UGANDA COMMUNICATIONS COMMISSION

TERMS OF REFERENCE

STUDY ON THE EVALUATION OF CARBON AND ENERGY FOOTPRINT IN THE TELECOMMUNICATIONS SECTOR IN UGANDA

1. INTRODUCTION AND BACKGROUND

The Uganda Communications Commission operates in a dynamic landscape where the convergence of technology, environmental sustainability, and economic development are paramount. The Commission, guided by the Uganda Communications Act of 2013, is tasked with the effective regulation of the communications sector, fostering the growth of communication services for sustainable development.

Recognizing the global challenge of climate change and the need to mitigate its effects, the Commission seeks to play a pivotal role in promoting environmentally responsible practices within the communications sector. This is in alignment with the Government of Uganda's various frameworks, such as: Uganda's National Development Plan III (NDP III), the Digital Uganda Vision 2040, Digital Transformation Roadmap for Uganda, and the NRM Manifesto 2021-2026, among others.

The telecommunications sector, an integral component of Uganda's economic and social fabric, stands at the forefront of this transformative journey. As the country continues to witness an expansion in essential connectivity and other services to the citizens, the telecom sector's contribution to growth and development is undeniable. This sector has become a lifeline, providing citizens with access to vital services, education, healthcare, and economic opportunities.

However, alongside these advancements, the sector also brings forth environmental challenges, primarily in terms of carbon emissions and energy consumption. In a world increasingly focused on sustainable development and green initiatives, it is necessary to comprehensively assess the environmental impact of the telecom sector. The telecom sector has committed to reducing its carbon footprint, and its trajectory is a 45% reduction of Greenhouse Gases (GHG) by 2030. This commitment aligns with the goals within the broader context of international climate action; the Greenhouse Gas Protocol (GHG Protocol) and the Paris Agreement *(to hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels).*

The telecom sector operators in Uganda operate under a regulatory regime that encompasses various dimensions, ranging from financial reporting to quality-of-service (QoS) standards, spectrum usage, and Health, Safety, And Environment (HSE) compliance, among others. In addition to complying with laws and regulations on licensing and consumer protection, these operators bear a critical responsibility in ensuring their operations align with environmental standards and regulations.

It is within this context that the Commission seeks a Collaborative Research Partner to conduct an in-depth assessment and evaluation of the carbon and energy footprint within the ICT sector, with a specific focus on the telecom sector. This study is not only a response to the Science-Based Target initiatives (SBTi) and net zero strategies for the telecom sector, emphasizing the need for sustainable practices, but also a proactive step towards ensuring that the sector aligns with Uganda's commitment to global environmental goals; specifically; the Sustainable Development Goals (SDGs); 13 *(climate action),* 7 *(Affordable and clean energy),* 12 *(Responsible Consumption and Production)* and 9 *(Industry, Innovation and Infrastructure).*

2. OBJECTIVE OF THE ASSIGNMENT

The objective of this assignment is to conduct a comprehensive assessment of the carbon and energy footprint of the telecom sector in Uganda to enhance its environmental sustainability.

Specifically, the study shall:

a. Quantify the direct and indirect carbon emissions generated by the telecom sector's products, networks, and services.
b. Analyze the standards and best practices employed by telecom operators in Uganda related to energy consumption and GHG emissions.
c. Evaluate the environmental impacts associated with various technologies employed by the telecom operators in Uganda.
d. Explore and recommend innovative solutions aimed at enhancing the environmental efficiency of the telecom sector in Uganda.

3. TASKS TO BE PERFORMED

The Collaborative Research Partner shall:

a. Quantify the direct and indirect carbon emissions and energy consumption resulting from the sector's operations, including equipment, infrastructure, products, and services.
b. Identify the areas within the telecom sector that contribute significantly to carbon emissions and energy consumption to prioritize mitigation strategies and efficiency improvement.

c. Investigate the environmental impact of different technologies used within the telecom sector and associated equipment, to determine their contribution to the overall carbon footprint.

d. Analyze the energy consumption patterns of the telecom sector, focusing on key aspects such as network infrastructure, data centres, and operational facilities.

e. Identify the standards and best practices of the telecom operators in Uganda used to assess their energy consumption and GHG emissions, including their Scope 3 emissions.

f. Establish if the telecom operators have set up Science-Based Targets (SBT), Net Zero (NZ) targets and strategies.

g. Identify the data reported annually on GHG emissions by the telecom operators.

h. Compare the carbon and energy footprint of the Ugandan telecom sector with international benchmarks and best practices, providing a context for performance evaluation and potential improvements.

i. Examine the extent to which renewable energy sources, are/or may be integrated into the operations of the telecom sector and assess the impact on carbon reduction.

j. Identify the relevant ITU[1] standards and incorporate references and recommendations in the study, to aid Uganda's contribution to the ITU-T Study Group 5[2] on relevant subjects.

k. Determine actionable strategies and recommendations to reduce the carbon and energy footprint of the telecom sector, outlining steps for the adoption of cleaner technologies and sustainable practices.

l. Propose policy and regulatory measures to incentivize energy-efficient practices within the telecom sector.

4. KEY DELIVERABLES AND REPORTING

The expected deliverables for this assignment are detailed herein below.

The deliverables/output reports shall be submitted in electronic format. The Collaborative Research Partner shall be required to submit electronic reports in MS Word, pdf files (secured) and presentations in MS PowerPoint.

Reports shall be submitted in English only.

[1] International Telecommunications Union

[2] Study Group 5 [EMF, environment, climate action, sustainable digitalization, and circular economy

4.1 Task 1: Inception Report

Upon signing the contract, the Collaborative Research Partner may be availed with information and other supporting materials that provide background information to support the development of the inception report.

This report shall contain details of the Collaborative Research Partner's comprehensive understanding of the assignment, methodology, project plan, project risk management plan, associated resource requirements and timelines subject to the Commission's approval. The Collaborative Research Partner shall convene a meeting with the Commission to review the draft inception report.

The Collaborative Research Partner shall submit an acceptable **Inception Report**.

4.2 Task 2: Deliverable

The Collaborative Research Partner shall conduct the study including but not limited to document reviews, qualitative and quantitative interviews, field observations, etc.

Upon completion of the study, the Collaborative Research Partner shall contact the Commission to arrange for a validation meeting[s][3] to review the draft study report and provide any additional input. The draft report shall include a clean data set from the study.

The Collaborative Research Partner shall then proceed to develop and submit the final study report incorporating all the necessary changes from the validation feedback.

5. TIMELINES AND PAYMENTS

The proposed timeline for this assignment is 24 weeks from contract commencement, including the following:

No.1	Deliverable	Content	Submission Time from Date of Contract
1.	Inception report	• Comprehensive details of the Collaborative Research Partner's understanding of the assignment, methodology, project work plan stakeholder engagement plan, project risk management plan, associated resource requirement and timelines. • Roles and responsibilities of each member of the team, including qualifications and CVs.	3 weeks

[3] Internal Commission validation meeting and the Sector stakeholders' validation meeting

2.	Draft report	Comprehensive details of findings and analysis.	18 weeks
3.	Validation meetings (internal and external)	PowerPoint presentations that provide key highlights from the report.	1 week
4.	Final report	Comprehensive details incorporating additional input, comments, concerns, and proposed recommendations related to the assignment.	2 weeks

The payments to the Collaborative Research Partner shall be made against the acceptance of deliverables as detailed below:

1. Deliverable 1: 50% upon acceptance and approval of the inception report.
2. Deliverable 2: 20% upon submission and acceptance of the draft report.
3. Deliverable 3: 30% upon acceptance and approval of the final report

Deliverables 2 and 3 shall be due in line with the agreed-upon work plan in the inception report and will not be considered complete until the relevant approvals have been granted based on assessment and acceptance by UCC.

6. REQUIRED SKILLS AND EXPERIENCE

a. Educational Qualifications of the Collaborative Research Partner

The Collaborative Research Partner should be from academia, specifically a registered university in Uganda. They should possess an advanced degree (Doctorate or Masters) in a relevant field such as Environmental Science or Energy Management, with expertise in Sustainability, Engineering (especially electrical/telecom or environmental engineering) or a related discipline.

b. Experience Requirements

The Collaborative Research Partner should have, or ensure their team collectively possesses, experience and expertise in the following areas:

- Comprehensive knowledge and experience of the telecommunications sector, including infrastructure, technologies' application, and operational practices.
- Proficiency in carbon accounting methodologies and tools.
- Familiarity with energy efficiency principles and best practices specific to the telecom sector.
- In-depth understanding of telecommunications infrastructure, networks, and operations.
- Knowledge of sustainability principles, climate change mitigation strategies, and international frameworks, notably the Paris Agreement.

- Awareness of current and emerging trends, technologies, and innovations in sustainable ICT and green telecommunications.
- Proven experience in data collection, analysis, and interpretation, particularly related to assessing carbon and energy footprints.
- Familiarity with the regulatory environment and policies pertaining to carbon emissions and energy efficiency within Uganda's ICT sector.
- Strong organizational and communication skills for effective collaboration with stakeholders, data collection, and presentation of findings.
- Proficiency in data analysis using software tools such as Microsoft Excel, statistical software packages, and, where applicable, specialized carbon accounting software.
- Expertise in data visualisation
- Ability to interpret complex data and derive meaningful conclusions to develop strategies for reducing carbon and energy footprints.

7. REPORTING

The Collaborative Research Partner shall report to the Project Manager and shall be required to provide a weekly and monthly report detailing progress achieved and/or any difficulties encountered prior to providing the final report. The reporting shall be done by electronic means (emails, MS Teams meetings, etc.) or physical meetings as shall be decided by the Project Manager.

8. COPYRIGHT AND DISCLOSURE

During and after the agreement execution period, all data collected, field tools, and other study deliverables shall remain the property of the Commission and shall not be reproduced without express consent from the Commission.

In adherence to data protection regulations, consent and approval must be obtained for the utilization of third-party data or tools in this study.