Terms of reference (ToR) for the procurement of services below the EU threshold

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CONFIDENTIAL

Assessing the feasibility of micro-grids for the electrification of urban informal settlements in South Africa	**Project number:** **20.2108.7-001.00**

List of abbreviations and acronyms

AVB	Allgemeine Vertragsbedingungen (General Terms of Contract)
BESS	Battery Energy Storage System
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry for Economic Cooperation and Development)
C2	Common European Framework of Reference for Languages (CEFR), level 2 (i.e. proficient)
CAP	Challenge, Action, Promise (framework)
CAPEX	Capital Expenditure
CoCT	City of Cape Town
DB	Distribution Board/Box
DC	Direct Current
DEDEAT	Eastern Cape Provincial Department of Economic Development, Environmental Affairs and Tourism
DMRE	Department of Mineral Resources and Energy
EDI	Electricity Distribution Industry
EPC	Engineering, Procurement and Construction
EXCO	Executive Committee
FBAE	Free Basic Alternative Electricity
FBE	Free Basic Electricity
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
INEP	Integrated National Electrification Programme
kW	kilowatt
kWh	kilowatt hour
LCOE	Levelised Cost of Electricity
LV	Low Voltage
MayCo	Mayoral Committee
MTF	Multi-Tier Framework
MW	Megawatt

MWh	Megawatt hour
NERSA	National Energy Regulator of South Africa
NGO	Non-governmental Organisation
NT	National Treasury
OPEX	Operational Expenditure
PAYGO	Pay-as-you-go
PR Eng	Professional Engineer
PV	Photovoltaic
SAGEN	South African-German Energy Programme
SALGA	South African Local Government Association
SE4ALL	Sustainable Energy for All Programme
SLD	Single Line Diagram
SWOT	Strengths, Weaknesses, Opportunities and Threats (Analysis)
ToR	Terms of Reference

1. Context

1.1. Brief introduction to SAGEN

The South African-German Energy Programme (SAGEN) supports South African partners to manage the energy transition with a focus on renewable energy and energy efficiency. SAGEN is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in cooperation with the Department of Mineral Resources and Energy (DMRE), Eskom and the South African Local Government Association (SALGA) under the government-to-government coordination of National Treasury (NT).

SAGEN's support includes the following fields of intervention towards the transformation of the South African energy sector:

- Power Sector Reform and Regulation,
- Power Systems Planning and Operation,
- Embedded Generation in Distribution Networks,
- Municipal Energy Management Systems,
- Capacity Building for the Energy Transition and Electricity Distribution Industry (EDI) Reform, and
- Gender Mainstreaming in Energy.

As part of SAGEN's collaboration with SALGA and municipalities, the programme would like to explore the feasibility of alternative, clean solutions such as micro and mini grids for the electrification of underserved urban areas, such as, informal settlements as part of the transition towards a more inclusive, decentralised and sustainable energy system.

1.2. Brief context for the project

Approximately 93,4% of the South African population who live in rural areas have access to electricity compared to the 87,1% of the population in urban areas[1,2]. One of the reasons for this is the rapid urbanisation taking place in cities, and the increased demand for electrification that comes with it, leaving pockets of underserved areas; the majority of them being informal settlements. Electricity distributors have the mandate to electrify underserved areas in their jurisdiction, however electrification via the grid can often take long or it may not be possible due to network capacity constraints or a lack of low voltage (LV) reticulation. In these instances, it may be viable for utilities to consider alternative solutions for the provision of basic, modern energy services.

[1] https://data.worldbank.org/indicator/EG.ELC.ACCS.RU.ZS?locations=ZA
[2] https://data.worldbank.org/indicator/EG.ELC.ACCS.UR.ZS?locations=ZA

Given the evolving landscape of innovative energy access solutions, the financial constraints faced by municipalities, as well as the uncertainty of sustainable funding mechanisms under the proposed multi-market model in South Africa for electricity provision to vulnerable customers, municipalities must begin to examine the options available to them. This may include evaluating potential alternate service delivery models or considering innovative energy access solutions, such as micro and mini grids, to bridge the gap in areas where grid electricity is yet to be provided.

Microgrids are decentralised electrical systems used by small residential or commercial consumers and are categorised as isolated (not connected to the grid) or non-isolated (grid-tied with an island mode) [3,4,5]. Microgrids are gaining traction in South Africa, with a number of installations across the country already. As of May 2024, Eskom had installed 20 microgrids with plans to roll out a hundred more[6]. There are also a handful of others installed by private companies mostly in the Eastern and Western Cape. Micro and mini grids may be a cheaper, cleaner, and more financially sustainable option for the electrification of underserved areas. In addition, these systems can be implemented with a variety of ownership models (utility owned, customer owned, community/partnership owned) which also makes it an interesting solution to explore. However, it is not always known where and when this solution is best deployed and what conditions influence its feasibility. Therefore, the proposed assignment, as described in this ToR, will aim to assist municipalities with understanding the following: 1) the feasibility and opportunities that micro and mini grids present for providing electricity in urban underserved areas such as informal settlements, 2) the criteria for assessing and prioritising locations for microgrids, and 3) the limitations that may exist under current legislation/practices and the specific areas to advocate for policy reform where necessary.

2. Tasks to be performed by the contractor

The contractor is responsible for providing the following services, which are described in five work packages below:

2.1. Work package 0: Project Management

This work package includes time to ensure sound project management for the duration of the assignment. It entails developing, maintaining and following a workplan, organisation of monthly progress update meetings and ad-hoc meetings as required, as well as ensuring the high-quality and timely delivery of all deliverables and documenting them accordingly.

As one of the first steps following the appointment of the consultants, GIZ will facilitate the organisation of an in-person inception meeting, held at the GIZ offices in Pretoria or at the City of Cape Town offices. GIZ will send out the invitation for the inception meeting, and work

[3] https://www.iec.ch/energies/minigrids-microgrids
[4] https://webstore.iec.ch/en/iec_catalog/product/preview/?id=L3B1Yi9wZGYvcHJldmlldy9pbmZvX2llY3RzNjI4OTgtMXtlZDEuMX1lbi5wZGY=
[5] https://www.eskom.co.za/distribution/microgrid/
[6] https://mybroadband.co.za/news/energy/538451-eskoms-new-microgrid-plan.html

closely with the consultants to formulate an agenda. The appointed consultants (hereafter referred to as "the consultants") are required to prepare a presentation encompassing the proposed work approach/methodology as per their proposal, a draft work plan (with a detailed breakdown of work steps, milestones, commenting/feedback periods and timelines), the proposed coordination concept for the project, and the proposed mitigation measures for any risks/challenges foreseen. The work plan should be updated and maintained following the inception meeting.

The consultants are required to liaise with the appointed project manager from GIZ and the designated team responsible for various aspects of the project. GIZ will facilitate contact with the respective focal point/s at the City of Cape Town, who will then facilitate contact with the various department officials and external stakeholders as required. A project steering group[7] will be established by GIZ for this project. In order to keep the group updated, the consultants shall organise regular progress update meetings on a monthly basis, held via Microsoft Teams. The consultants shall use these meetings to provide an update of the status of the project and describe the tasks that have been achieved and those outstanding against the workplan, and/or to present the outcomes of the work to solicit inputs as required from the steering group. Any deviations from the workplan must be discussed and agreed upon. The consultants shall capture key discussion points and action items from these meetings (as opposed to full meeting minutes) and share them with the project steering group via email or posted on a joint project management tool (e.g. Kanban board, Trello, etc.), within three days of the meeting being held. The discussion points and action items will then serve as reference for the way forward, in conjunction with the ToR.

With respect to the review of the deliverables of this assignment, the consultant shall ensure adequate time is catered for the review from the project steering group, with at least 2 feedback rounds for all major deliverables (i.e. literature review report and tool). GIZ will review **all** deliverables as part of this assignment, with the project steering group reviewing the agreed upon deliverables according to their available capacity (to be discussed during the inception meeting). In addition, the consultants are required to make all deliverables available in their original format (for the purpose of commenting/editing) as well as in pdf (for the final versions) and will be required to set-up a shared drive for the documentation and sharing of deliverables.

2.1.1. Work Package 0 Deliverables:

- Presentation (max 25 slides, made available in PowerPoint and pdf format) prepared and presented during the inception meeting (in-person).
- Inception meeting notes (no inception report required) with key discussion points and action items captured, coordination concept/protocol, and updated detailed work plan (max 5 pages, made available in Word format for the draft and pdf for the final version) prepared and shared with meeting participants.
- Monthly progress update meetings held with MS Teams, with key discussion points and action items captured and shared with meeting participants.

[7] Steering group: GIZ, SALGA, DMRE and the nominated representatives from the City of Cape Town.

2.2. Work package 1: Literature review

The consultants shall provide an overview of current literature around micro and mini grid technology in the South African and developing country context. The literature review shall aim to cover the definition of mini- and microgrids, provide a stock-take of the adoption in the country, describe the different ownership models that can be employed, and list the benefits, advantages and risks of the technology. In addition, a policy and regulatory review, legal opinion on key issues, documentation of at least four case studies on interesting applications and some of the lessons learnt, and an overview of financial and implementation mechanisms shall be included as part of the literature review report.

As some literature already exists on mini grids, microgrids and their application should be prioritised as far as possible.

Case study development

Documentation of the main lessons learnt from selected installations shall be conducted based on available research and stakeholder engagements with, for example, Eskom on their Swartkopdam installation, City Power on their Alexandra micro-grid, private utilities or companies that operate in the informal settlement context and their respective installations, the Eastern Cape DEDEAT's for the Upper Blinkwater mini grid, as well as other targeted industry and community representatives as necessary. Case studies shall be prioritised where mini/microgrids have been used for the electrification of urban underserved areas, or where the lessons learnt could be applicable to this context. The consultants are required to prepare a set of guiding questions for the stakeholder engagements, and describe the following in each case study, amongst other aspects as relevant:

- The location of the system with pictures included of the mini/microgrid (with the appropriate citations),
- Technical information of the installation such as the total installed generation (kW/MWs) and storage capacity (kWh/MWh) of the system, unit sizes, network configuration, i.e. whether it is an off-grid, grid-connected or hybrid installation, components, etc.
- Description of how the mini/microgrid is being utilised, how many households it is providing electricity to and to what level of energy service*,
- The role of the utility, community, and/or private sector if relevant,
- The source of funding or financing arrangement for the system,
- Tariff structure,
- Ownership, operation and maintenance responsibilities for the system,
- Impacts and benefits of the system, and
- Key lessons learnt around the project implementation.

*As far as applicable, the energy service level shall be described against the SE4ALL Multi-Tier Framework (MTF) developed by the World Bank Group i.e. [8]:

- Tier 2: Minimum of 50W available for 4 hours per day
- Tier 3: Minimum of 200W available for 4 hours per day

[8] Open Knowledge Repository (worldbank.org)

- Tier 3-4: Between 200W and 800W available for 8 hours per day

Note: Should systems not adhere to the MTF as listed above, it shall not be considered a limiting factor for the case study development. Projects that did however apply the MTF should be given preference.

Policy review

As part of the literature review, the consultants shall provide a detailed desktop review of the current South African legislative and policy framework that relates to or supports the off-grid electrification of underserved areas/urban informal settlements, for example, this may include but is not limited to the Integrated National Electrification Programme (INEP) policy framework, informal settlement upgrading policies, electricity reticulation policies and any relevant municipal by-laws thereof. In addition, the consultants should also cover the legislative and policy framework that specifically relates to micro and mini grids.

The analysis shall include a description of the relevant legislation/policies, an assessment of the gaps/blind spots and a quantification/estimation of the consequences thereof; conflicts, challenges, opportunities, and outline any reporting requirements for municipalities where applicable. Based on the identified gaps, the consultants shall formulate policy recommendations and propose the necessary institutional arrangements, outlining the roles and responsibilities of key players (for example municipalities, NERSA, National Treasury and the DMRE) to facilitate the increased uptake of micro and mini grids as a solution for the clean, affordable, and efficient electrification of informal settlements and underserved urban areas.

Lastly, based on the work undertaken above, the consultants should summarise the main findings from the policy review and prepare a mini booklet with policy recommendations aimed at decision makers.

Legal opinion

The consultants shall also provide a legal opinion about the following key issues relating to micro and mini grids:

- The technical parameters of what ‘distribution’ entails and the requirement for distribution licenses in light of third-party ownership models for mini and microgrids;
- Where microgrids can/cannot be deployed and identify the scenarios or ideal legal conditions where micro-grids would be most suitable, i.e. this must be evaluated against the framework of various land ownership arrangements, the presence/absence of environmental hazards, land zoning, as a permanent or temporary measure whilst upgrading of informal settlement pipelines, and so forth.
- Provision of a clear definition of FBE and FBAE and the integration thereof for electrification projects and applicability with micro and mini grids.

Financial and implementation mechanisms

As one of the key challenges for electricity provision in urban informal settlements with micro-grids is the limitations of the INEP grant and access to financing, the consultants are expected to provide an overview of the potential financial options that municipalities can tap into, or implementation mechanisms where funding can be leveraged. This shall include an overview and analysis of applicable grants, funding/financing options, private-public partnerships, pay as you-go (PAYGO) arrangements, community ownership models, stokvel microgrid systems, and so forth.

The analysis should include a description of the option/mechanism, their conditions/requirements (e.g. distribution license, assets purchased to be part of the municipal asset registry, etc.), as well as an assessment of which financial and implementation options are suitable for particular scenarios. It shall also describe the extent that these instruments are currently used or not and any challenges associated with them, as well as describe the extent that the majority/different categories of municipalities (metropolitan, district and local) would meet the defined criteria. Where municipalities are eligible, the benefits/value-add of the implementation mechanisms should be quantified. On the other hand, should certain municipalities not be eligible, the necessary steps for the cost and time associated to meet the requirements must be elaborated on.

2.2.1. Work Package 1 Deliverables:

- Literature review report (max 35 pages, made available in Word for the draft and pdf for the final version) with the following elements:
    - Background information on micro and mini grids.
    - Minimum four case studies with key lessons learnt from existing systems implemented around the country.
    - Analysis of the regulatory and policy framework for the electrification of urban informal settlements, and micro and mini grids. Formulation of policy recommendations and institutional arrangements for decision makers in order to create an enabling legal and regulatory framework for micro-grids as a solution for the clean, affordable, and efficient electrification of urban informal settlements.
    - Analysis of existing government grants, financing options, and implementation /partnership options and proposal of suitable options for municipalities in general.
- Development of a mini booklet (max. 15 pages) with policy recommendations based on the policy analysis work undertaken above (made available in Word and pdf).

2.3. Work package 2: Engagements with internal stakeholders and communities

As part of this work package, the consultants shall conduct a brief stakeholder mapping exercise which aims to identify the key internal stakeholders at the City of Cape Town and external stakeholders that need to be engaged with during the project. A stakeholder map shall be prepared detailing the various stakeholders that are identified as important to engage with during this assignment, their names, contact details, designation, organisation, role, details about when they need to be engaged and how they will be engaged (brief engagement strategy including frequency of engagement, method, etc.).

Internal stakeholder engagements

The aim of the internal stakeholder engagements is to enquire about the potential possibilities and limitations with regards to the implementation of micro-and mini-grid projects in the City. The identification of internal stakeholders shall be done in close collaboration with the City of Cape Town project steering group representatives. Some of the relevant internal stakeholders to engage with may be from departments such as Human Settlements, Finance, Legal, and so forth.

It is recommended that the internal stakeholders are grouped so that engagements with multiple representatives can take place sequentially within one or two days, or within one setting (focal group setting). For this, the consultants should prepare a set of guiding questions which may be different for each department. As a minimum, the formulation of the questions shall be guided by the questions that the project steering group has relating to the objectives of this assignment. Engagements could take the form of in-person or virtual engagements. The engagements must be captured through recordings and brief notes.

Community stakeholder engagements

The aim of the engagements with community stakeholders is to support the assessment of buy-in for a micro/mini grid electrification project concept, and assess the communities' needs and concerns. Community stakeholders can be residents of the selected community, private companies that have implemented microgrid or renewable energy projects in informal settlements previously such as iShack or Zonke Energy, and community representatives such as NGOs, civil society organisations, traditional leaders, etc.

Community stakeholder engagements shall be held in no more than three communities, identified by the City of Cape Town. The City of Cape Town will lead these engagements together with the respective ward Councillors and will be responsible for arranging the logistics and presenting the content for the day. The consultants are required to support the City of Cape Town with the development of material for the engagements with community stakeholders, such as:

- Inputs towards the City's presentation materials (which can be summarised content from Work Package1:
    - A simplified diagram with explanations of the technical elements/components of a micro grid;
    - Description and narrative articulating the opportunities and benefits of micro grids, and at least one case study where a microgrid has been implemented in an informal settlement in the country with the impacts described; and
    - A list of potential risks of the technology.
- Inputs towards a standardised agenda for the events.
- Preparation of 4 key messages that can be incorporated into the presentation or used during the engagement.

2.3.1. Work package 2 Deliverables

- Stakeholder map outlining the key internal and external stakeholders, listing their contact details as well as describes the engagement strategy (max 3 pages).
- A set of questions prepared for the internal stakeholder engagements with the City of Cape Town.
- Engagements with internal stakeholders held with brief notes captured from the engagements, and inputs integrated into the various deliverables as required.
- Support to the community stakeholder engagements provided through inputs towards required presentations, agendas and the formulation of 4 key messages.

2.4. Work package 3: Development and testing of a site selection tool for micro-and mini grid projects

The main objective of the tool is to assess the suitability of different sites for micro and mini grid projects, support the prioritisation of sites, and to facilitate a more transparent and objective way of choosing a site. In addition, the tool is also envisioned to support certain design elements of the microgrid such as whether the system is a temporary or permanent one, sizing, and so forth.

Development of the tool

The consultants shall develop a site selection tool in order to guide municipalities and project developers with assessing potential sites and choosing a suitable location for the implementation of micro-and mini-grid projects, as well as supporting the design of the system. The tool shall include a set of pre-screening or exclusionary criteria that may disqualify a site from being further evaluated, for example, this could be any legal considerations, immovable/unmitigable environmental hazards or regulatory factors. Following the initial screening criteria, various other criteria/determining factors for which a site can be examined by (input parameters) shall be developed. It is envisaged that the tool should then produce three sets of results or outputs i.e. 1) the type of system that would be most suitable in terms of a permanent versus temporary solution, 2) the energy service level that can be provided expressed as a range; and 3) an overall ranking for the locations that were assessed. The tool should also be dynamic so that users are able to play around with the various trade-offs or the application of mitigation measures (to be defined) for specified risks that can be averted or managed (to be defined).

The schematic below (Figure 1) proposes an outline of some of the potential factors and functionalities to consider but is not limited to the below. The tool shall also include sufficient guidance on usability though a brief user guideline.

The consultants are invited to propose an outline of the envisaged tool in their proposal.

Testing of the tool and assessment of three sites in the City of Cape Town

Following the development of the tool, the consultants shall test the tool by assessing three locations in the City of Cape Town (identified by the City, and ideally where the engagements with community stakeholders have taken place) against the criteria that was developed. The City of Cape Town shall accompany the consultants to the various sites for the assessment.

The tool should be amended as necessary following the testing phase. The assessment of the three sites should result in one site that was ranked the most suitable, which will then be verified through a detailed site assessment (Work Package 4).

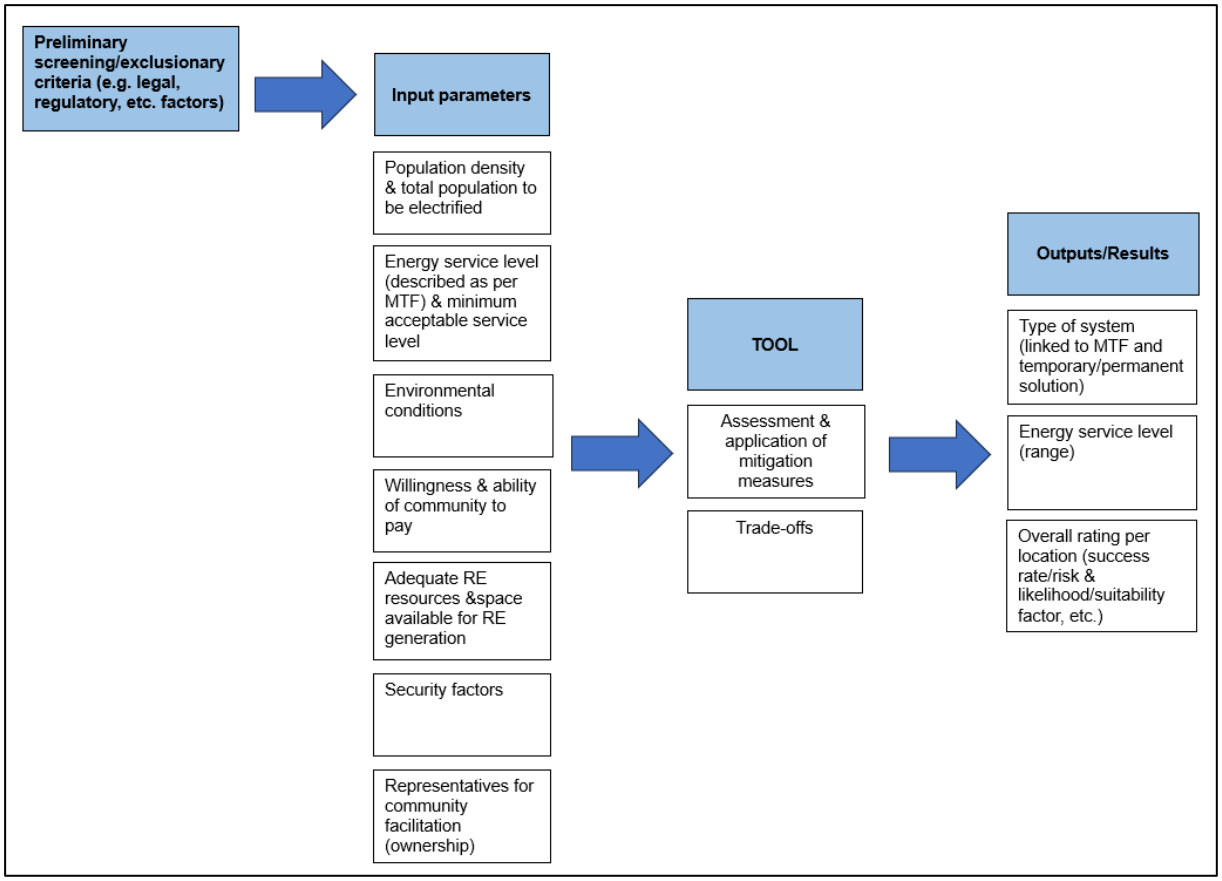

Figure 1. Proposed outline, criteria and functionality of the micro and mini grid site selection tool

2.4.1. Work Package 3 Deliverables

- Tool for site selection of micro and mini grid projects developed with assessment criteria, rankings and guidance on utilisation for users.
- Testing of the tool, results of the assessment of the three sites and one site selected for the detailed site assessment with a rationale provided.

2.5. Work package 4: Verification and detailed site assessments

As one of the last tasks that will inform the City of Cape Town whether it is viable or not to proceed with the next steps such as the design of the micro grid system and financial modelling, a detailed site assessment shall be conducted to verify the results from the tool (as per Work Package 3).

Detailed site assessment

The site ranked the most suitable under Work Package 3 shall be verified through a detailed site assessment. The assessment shall build upon the assessment done with the tool under Work Package 3, verify the results and add further details as necessary in terms of the geographic location, existing infrastructure (e.g. power lines, roads, buildings, etc.), available land, site access, possible grid interconnection points/substations and associated capacity for

potential grid connection in future, population density and demographics, environmental/geographical features and socio-economic indicators for the region.

Renewable energy resource assessment and demand analysis

An assessment of the available and most suitable renewable energy resources shall be performed for the site. In addition to a physical site assessment, desktop research may also be used where databases are deemed accurate and freely accessible. Results shall be produced at an hourly resolution for a typical year which will be used to predict generation and compared with demand.

It is expected that the tool should also provide guidance on the type of energy service tier level that can be provided. Should the City wish to consider options above the energy service tier level, then a load assessment and demand analysis for the site will be conducted to determine the load profile, as well as average and peak demand, which will be used for the sizing of the microgrid.

2.5.1. Work Package 4 Deliverables

- Detailed site assessment and verification of the site (max 10 pages, made available in Word for the draft and pdf format for the final).
- Renewable energy resource assessment and energy demand analysis (max 10 pages, made available in Word for the draft and pdf format for the final).

2.6. Deliverables and timelines

The following milestones, as laid out in the table below, are to be achieved during the contract term.

Milestones/process steps/partial services	Deadline/person responsible
Work Package 0: • Inception meeting presentation prepared. • Inception meeting notes and updated detailed work plan. • Monthly progress update meetings held, with key discussion points and action items captured.	• GIZ to secure a date for the meeting within 2 weeks of the appointment of the consultant (April 2025), send out the invitation and prepare agenda in collaboration with the consultants. • CoCT to provide a list of municipal officials to invite from the relevant departments. • Consultants to prepare the presentation and capture the key discussion points and action items. • Consultants to send out invitations and facilitate the monthly progress update meetings with notes captured.
Work Package 1: • Literature review report. • Policy recommendations mini booklet.	April-June 2025
Work Package 2: • Stakeholder map. • Internal stakeholder engagements questions.	April - July 2025

• Internal stakeholder engagements and notes captured. • Community engagement support.	
Work Package 3: • Tool for site selection of micro and mini grid projects. • Testing of the tool and results of the assessment.	August-October 2025
Work Package 4: • Detailed site assessment and verification of the site. • Renewable energy resource assessment and energy demand analysis.	October 2025

Period of assignment: from 07.04.2025 until 31.10.2025.

NB: *There is additional scope for consideration under Chapter 8 (optional services) which will extend the period of assignment until July 2026, should the requirements for exercising the option be fulfilled.*

3. Concept

In the technical proposal of the tender, the tenderer is required to show ***how*** the objectives defined in Chapter 2 (Tasks to be performed) are to be achieved, if applicable under consideration of further method-related requirements (technical-methodological concept). In addition, the tenderer must describe the project management system for service provision.

Note: The numbers in parentheses below correspond to the lines of the technical assessment grid.

Technical-methodological concept

Strategy (1.1): The tenderer is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1 Context) (1.1.1). Following this, the tenderer must **describe and justify** the explicit strategies with which it intends to provide the services for which it is responsible (see Chapter 2 Tasks to be performed) (1.1.2).

The tenderer is required to present the actors/partners/stakeholders and their interaction that are relevant for the services for which it is responsible (1.2.1) .

The tenderer is required to describe the key processes for the services for which it is responsible and create an operational plan or schedule (1.4.1) that describes how the services according to Chapter 2 (Tasks to be performed by the contractor) are to be provided. In particular, the tenderer is required to describe the necessary work steps.

Project management of the contractor (1.6)

The tenderer is required to explain its approach for **coordination with the GIZ project (1.6.1).** In particular, the project management requirements specified in Chapter 2 (Tasks to be performed by the contractor) must be explained in detail. T

NB: please also explain typical response times, length of review periods for minor versus major deliverables, communication structure/platforms, general approach for meetings and travel should all be described.

The tenderer is required to draw up a **personnel assignment plan (1.6.2)** with explanatory notes that lists all the experts proposed in the tender; including information on assignment dates (duration and expert days) and locations of the individual members of the team complete with a clear allocation of roles, tasks and work steps as set out in the schedule.

The tenderer is required to describe its **backstopping concept (1.6.3.)** for the assignment. The following services are part of the standard backstopping package, which (like ancillary personnel costs) must be factored into the fee schedules of the staff listed in the tender in accordance with Section 3.3.1 of the GIZ AVB (General Terms of Contract):

- Service-delivery control
- Managing adaptations to changing conditions
- Ensuring the flow of information between the tenderer and GIZ
- Assuming personnel responsibility for the contractor's experts
- Process-oriented steering for implementation of the commission
- Securing the administrative conclusion of the project

4. Personnel concept

The tenderer is required to provide personnel who are well suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved in and the required qualifications. The below specified qualifications represent the requirements to reach the maximum number of points in the technical assessment.

Team leader

Tasks of the team leader

- Overall responsibility for the project management of the assignment, quality assurance and adherence to deadlines as per work plan.
- Coordinating and ensuring communication with GIZ, partners and others involved in the project.
- Personnel management, in particular identifying the need for short-term assignments within the available budget, as well supporting experts.
- Regular reporting and progress updates in accordance with deadlines.
- Contributions to the technical delivery of the project, and overall technical steering.

Qualifications of the team leader

- Education/training (2.1.1): Post-graduate university degree (Masters) in Electrical Engineering, Environmental Sciences, Energy Studies, Urban Planning, Climate Change or similar (8 out a max of 10 points); and Project Management certification (Diploma or accredited short course) (2 of a max of 10 points).
- Language (2.1.2): C2-level language proficiency in English.
- General professional experience (2.1.3): 10 years of professional experience with renewable energy, micro/mini-grid, energy policy, energy systems or just transition projects in South Africa.
- Specific professional experience (2.1.4): 6 years of demonstrated experience with managing or leading components of feasibility studies for electrification projects,

renewable energy projects, or with mini/microgrid projects (5 points out of a max of 10 points); and 4 years of experience with projects working with local government in South Africa (5 out of a max of 10 points).
- Leadership/management experience (2.1.5): 5 years of management/leadership experience as a project team lead or manager in a company.
- Regional experience (2.1.6): 8 years of experience with projects in South Africa.
- Development cooperation (DC) experience (2.1.7): 3 years of professional experience with DC projects.
- Other (2.1.8): N/A.

Key expert 1: Legal expert

Tasks of key expert 1

- Responsible for the delivery of the 'Legal opinion' section under Work Package 1.

Qualifications of key expert 1

- Education/training (2.2.1): Master of Law degree (LLM) or equivalent.
- Language (2.2.2): C2-level language proficiency in English.
- General professional experience (2.2.3): 10 years of experience with renewable energy law/electricity regulation, environmental law, or municipal procurement law in South Africa.
- Specific professional experience (2.2.4): 6 years of experience with advisory on the legal requirements for the implementation of electrification projects in South Africa.
- Leadership/management experience (2.2.5): N/A
- Regional experience (2.2.6): 8 years of professional experience working in South Africa.
- Development Cooperation (DC) experience (2.2.7): N/A
- Other (2.2.8): N/A

Key expert 2: Finance expert

Tasks of key expert 2

- Responsible for inputs into the financial and implementation mechanisms section under Work Package 1.

Qualifications of key expert 2

- Education/training (2.3.1): Post-graduate degree (Masters) in Development Finance, Financial Modelling, Financial Planning, or similar.
- Language (2.3.2): C2-level language proficiency in English.
- General professional experience (2.3.3): 10 years of financial modelling experience for renewable energy projects or municipal infrastructure projects.
- Specific professional experience (2.3.4): 4 years of experience with electrification or with mini/microgrid projects.
- Leadership/management experience (2.3.5): N/A
- Regional experience (2.3.6): 8 years of professional experience working in South Africa.
- Development Cooperation (DC) experience (2.3.7): N/A.
- Other (2.3.8): N/A

Key expert 3: Micro/mini grid specialist

Tasks of key expert 3

- Contributions towards the literature review as per Work Package 1.
- Responsible for the technical delivery and overall steering of tasks under Work Package 3 (tool development and site assessment) and 4 (detailed site assessments).

Qualifications of key expert 3

- Education/training (2.4.1): Postgraduate degree (Masters) in Electrical Engineering, with ECSA registration (Pr Eng).
- Language (2.4.2): C2-level language proficiency in English.
- General professional experience (2.4.3): 10 years of work experience in the design of electricity distribution/ generation projects.
- Specific professional experience (2.4.4): 6 years of demonstrated experience working on feasibility studies for renewable energy projects, electrification or with mini/microgrid projects.
- Leadership/management experience (2.4.5): N/A
- Regional experience (2.4.6): 8 years of professional experience working in South Africa.
- Development Cooperation (DC) experience (2.4.7): N/A
- Other (2.4.8): N/A

Key expert 4: Communications expert

Tasks of key expert 4

- Contributions towards the policy recommendations booklet under Work Package 1,
- Steering of the tasks related to supporting the community engagements under Work Package 2.

Qualifications of key expert 4

- Education/training (2.2.1): Undergraduate degree in Communications, Marketing, Public Relations, Journalism, or related degree.
- Language (2.2.2): C2-level language proficiency in English.
- General professional experience (2.2.3): 4 years of experience with the development of knowledge products for energy related projects.
- Specific professional experience (2.2.4): 2 years of experience of knowledge management and creating digestible messages for renewable energy/just transitions/energy access related projects.
- Leadership/management experience (2.2.5): N/A
- Regional experience (2.2.6): 2 years of experience working in South Africa.
- Development Cooperation (DC) experience (2.2.7): 1 year of professional experience with DC projects.
- Other (2.2.8): N/A

Short-term expert pool with minimum 2, maximum 3 members

For the technical assessment, an average of the qualifications of all specified members of the expert pool is calculated. Please send a CV for each pool member (see below Chapter 7: Requirements on the format of the bid) for assessment.

Tasks of the short-term expert pool

- Contributions towards the literature review under Work Package 1,
- Contributions towards/steering of the tasks on the stakeholder mapping and stakeholder engagement support work under Work Package 2,
- Contributions toward the tool development and site assessments as per Work package 3 and 4.

Qualifications of the short-term expert pool

- Education/training (2.6.1): 2 to 3 experts with a university undergraduate qualification in Engineering, Environmental Sciences, Energy Studies, Urban Planning, Climate Change Mitigation/Resilience, Social Sciences or similar.
- Language (2.6.2): All experts with C2-level language proficiency in English.
  General professional experience (2.6.3): 1 to 2 experts with 6 years of professional experience working in the renewable energy sector and 1to 2 expert with 6 years of professional experience working with energy poverty, energy access or just transition projects.
- Specific professional experience (2.6.4): 1 to 2 experts with 4 years of professional experience working with renewable energy policy and 1 to 2 experts working with electrification projects using renewable energy for informal settlements in South Africa.
- Regional experience (2.6.5): All experts with 4 years of experience with projects in South Africa.
- Development cooperation (DC) experience (2.6.6): N/A
- Other (2.6.7): N/A

The tenderer must provide a clear overview of all proposed short-term experts and their individual qualifications.

Soft skills of team members

Although it will not be evaluated, the following qualifications and soft skills are required of team members:

- Team skills
- Initiative
- Communication skills
- Socio-cultural skills
- Efficient, partner- and client-focused working methods
- Interdisciplinary thinking

5. Costing requirements

Per diem allowances are reimbursed as a lump sum up to the maximum amounts permissible under the GIZ travel regulations.

Accommodation allowances are reimbursed as detailed in the GIZ South Africa Travel Regulations and specification of inputs below. With special justification, additional accommodation costs up to a reasonable amount can be reimbursed against evidence.

All business travel must be agreed in advance by the officer responsible for the project.

Sustainability aspects for travel

GIZ has undertaken an obligation to reduce greenhouse gas emissions (CO_2 emissions) caused by travel. When preparing your tender, please incorporate options for reducing emissions, such as selecting the lowest emission booking class (economy) and using means of transport, airlines and flight routes with a higher CO_2 efficiency. For short distances, travel by train (second class) or e-mobility should be the preferred option.

CO_2 emissions caused by air travel must be offset. GIZ specifies a budget for this, through which the carbon offsets can be settled against evidence.

There are many different providers in the market for emissions certificates, and they have different climate impact ambitions. The Development and Climate Alliance (German only) has published a list of standards (German only). GIZ recommends using the standards specified there.

Specification of inputs

Fee days	**Number of experts**	**Number of days per expert**	**Total expert days**	**Comments**
Team Leader	1	24	24	All expert days in the country of assignment - South Africa
Key expert 1: Legal expert	1	12	12	
Key expert 2: Finance expert	1	4	4	
Key expert 3: Micro/mini grid specialist	1	23	23	
Key expert 4: Communications expert	1	4	4	
Short-term pool of experts	2-3	Undefined per expert	36	
Travel expenses	**Quantity**	**Number per expert**	**Total in ZAR**	**Comments**
Fixed travel budget	1	Undefined	115.768,00	For all travel and travel related costs there is a budget of R115 768,00 which is already in the price sheet and will be

				reimbursed against evidence. This budget should cover the following costs: • up to 13 domestic flights • Up to 32 airport shuttles or taxi cost for local trips • Up to 6 Gautrain trips from ORTIA/JHB • Up to 650 km for local travels by car, based on reimbursement rate for SA on R4.84 • up to 20 Per-Diems and accommodation allowance according to GIZ South Africa regulations The costs are reimbursed in accordance with the country table in the GIZ travel expenses guidelines – per diem and accommodation as a lump sum, and all other travel and travel related costs against evidence. All travels must be agreed in advance by the officer responsible for the project. Travel expenses must be kept as low as possible.
CO2 compensation for air travel	1	Undefined	15.041,00	A fixed budget of R15 041,00 is earmarked for settling carbon offsets against evidence.
Other costs	**Number**	**Price in ZAR**	**Total in ZAR**	
Flexible remuneration	1	135.062,00	135.062,00	A budget of R135 062,00 is foreseen for flexible remuneration. Please incorporate this budget into the price schedule. Use of the flexible remuneration item requires prior written approval from GIZ.

6. Inputs of GIZ or other actors

GIZ will be responsible for the design, layout and dissemination of deliverables that require this.

The consultants are expected to work closely with the project steering group and additional relevant team members from the City of Cape Town as needed, where introductions will be made at the Inception meeting, or shortly thereafter, noted in a coordination protocol. The City of Cape Town will share any relevant documentation such as municipal by-laws/policies that may be required. In addition, the community stakeholder engagements (Work Package 2) will be conducted by the City of Cape Town, and any facilitation to the stakeholders for engagements (Work Package 2) will be made by GIZ or the City of Cape Town as required. It is advantageous if the consultants have existing relationships with the stakeholders as outlined in Work Package 1.

7. Requirements on the format of the tender

The structure of the tender must correspond to the structure of the ToR. In particular, the detailed structure of the concept (Chapter 3) shall be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). The tender must be legible (font size 11 or larger) and clearly formulated. It must be drawn up in English (language).

The complete tender must not exceed 30 pages (excluding CVs). If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages each. They must clearly show the position and job the proposed person held in the reference project and for how long. The CVs can also be submitted in English (language).

NB: *Please note that the submission of CVs alone does not meet the requirements of a personnel plan as required under Chapter 3.*

Please calculate your financial tender based exactly on the parameters specified in Chapter 5 Quantitative requirements. The contractor is not contractually entitled to use up the days, trips, workshops or budgets in full. The number of days, trips and workshops and the budgets will be contractually agreed as maximum limits. The specifications for pricing are defined in the price schedule.

8. Option

After the services put out to tender have been completed, important elements of these tasks can be continued or extended. Specifically:

Type and scope

The contractor is responsible for providing the following optional extended services described below in *a.* and *b*, to further assess the feasibility of micro-grids for urban informal settlements. The optional services entail the compilation of a pre-feasibility study for the location identified

with the tool under Work Packages 3 and 4, as well as the development of several complementary knowledge products for dissemination amongst other municipalities.

a. Technical and financial pre-feasibility study

This work package requires the consultants to compile a full pre-feasibility study for the site that was assessed under Work Package 4, in order to assess the technical and financial feasibility of microgrids for the electrification of urban underserved areas/informal settlements. The feasibility study shall include the relevant elements from the work packages above, as well as the additional elements as described below.

Design options for the micro grid

The consultants shall propose up to two options for the design of the proposed microgrid that may explore options across the energy service levels capable of addressing lower or higher demands as per the MTF, different network or technology configurations, or solutions that are configured for temporary versus permanent electricity provision - ideally all informed by the tool. The designs shall include plant sizing, concept layout design, network configuration options, proposed technology components, mounting structures (including a brief description of civil works), primary electrical equipment (e.g. inverters, transformers, switchgear, meters, anti-theft options), where applicable, and so forth.

The following are recommended solution typologies or architectures to consider, although they are not limited to these options:

- Conventional mini/micro-grid – permanent generation + storage and distribution infrastructure designed to either supply the area in the long term or to be integrated fully into the public grid should it become available.
- Containerised micro-grid: temporary generation + storage infrastructure and permanent distribution infrastructure. This would allow for a utilisation of the generation + storage components in other areas once the public grid is available which could utilise the distribution infrastructure.
- Low-Voltage DC micro-grid: Standardised application for temporary basic service level supply to a small number of customers which could be utilised once options for higher service levels are available.

Operational model and requirements

The consultants are required to describe the operational model for the microgrid design options that were proposed. This shall entail the procurement model including ownership structure, contractual requirements and roles of the different players, a list of the relevant licenses and environmental authorisations that are required, a description of the maintenance considerations for long term sustainability, a SWOT analysis and proposed mitigation measures for identified risks, and proposed financing/funding options (as identified in Work Package 1).

Financial modelling

The consultants shall assess the financial feasibility of up to two proposed microgrid options and build a business case for at least one option. This shall include but is not limited to a cost-benefit analysis, a sensitivity analysis, assessment of the net present value (NPV), payback period, LCOE, a detailed breakdown of the CAPEX and OPEX costs, and so forth.

As part of the financial model, a suitable tariff shall also be included for microgrid customers which includes the potential integration of FBAE, identification of any once-off/on-going costs if applicable, level of subsidisation, payment models that support affordability e.g. PAYGO, and so forth. The study should also explore how introducing microgrids in municipalities may impact the municipal business model, energy access, affordability, and potential benefits for tariff reforms.

Implementation roadmap

Lastly, a roadmap which outlines the next steps for the implementation of the project for example, the technical specifications for the most viable micro grid system, indicators to measure success and the desired impacts, etc. shall be compiled should the City of Cape Town wish to take this project further and scale up efforts around this.

b. Knowledge development, dissemination and scaling up impact

Knowledge product development

The consultants are required to prepare a concise summary of the pre-feasibility study for the purpose of dissemination and sharing of the key results internally, and externally with other municipalities.

Additionally, the consultants shall prepare a slide deck for the City of Cape Town which summarises the purpose and results of the pre-feasibility study. A few slides should also be included on content that can be used for presentations with Councillors, the Mayor/MayCo, etc. such as key results in plain language, the proposed benefits and impacts of the project, risks, feedback from stakeholders and the community (Work package 2), etc. The slide deck shall also include the development of two sets of narratives according to the CAP (Challenge, Action, Promise) framework, geared towards civil society (one set) and decision makers (second set) addressing the various opportunities and benefits of the microgrid project, as well as a total of four key messages for the City of Cape Town to utilise for various purposes. Note this must be different to the key messages developed under Work Package 2 for the community stakeholder engagements.

The preparation of the slide deck shall be done in conjunction with or guided by the City of Cape Town and be tailored to their foreseeable needs.

Lastly, the consultants shall prepare a brief, 2-page project factsheet which highlights, but is not limited to, the background information on the project, the estimated budget for implementation of the intended microgrid system and describes the challenges, opportunities, co-benefits and impacts of the project.

Upscaling impact and dissemination of knowledge

As the final task, the consultants shall organise a webinar for all municipalities to present the site selection tool and the results of the pre-feasibility study. The consultants shall prepare the invitations, agenda and presentation for the webinar, with GIZ or the City of Cape Town facilitating the session. The session should ideally be co-hosted by SALGA and the City of Cape Town.

Deliverables for the optional services *a* and *b*:

- In-person meeting held with the City of Cape Town to present the results of the draft pre-feasibility study, with agenda prepared, invitations sent out and presentation prepared (max 40 slides, made available in PowerPoint and pdf format).
- Virtual/in-person meeting held with the City of Cape Town to present the results of the final pre-feasibility study, with agenda prepared, invitations sent out and presentation prepared (max 40 slides, made available in PowerPoint and pdf format).
- Pre-feasibility study prepared for the City of Cape Town with the following elements as described below (in Word format for the draft, and pdf format for the final version, no prescribed page limit).
    - Background information (summary of the relevant aspects of the literature review compiled under Work Package 1, and perceptions of stakeholders as a result of the engagements under Work Package 2).
    - Detailed site assessment and rationale for choosing the site (as informed by the tool under Work Package 3, and 4)
    - Renewable energy resource assessment and energy demand analysis
    - Design package for the two design options, including:
        - A development envelope drawing for the site.
        - Preliminary layout design including general plant arrangement, line route and interconnection SLD (Single Line Diagram).
        - Owner requirement specifications to support an EPC (Engineering, procurement and construction) procurement process.
        - Preliminary cost estimates for the proposed systems based on the preliminary design.
    - Financial model (Excel) with explanatory notes and interpretation captured in the write-up of the pre-feasibility study.
    - Operation model and requirements.
    - Roadmap for implementation
- Preparation of a summary of the pre-feasibility report with the main findings captured (max 25 pages, in Word and pdf format).
- Preparation of a slide deck summarising the main findings of the pre-feasibility study (max 45 slides, made available in PowerPoint and pdf formats).
- Development of one two-page project fact sheet that includes the following, but is not limited to, background information, challenges, opportunities, budget, co-benefits and impacts of the intended microgrid system (made available in Word and pdf).
- Organisation of a webinar for all municipalities to present the site selection tool and results of the pre-feasibility study.

Requirements/Prerequisite for exercising the option

Exercising the option will depend on the positive assessment of the interim results of the original commission, and the commissioning of the follow-on phase of the SAGEN programme by GIZ's commissioning party. The decision on continuation is expected to be made in the period October-November 2024. If the option is exercised, it is anticipated that the contract term will be extended to July 2026.

The option will be exercised by means of a contract extension on the basis of the individual approaches already offered.

Quantitative requirements for the optional services

Fee days	Number of experts	Number of days per expert	Total expert days	Comments
Team Leader	1	10	10	Time included for project management and technical contributions under *a.* and *b*.
Key expert 1: Legal expert	1	3	3	Time included for contributions towards the legal aspects under the operational model (as described in *a*)
Key expert 2: Finance expert	1	26	26	Time included for leading the financial modelling work as part of the pre-feasibility study (as described in *a*).
Key expert 3: Micro/mini grid specialist	1	22	22	Time included for leading the technical work as part of the pre-feasibility study (as described in *a*).
Key expert 4: Communications expert	1	7	7	Time included for leading the knowledge management and communications work as described in *b).*
Short-term pool of experts	2-4	Undefined	5	Time included for contributions towards the pre-feasibility study and co-development/contributions towards knowledge products.
Travel expenses	**Quantity**	**Number of days per expert**	**Total in ZAR**	**Comments**
Fixed travel budget	1	undefine	48.236,00	For all travel and travel related costs for the optional services there is a budget of R48 236,00 which is already in the price sheet and will be reimbursed against evidence. This budget should cover the following costs: •up to 6 domestic flights -up to 16 airport shuttles or taxi cost for local trips

				•up to 200 km for local travels by car, based on reimbursement rate for SA on R4.84 •up to 6 Per-Diems and accommodation allowance according to GIZ South Africa regulations The costs are reimbursed in accordance with the country table in the GIZ travel expenses guidelines – per diem and accommodation as a lump sum, and all other travel and travel related costs against evidence. All travels must be agreed in advance by the officer responsible for the project. Travel expenses must be kept as low as possible. Note: Since a fixed budget is specified for travel costs, the travel costs offered are not relevant for the overall assessment and are not included in the price assessment.
CO2 compensation for air travel	1	undefined	6.942,00	A fixed budget of R6 942,00 is earmarked for settling carbon offsets against evidence.
Other costs	**Number**	**Price in ZAR**	**Total in ZARR**	
Flexible remuneration	1	96.473,00	96.473,00	A budget of R96 473.00 is foreseen for flexible remuneration. Please incorporate this budget into the price schedule. Use of the flexible remuneration item requires prior written approval from GIZ.

Requirements on the format of the tender for the option

Please complete both spreadsheets in the price schedule, i.e. one for the main service and one for the optional service.