TERMS OF REFERENCE FOR THE DISTRIBUTION SYSTEM MANAGEMENT EXPERT

1. Background

The Energy Sector in Rwanda is undergoing a process of reform and a comprehensive program of renewal and expansion of the electricity infrastructure, to ensure supply capacity of the existing and future network balances current and future demand in a secure and reliable manner.

The Rwanda Energy Group with its subsidiaries, the Energy Development Corporation Limited (EDCL) and Energy Utility Corporation Limited (EUCL) are the main implementing corporate entities for the Government Reform Programme.

The transition is ongoing and to this end, the GoR has obtained financing from the Government of the Kingdom of Belgium, through Enabel (formerly Belgian Technical Cooperation) and wishes to apply part of the funding through REG and recruit Expert Distribution System of international repute to support the REG, especially EUCL in distribution management system.

On one hand, the electricity infrastructure countrywide requires significant rehabilitation, expansion and prudent operations and maintenance practices to support the Rwandan economy, contribute to the regional market security and reliability of electricity supply, provide high quality of service, enable optimal and affordable value chain operating cost, ensure affordable tariffs to consumers whilst realising the required returns on investment to support the Utility's business in a sustainable manner.

On the other hand, the rapid and sustained economic growth in Rwanda has seen an accelerated growth in system demand exhausting reserve network capacity. Kigali City, the axis of commerce, industry and trade still experiences high frequency of electricity outages due to constrained supply capacity and thus the need for expansion and adequate maintenance. Several System Strengthening initiatives are already ongoing albeit yet to be concluded. Furthermore, with a rapidly expanding transmission and distribution infrastructure countrywide, coupled with an intensified electricity access program connecting more consumers on-grid heightens the need for additional strategic and technical interventions in the management of the Distribution system.

To this end, the REG seeks to engage a competent Distribution **Management Expert**. **(DME).** The Expert will champion the desired improvements in the Operations and Maintenance of electricity infrastructure, development and institutionalisation of work standards and procedures and undertake skills and knowledge transfer to technical staff managing the Transmission and Distribution value chain.

2. SCOPE OF WORK

Function: Working in liaison with a dedicated counterpart from the Directorate of Distribution Operations and other designate Utility staff, the Distribution Management Expert shall lead a range of initiatives contributing to the transformation and strengthening of the EUCL Electricity Distribution Network (EDN) and related functional areas. The Expert's responsibilities shall include but not limited to the following key responsibilities:

2.1 Responsibilities

2.1.1 Task 1-Situation Assessment: Conduct a comprehensive review of the EUCL EDN configuration, including functions and structure, and propose a set of short and medium term operational and maintenance action plans necessary to enhance the EDN's performance. The objectives of the task are twofold: (i) to assess EUCL's EDN operational performance in the areas of network architecture and configuration, load density, operations and maintenance; and (ii) to identify the bottlenecks and critical areas on EDN and other aspects affecting performance, develop an action to address priority needs for improvements in reliability and security of supply in line with international standards. The task shall be completed within two (2) months from the date of commencement of the service contract.

2.1.2 Task 2-Management and Advisory Services to EDN function: The Distribution Expert shall support the EUCL counterpart in the day-to-day management function of the EDN. The Expert shall be responsible and accountable for the performance of the EDN line of business, as follows:

a) Develop and implement a realistic Distribution reliability improvement plan for the maintenance of distribution transformers, switchgear and protective equipment, overhead line network, underground cable network infrastructure;

b) Develop and implement equipment outage procedures, switching procedures, testing and commissioning procedures, black start procedures, equipment testing and commissioning/decommissioning procedures, maintenance management procedures, equipment reinforcement and upgrade and installation procedures, faults/incidents management procedures

c) Develop and Implement a strategy complete with a risk minimization approach in the prediction, prevention or resolution of faults and defects on the EDN in order to ensure minimal interruption frequency and duration.

d) Review and enhance the implementation of the strategy for monitoring, evaluating and minimizing energy losses, consistent with requirements of the Rwanda grid code, due to mining, industrial, commercial, agricultural and domestic loads, reduced supply capacity, poor management of billing/commercial cycle and theft of electricity among other causes;

e) Develop and implement an action plan to ensure the authorization of all technical personnel working in hazardous environments so that they can prevent injuries, loss of life, damage to equipment or pollution of the environment;

f) Review the and enhance the implementation of safety policy and procedures for work above or below ground level and in close proximity to electrically charged equipment and apparatus in order to prevent danger to the public and workmen consistent with the RURA and other statutory bodies;

g) Develop and implement an innovative faults management procedure and process that could be integrated or operated in the enterprise business (IBMS) process of EUCL whereby customer supply interruption experience, in terms of duration and frequency, is within allowed statutory limits, from customer reporting incident/fault to O&M crews restoring and confirming supply at customer metering point;

h) Develop and implement an innovative maintenance management procedure and process that could be integrated or operated in the enterprise business process (IBMS) of EUCL for distribution asset/infrastructure registration, maintenance planning and scheduling, resource allocation or request, outage requests, cost tracking, time management, quality controls, technical audits and maintenance budget estimation;

i) Develop and implement a joint system operation and coordination procedure that will facilitate a coordinated approach to implementing O&M works agendas with generation, transmission and distribution teams during normal and abnormal system operating conditions to ensure satisfactory customer experience and high-quality services delivery;

j) Develop and implement a capacity development strategy that will ensure effective and efficient skills and knowledge transfer to EUCL counterparts and designate staff in line with all and other responsibilities assigned under the service contract;

k) Document and report on all contractual responsibilities, actions, results, opportunities, risks, challenges and lessons learnt in order to facilitate for evidence-based results reporting, opportunity for corrective actions and decision-making processes going forward.

3. QUALIFICATION AND EXPERIENCE

3.1 Qualification

- Minimum of Bachelor's Degree in Electrical Engineering or Equivalent
- Additional Post-graduate and or technical training in electrical engineering or Management field will be an added advantage;
- Certification in occupation health, safety and environment or first Aid will be an added advantage.

3.2 Experience

- Minimum of 15 years' experience in Electricity Utilities in the field of Electricity Distribution and familiar with O&M in 30kV, 15kV, 11kV and 0.4kV voltage level work environment or infrastructure;
- At least five years of utility management at a senior management level, with knowledge and experience in substation engineering, overhead line and underground networks, electrotechnical services, plant and equipment maintenance management, system operations and control;
- Extensive knowledge and experience in utility commercial services, management of technical and non-technical losses;
- Knowledge and experience in the use of common utility software, such as DigSILENT Power factory, PSSE, PSCAD or ETAP used in optimisation studies/modelling of distribution networks;
- Knowledge and experience in the development of computer-based tools for process mapping, customisation and integration into business information systems to ensure quality controls, cost optimisation, time keeping and standardisation of O&M work in incident management and maintenance management of the EDN;
- Knowledge and experienced in Utility end-user/customer and stakeholder relationship management;
- Knowledge and experience in change management and revamping/restructuring and turnaround of utility systems and operations;
- Knowledge and experience in Africa or similar emerging economies;

3.3 Skills/Competencies

- Ability to work with a multidiscipline team and in a multicultural environment in an all-inclusive manner;
- Mentorship and coaching skills;
- Excellent communication skills and proficient in the English language;
- Knowledge of French is an added advantage.

4. DELIVERABLES

The Expert shall ensure to develop and implement the following:

- A current situation analysis, giving a comprehensive report on the EDN status, comprising a risk matrix and action plan recommending improvements actions in EDN priority areas;
- A comprehensive network Operations contingency strategy for planned and emergency switching procedures to ensure security of supply;
- A comprehensive network maintenance management plan for preventive, corrective and predictive maintenance of the EDN to ensure reliability of supply;
- A comprehensive O&M strategy comprising articles compliant RURA and the customer service charter;

- A detailed policy and operational guideline on safety for the public, staff, equipment and the environment
- Distribution operation and maintenance procedures standards and specifications;
- An OPEX and CAPEX budget framework for the O&M of the EDN.
- A comprehensive capacity building action clan for the Staff under the department/Unit of Operations and Maintenance
- A distribution Information Systems (IDMS)Policy and Processes including Operational Guidelines
- A detailed quarterly report on knowledge, skills transfer and mentorship of the EDN staff (training, skills development and competency)

5. DURATION

The assignment **will be for a period of two years**.

6. TIME AND REPORTING ARRANGEMENTS

Reporting to Managing Director **of EUCL**, and the Expert will be a member of Senior Management Team.

7. FACILITIES TO BE PROVIDED BY THE CLIENT

REG will provide the consultant with office space and the required tools, equipment and ICT facilities.

8. KEY DELIVERABLES

The Expert shall ensure that the following are prepared and implemented:

	Deliverable	**Within (≤)**
a	A system status assessment report with detailed action plan on proposed interventions (including disaggregation of key segments of the network) for optimization of the EUCL's EDN performance and quality of supply	2months
b	A comprehensive Network Operations and Maintenance plan and Budget covering short-term and long-term horizons	3months
c	A loss Reduction Strategy with a clear technical loss and commercial loss reduction implementation plan with supporting budget estimates and a clear schedule of mile stones to be achieved over a short to medium term horizon.	6months
d	A comprehensive Capacity Building Plan for the Staff under the Department/Unit of Operations and Maintenance	10months
e	A regulatory compliance framework for the distribution system and its operational regiment	6months
f	Detailed Policies and Operational guidelines on safety for equipment, staff and community within the foot-print of the network	12months

g	Support REG in producing of bidding documents of necessary materials and related services that will be required in strengthening of network	Case by case
h	Distribution Operation and Maintenance Procedures including engineering guidelines, design and maintenance standards	12months
i	A Distribution Information Systems (IDMS) Policy and Processes including Operational Guidelines	18months
j	Monthly Progress Reports to Managing Director on how the listed deliverables are being achieved.	Monthly
k	Detailed Quarterly reports on Knowledge, Skills Transfer and Mentorship of the EDN staff (training, skills development and competency)	Quarterly