manager (CM).

## Load Profile

Measurements of load curves (each phase L1 L2 L3 separately) representing in sum the total load (e.g., grid connection (minimum) + generator(s)/UPS + PV) so that all sources with different pricing are measured separately and in parallel:

* In case a site has two or more connection points to the grid, aggregated data for all connection points can be collected and presented at the same time.
* In case a site has other sources of electricity generation, e.g., diesel generators, LNG generators, existing solar PV system, the data shall include all electrical outputs of such generators and be carried out at the same time with grid consumption to provide an accurate overview of total energy demand on-site.
* This means that for each site, the contractor must be able to provide multiple load curves for the same time period (e.g., deploy multiple meters and measure at multiple points in parallel)

The basic measurements recorded must include:

* + - Load [W] or Voltage [V], Ampere [A]
    - Consumption [Wh]

Additionally, if the measurement device provides data on power quality, they should be included in the data delivered:

* + - Min. frequency [Hz]
    - Max. frequency [Hz]
    - Max. frequency deviation [df/dt]
    - Average Power Factor [Cos phi]
    - Harmonics [THD up to 7th Harmonic]

**Period**: **2 weeks** of full, consecutive days (24/7) beginning the moment the device start recording data. The period should be suitable to be extrapolated to cover a whole year and needs therefore to be discussed and authorized by GIZ in order to find in cooperation with the site owner to record a period representative of the site activities, depending on the site´s operational schedule.

**Measurement equipment requirements**: It is preferable that the measurement device employed by the consultant has the capacity to transfer data via internet connection for online access and monitoring. The online data will be updated every 15-minutes to ensure on-time monitoring and troubleshooting. It is essential that the consultant can arrange sufficient equipment (owned or rented) and personnel capacity to conduct at least four (4) load measurements at two (2) different sites at the same time (if required).

**Granularity**: Measurements must be done in a resolution of **1 minute or better**.

**Gaps**: Measurements **shall not have any gaps**. If there would be gaps in the data collected, they shall be declared, explained and a suitable proposal for interpolation been made. In the final load profile submitted to GIZ, data gaps longer than 5 minutes will be added as data rows and the backgrounds will be declared (e.g., power cuts, generator maintenance, weekends, internet connection disruption, logger/ meter error, etc.) and a suitable proposal for interpolation been made. It remains under the full discretion of the customer whether he accepts or refuses the suggested fixing method or refuses the measurement in case that the measurement data may not be sufficiently representative.

**Accuracy** must be better than **2%**. Datasheet and calibration protocol of the metering device must be provided.

In case of **major power supply deficiency or interruption** at the intended site in which the site owner is not able to conduct normal business operation, the load measurement will be delayed until normal operation is resumed. It remains under the full discretion of the GIZ whether the situation is considered a major power supply deficiency and therefore, the load measurement should be postponed.

* + - Data shall be checked on plausibility (to be confirmed by the supplier)
    - Access to the remote dashboard
    - Measurement data files has to be provided in an Excel format (xls, xlsx) or comma separated values (csv)
    - Individual files for each load measurement point
    - Summary file of all measurements combined to a total load
    - Measurements must be provided with timestamps in local time or UTC

A sample Excel file of a load measurement is provided in the annex. The information marked as mandatory needs to be delivered.

**Special considerations:**

* + - Load profile of multiple generators can be measured via the same device, provided that, the generators use the same type of fuel (diesel or LNG) AND have the same operational schedule AND are fed into the same distribution board. The logger in this case can be installed to measure the output of the distribution board.
    - It is not required to acquire data of any stand-alone supply source (e.g. generator), except for the grid, which is deployed as back-up solution and contributes to less than 5% of total annual energy consumption. This must be discussed and agreed with GIZ prior to the logger installation.

# Tasks and deliverables

Period of assignment: From approximately **01.09.2022** until **31.03.2023**.

|  |  |
| --- | --- |
| **Task** | **Deliverable** |
| Electrical system configuration | * Single Line Diagram (SLD) * Information sheet of site’s power supply |
| Load measurements | * At least two (2) calendar weeks (14 days) of load measurement data of the different energy sources on site |
| Analysis of data | * Load measurement report and load measurement data in the format provided and checked for accuracy, discrepancies and/or gaps |

## Milestones

Certain milestones, as laid out in the table below, are to be achieved during the contract term, for each location (site):

|  |  |
| --- | --- |
| **Milestones per site** | **Deadline/place/person responsible** |
| Delivery of site’s electrical system (single line diagram and information of site’s power system) **in English** | Up to 5 working days after GIZ’s official request on individual load measurement and site survey has been conducted.  Communication format: via email to GIZ. |
| Delivery of quantitative load measurements **in English** of individual case | The load measurement will start upon GIZ’s approval of the single line diagram, measurement points, measurement duration and the quantity of loggers/meters.  The consultant will deliver the load profile of the first week at the beginning of the second week to GIZ for review on quality and potential adjustments, if any.  When available, the contractor will provide access to the web interface of the logger for remote monitoring.  The full load profile will be delivered at latest within 3 working days via email to GIZ after the measurement has concluded. |
| Delivery of short report **in English.** | The short report will be delivered at latest within 5 working days via email to GIZ, after the measurement has concluded. |

# Concept

In the bid, the bidder is required to show how the objectives defined in Chapter 3 are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept). In addition, the bidder must describe the project management system for service provision.

## Technical-methodological concept

**Strategy**: The bidder is required to consider the tasks to be performed with reference to the context of the services put out to tender (see Chapter 2). Following this, the bidder presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Chapter 3).

The bidder is required to present the actors relevant for the services for which it is responsible and describe the cooperation with them.

The bidder is required to describe the key processes for the services for which it is responsible and create a schedule that describes how the services according to Chapter 3 are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Chapter 3.

The bidder is required to describe applicable safety standard procedures that will be adopted in the course of the tasks to be performed

1. **Background**
   1. Information including main focus of organisation’s activities, years of experience
   2. Specific experience: years of experience and services offered relevant to the assignment
2. **Strategy**
   1. Description and justification of the contractor's strategy for delivering the services put out to tender (see Chapter 3)
   2. Measurement devices available: quantity, make, model, offered functionalities, such as: data measured, granularity, remote services, data storage, etc.
3. **Project management of the contractor**
   1. Approach and procedure for coordination with/in GIZ project
   2. Personnel assignment: experts proposed (duration and expert days) with the allocation of work steps (see Chapter 6)
4. **Financial Offer** (see Chapter 7)

It must be evidenced in the technical offer that the contractor has **sufficient technical equipment** (load measurement devices/data loggers)with purchasing document proof or rent agreement, as well as human capacity to deliver the load measurement and site survey data to GIZ under the above requirements.

It must be specified in the technical offer that the bidder can **arrange personnel and equipment within the period of 1 week** (5 working days) **upon receiving the request from GIZ** responsible officer, to conduct site survey, set up equipment and deliver the data to GIZ.

The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.

* The contractor is responsible for selecting, preparing, training and steering the experts assigned to perform the advisory tasks.
* The contractor makes available equipment and supplies (consumables) and assumes the associated operating and administrative costs.
* The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.
* The contractor reports regularly to GIZ in accordance with the AVB of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH from 2018

In derogation from GIZ AVB, the contractor makes contributions to reports to GIZ’s commissioning party instead of submitting its own reports.

The contractor submits the following reports:

* Reports per site assessment
* Brief quarterly or half-yearly reports on the implementation status of the assignment

Sub-contracting is not permitted without prior GIZ approval. The consultant shall enforce strict discipline and good order among staff and other persons carrying out the work and shall not permit employment of unfit persons or persons not skilled in assigned tasks.

The contractor shall be responsible for initiating and supervising all safety precautions and programs including all required by law. The consultant shall take reasonable precautions to prevent damage, injury or loss to employees and other persons who may be affected, to materials and equipment or to property at the site. The consultant shall promptly remedy such damage and loss.

The bidder is required to draw up a **personnel assignment plan** with explanatory notes that lists all the experts proposed in the bid; the plan includes information on assignment dates (duration and expert days) and locations of the individual members of the team complete with the allocation of work steps as set out in the schedule.

## Confidentiality

The contractor hereby undertakes to maintain confidentiality during and after the completion of the assignment with respect to all business matters of which he learns during his time with the project and the outputs that are developed. Permission in writing must be obtained from GIZ before any publication.

The contractor is not allowed to provide a commercial offer or proposal to the organisation where the measurements where recorded (also known as off-taker). There shall be no transfer of information between the consultant and the off-taker, and any request for additional information shall be made through GIZ.

## Further requirements

**Flexibility considerations due to COVID 19:** Due to the current situation of the COVID19 pandemic and consequentially unforeseeable travel and social contact restrictions by the local Government or by site owners, as well as the increased business insecurity and current disruption of supply chains, the bidder must take into consideration these scenarios:

* There might be certain period under the contract duration when load measurement cannot be conducted, whereas in others, multiple load measurements might be requested at the same time.
* It could be the case that the contractor would have long waiting time and fewer load measurements conducted (e.g., 5, 10, 15) compared to estimated “up to 20 measurement points” by the end of contract duration.
* Additionally, it could be also the case that the contractor could not remove the load measurement equipment from the sites in due time due to local curfews or social contact restrictions.
* With the first cases after lock-down is relaxed, business at the factories might not be stable for a certain period. It might be necessary to prolong the load measurement longer than 4 weeks to a) learn the moment when production ramps up again and b) have full 4 weeks of qualified load measurement of the factory under operation. In order to be able to monitor whether production has started again, the meters need to remain connected on site and supply data with no communication (in case of remote monitoring) or storage restrictions.

It is therefore of high importance that the bidder takes all the above into consideration when preparing the technical and financial offers, e.g., estimating, and proposing the efforts to prepare capacity corresponding to different scenarios.

Please consider again that GIZ is procuring “Quantitative and Qualitative Data Delivered”, thus the contractors services can only be accepted as fulfilled once the data is handed in as per the above requirements.

# Personnel Concept

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved and the required qualifications.

## Team leader

Tasks of the team leader

* Overall responsibility for the deliverables of the contractor (quality and deadlines)
* Coordinating and ensuring communication with GIZ, partners and others involved in the project
* Regular reporting in accordance with tasks, milestones and deadlines

Qualifications of the team leader

* Education/training (2.2.1): B.Sc. degree in Electrical Engineering, Industrial Engineering/Management, Renewable Energy or Energy Management
* Languages (2.2.2): Good English skills for reporting is required
* General professional experience (2.2.3): 5 years in renewable energy project development, market and business development
* Specific professional experience (2.2.4): 3 years of experience in the field data collection, load measurements for photovoltaic project development / energy auditing
* Leadership/management experience (2.2.5): 3 years of experience with international team management
* Regional experience (2.2.6): 3 years of experience with Burundi is an advantage
* Development Cooperation (DC) experience (2.2.7): Understanding of documentation and administrative processes of DC is a plus
* Other (2.2.8): Good network and experiences working with local industrial companies in Burundi. Intermediate French for field deployment in Burundi is an advantage.

## Expert pool

Pool of experts with a minimum of 1 and maximum of 4 members.

Tasks of the short-term expert pool

* Travel to and from company identified by GIZ
* Installation and deinstallation of measurement devices
* Transport of data loggers
* Data evaluation
* Also see described in chapter 3

Qualifications of expert pool

* Education/training (2.6.1): B.Sc. degree in Electrical Engineering, Energy Management, certified electrician, or similar.
* Language (2.6.2): Good English (C1) especially for writing reports, Good French/Kirundi/Swahili (B2) especially for field deployment is an advantage.
* General professional experience (2.2.3): 2 years of experience with suppliers, contractors of industrial electrical systems/components, operation and/or maintenance services to electrical systems of industrial scale, consultancy on industrial energy system
* Specific professional experience (2.2.4): 3 years of experience performing electrical load measurements from different power supply sources
* Regional experience (2.6.5): Burundi / East Africa
* Leadership/management experience (2.2.5): at least 3 years on project management
* Regional experience (2.2.6): Not required
* Development Cooperation (DC) experience (2.2.7): Understanding of documentation and administrative processes of DC is a plus
* Other (2.2.8): Good network and experiences working with commercial and industrial companies in Burundi is a plus

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

* Experience working in a team
* Communication skills
* Sociocultural competence
* Efficient, partner- and client-focused working methods
* Interdisciplinary thinking

# Costing Requirements

As the expected delivered service is “Quantitative and Qualitative Data”, which can only be accepted once the data of each case is submitted to GIZ and fulfils all above requirements in chapter 2. The costing should be calculated based per site and per measurement point, on completed case basis and include fullefforts (equipment, human resources, travel) that the bidder requires to deliver complete data for each case.

## Data service: Electrical system configuration

The contractor shall include a cost position (per site) for data-as-a-service for electrical system configurations for **up to** 8 sites.

## Data service: Load Measurements

The contractor shall include a cost position (per measurement point) for data-as-a service for **up to** 20 measured points carried out. GIZ will not request any load measurements independent from requesting electrical system configuration data. (e.g., any load measurement is always linked to a site verification).

## Unavoidable restrictions (Force majeure)

If restrictions arise due to the measures to combat the Corona virus / COVID-19 (restrictions on admission, travel, mobility, quarantine measures, etc.) GIZ and the contractor are obliged to adjust their contractual services to the changed conditions in good faith, e.g., in terms of period of performance, service content and - if necessary - remuneration.

## Travel expenses

Travel should be undertaken in the most cost-efficient and environmental-friendly manner, reducing the number of trips necessary to perform tasks without affecting performance or final outputs. These expenses can be reimbursed according to GIZ travel cost regulations.

A maximum budget of 4.000 EUR is assigned for travel expenses to measurement sites. The travel costs are ONLY reimbursable with the submission of invoices.

# Inputs of GIZ or other actors

GIZ and/or other actors are expected to make the following available:

* Templates necessary for providing the requested data
* Access to the site where the measurements will be performed
* When possible, guided assessment of the site’s electrical infrastructure by the person responsible for its administration and/or maintenance.

# Requirements on the format of the bid

The structure of the bid must correspond to the structure of the ToR. In particular, the detailed structure of the concept (Chapter 4) is to be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The **bid is drawn up in English**.

The complete bid shall **not exceed 10 pages** (excluding CVs).

The offer must include a technical and financial offer, detailing the cost per site for “data service: Electrical system configuration” and per measurement point for “data service: Load Measurements”. Please note that only costs stated in the offer can be taken into account by GIZ. The technical offer needs to include an overview of the equipment proposed to be utilised during the term of the contract, including the maximum number of devices available for simultaneous measurements.

The CVs of the personnel proposed in accordance with Chapter 4 of the ToR must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages. The CVs must clearly show the position and job the proposed person held in the reference project and for how long. The CVs are to be submitted in English.

If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

Please calculate your price bid based exactly on the aforementioned costing requirements. In the contract the contractor has no claim to fully exhaust the budgets. The budget amount shall be agreed in the contract as ‘up to’ amounts.

# Option

The contractor shall include in the offer costs per additional measurement unit in case more than 4 devices are required (rented or owned) to be used simultaneously (specified in financial offer).

# Submission of offer

The Expression of Interest should contain the following:

Technical Proposal:

* + A cover letter expressing your interest in this assignment
  + Technical proposal
  + CVs of the experts
  + Company registration certificate (RDB)
  + VAT registration certificate
  + Valid tax clearance certificate
  + Proof of successful completion of related assignments.

Financial Proposal:

The Financial Proposal indicates the all-inclusive total contract price, supported by a breakdown of all costs. The cost must be in Rwandan Francs and VAT excluded.

Please submit electronically your EoI (technical & Financial offer) in 2 separated emails and should be in PDF files to this email: [**RW\_Quotation@giz.de**](mailto:RW_Quotation@giz.de) until latest **5th August 2022**.

Please you must write in your email subject this sentence:

**EOI number . 83415401 - submission of technical& financial offer**,

without this sentence, your offer may not be considered

Hard copies are not allowed this time

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# List of abbreviations

|  |  |
| --- | --- |
| AVB | General Terms and Conditions of Contract (AVB) for supplying services and work 2018 |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH |
| LNG | Liquefied natural gas |
| PDP | Project Development Programme |
| PV | Photovoltaic |
| ToR | Terms of Reference |
|  |  |

# Annexes

Annex 1: Methodological remarks (see below)

Annex 2: Specification of generators (see below)

Annex 3: Example of a single line diagram (see below)

Annex 4: Example of a load measurement sample Excel file (see separate file)