



COUNTRY: KENYA

PROJECT: KENYA DIGITAL ECONOMY ACCELERATION PROJECT (KDEAP)

IMPLEMENTING AGENCY: Information and Communications Technology Authority (ICTA)

PROJECT ID: P170941; Credit Numbers 7289-KE and 7290-KE

TERMS OF REFERENCE

FOR

**Request for Expression of Interest for Consulting
Services for Assessment Study to Classify Sites by Least
Cost Connection and Impact on Market Development**

Contract No: KE-ICTA-404614-CS-QCBS

Issue Date: 13th May 2025

Closing Date: 28th May 2025 at 1000Hrs East African Time

Client:

Chief Executive Officer,
ICT Authority

Teleposta Towers 12th Floor, Kenyatta Ave

PO Box 27150 - 00100 Nairobi Kenya

Tel: +254 20 2089061/ 2211960 Fax: +254 20 2211960

Email: procurement@ict.go.ke , info@icta.go.ke

Website: www.icta.go.ke

1. Background

The Government of the Republic of Kenya (GoK) has received financing in the amount equivalent to US\$390 Million from the World Bank towards the cost of the first phase of the Kenya Digital Economy Acceleration Project (KDEAP) and intends to apply part of the proceeds to payments for goods, works, non-consulting services and consulting services to be procured under this project.

The project will include the following components.

1.1 Component 1: Digital Infrastructure and Services- The aim of this component is to increase access to high-speed internet for individuals, industry, and government—the ‘foundation of the foundations’ of a digital economy and strengthen Kenya’s role as regional digital leader—while leveraging investments from the private sector

1.2 Component 2. Digital Government and Services- This component will invest in the foundational digital services, platforms, architectures, and policies needed to transform the way the Government communicates and conducts its internal operations.

1.3 Component 3. Digital Skills and Markets- This component aims to equip young Kenyans with digital skills and strengthen their abilities to access and compete in domestic and regional markets through supporting skills development, to study mechanisms to improve access to affordable devices and through enhancing the enabling environment for e-commerce to support Kenya’s role as a regional digital hub.

1.4 Component 4. Project Management- This component will support project implementation, coordination, for the Project Implementation Unit (PIU) within ICTA and capacity building.

1.5 Component 5: Contingent Emergency Response Components- This component will be activated in the event of an emergency.

2. Objectives of the Assignment

These terms of reference (ToR) are for a consulting firm to conduct a study of last-mile internet connectivity options that identifies and classifies sites by least cost needs and geographic considerations and assesses potential spillover impact on market development and access rates in surrounding communities for education and public institutions as well as nearby communities.

3. Scope of the Consulting Services and Specific Tasks

The scope of services involves conducting a primary study that identifies last-mile internet connectivity service level needs for educational sites and nearby public institutions and utilize the least cost model¹ to classify the identified sites. It also involves developing guiding frameworks that can be adopted for last-mile connectivity deployments for educational sites and public institutions.

The specific tasks will include the following:

a) Identification of the Last-mile Connectivity Service Level needs for Educational sites and other public institutions.

Under this task, the following are the sub-tasks:

¹ Model that maybe defined by technology options (e.g. satellite, fiber, cellular etc.). Consideration of OPEX & CAPEX, Geographical placement & sustainability

- Conduct a comprehensive assessment of Kenya's current existing last mile infrastructure status, both public and privately-owned, by thoroughly reviewing and analysing the existing network setup (both passive layer and active layer), security and operations. This will also involve collecting or updating data on network uptime and reliability.
- Survey and identification² of all educational institutions and public institutions, estimate their distance (in meters) from existing last-mile OGN points of presence (PoPs).
- Using a standard survey model, determine the key metrics related to the connectivity needs such as power, maintenance, operational costs, physical facilities (that can securely host the physical infrastructure) among others. Such metrics should serve as determining factors of the classification model to be developed.
- Identify the key stakeholders within the last-mile infrastructure ecosystem.
- Identify and propose alternative connectivity technologies and models that can be leveraged to enhance or extend connectivity from PoPs to the nearby educational institutions, nearby public institutions and communities.
- When considering other nearby public institutions, particular focus should be given to health facilities and Government offices, Judiciary (e.g., law courts, police stations, prisons etc) as these are the focus of KDEAP Program

b) Classification of the Sites based on the Least-cost and Geography.

Under this task, the following are the sub-tasks:

- Develop a classification model that will be used to classify sites based on the identified metrics (including cost of connection, financing approaches, geography). The model should also consider the Quality of Service (QoS) requirements, use of renewable energy, and environmental impact³.
- Classify the identified sites based on the developed model to generate a list of sites⁴ that can be prioritized for connectivity with the following criteria:
 - Distance of site from the nearest fiber nodes (PoP), both public and privately supplied that require further investment for last-mile infrastructure, which could most likely be provided by a fiber spur.
 - Sites that require further last-mile investment on the backbone and metro infrastructure that are unlikely to be optimal for fiber, and may requires an alternative connectivity technology, such as low-earth orbit satellite, cellular, microwave, fixed wireless, tethered balloons etc.
- Engage relevant stakeholders within the education sector based on the connectivity model developed within this work and to discuss with them recommendations on the approach of last-mile connectivity for schools, TVETs and higher educational institutions (HEIs).

² Reference: Saliency and GIGA Assessment Reports available from ICTA

³ An Environment and Social Impact Assessment report (ESIA) will be carried out, b for a sample of those sites that are selected to be connected

⁴ Please note that, ultimately, the selection of which technology will serve a particular site will be the outcome of a competitive bidding process in which bidders conduct their own due diligence, but this survey is intended to provide indicative information to bidders and to the Government.

c) Provision of a Connectivity Plan for last-mile Connectivity for Educational and public Institutions and nearby communities.

Under this task, the following are the expected sub-tasks:

- Develop an indicative **Connectivity Plan** for last-mile connectivity for Education and public institutions in accordance with International Telecommunication Union's (ITU's) Last-mile Connectivity Solutions guidelines and ICTA's standards.
- Develop **standard operating procedures (SOPs)** for Quality of Service (QoS) and Service Level Agreements (SLA) for last-mile connectivity deployment (public and private networks) for Educational institutions and other public institutions.

4. DURATION AND LOCATION OF THE ASSIGNMENT

The duration of the assignment shall be 12 calendar months from contract commencement date. The location of the assignment will be in the Republic of Kenya.

5. Reporting requirements and timelines for submission of Expected Deliverables

The consultant shall submit the reports as detailed in the table below.

Table 1: Reporting requirements and timelines for submission of deliverables/outputs

Reports	Details	Timeline for submission of deliverable from date of contract commencement	Number and format of reports presentation
Inception Report	The consulting firm will share the revised detailed workplan, approach of executing the project, milestones, staffing and projection execution arrangements (including risks and risk mitigation plan). The inception report should cover the anticipated data to be collected, metrics to be examined as well as the list of assumptions.	2 Weeks	2 hard copies and 1 digital copy

Reports	Details	Timeline for submission of deliverable from date of contract commencement	Number and format of reports presentation
Service Level Needs Report	The Service Level Needs Report should contain: a) The key metrics related to the connectivity needs such as power, maintenance, operational costs, physical facilities (that can securely host the physical infrastructure) among others b) Key stakeholders within the last-mile infrastructure network. c) Recommended alternative connectivity technologies that can be leveraged to enhance or extend connectivity from PoPs to the nearby public institutions and communities. d) Online Inventory Portal to capture all last mile sites with all associated metrics	10 Weeks	2 hard copies and 1 digital copy Inventory Portal
Sites Classification Report	The Sites Classification Report should contain: a) A cost model that can be adopted to classify sites based on the defined metrics. b) List of all sites with classification based on the proposed/developed least cost model, applicable cost per site, Bill of Materials per site and high level design topology per site. The List should be accessible/downloadable from the inventory Portal	24 Weeks	2 hard copies and 1 digital copy Fully populated inventory Portal
Connectivity Plan for Education Institution	The guiding connectivity documents should include: a. A comprehensive documentation for all last-mile connectivity for Education and public institutions based on ITU guidelines. b. Complete Online Inventory Portal accessible by all stakeholders and shall be used as the master reference	52 weeks	2 hard copies and 1 digital copy Complete Inventory Portal

Reports	Details	Timeline for submission of deliverable from date of contract commencement	Number and format of reports presentation
	for future connectivity planning of all last mile sites c. Standard operating procedures (SOPs) for Quality of Service (QoS) and Service Level Agreements (SLA) for last-mile connectivity (both public and private networks).		

The specified copies (2 original hardcopies, and 1 digital copy) of each of the listed reports shall be sent to the client at the following address:

The Chief Executive Officer,
ICT Authority
Telposta Towers 12th Floor, Kenyatta Ave
PO Box 27150 - 00100 Nairobi Kenya
Tel: +254 20 2089061/ 2211960 Fax: +254 20 2211960
Email: procurement@ict.go.ke , info@icta.go.ke
Website: www.icta.go.ke

Attention:

The Project Coordinator
KDEAP

Upon submission of every report, the consultant is expected to make a presentation of the submitted report to the Client in a scheduled meeting. The acceptance of the report shall be recorded in the minutes of the meeting.

6. PAYMENT SCHEDULE

The proposed payment schedules based on satisfactory performance of the contract which will be negotiated with the successful consultant will be as presented in Table 2 below.

Table 2: Proposed payment schedule

S/No	Report/Deliverable	Time from date of contract signature	Percentage of payment (for Phase 1)
1)	Submission and Acceptance of Inception Report	2 weeks	10%

S/No	Report/Deliverable	Time from date of contract signature	Percentage of payment (for Phase 1)
2)	Submission and Acceptance of Service Level Needs Report	10 Weeks	20%
3)	Submission and Acceptance of Sites Classification Report & Online Inventory Portal	24 Weeks	30 %
4)	Submission and Acceptance of Connectivity Plan for Educational Site and Fully Populated online Inventory Portal	52 weeks	40%

7. MINIMUM REQUIREMENTS FOR CONSULTANT'S QUALIFICATIONS AND EXPERIENCE

The shortlisting criteria for the consulting firm shall be:

- (i) **Core business and years of existence in Business:** The firm should be registered/incorporated as an entity in the field of telecommunications research and consultancy or equivalent for a minimum of ten (10) years.
- (ii) **Relevant Experience:** The firm shall demonstrate as having successfully executed and completed at least three assignments of similar nature, complexity and in a similar operating environment in the last eight (8) years. Details of similar assignments-Name and address of the client, scope, value, and period should be provided
- (iii) **Technical and Managerial capability of the firm:** The firm shall demonstrate as having the requisite technical and managerial capacity to undertake the assignment in the submitted company profiles. **Key Experts will not be evaluated at the shortlisting stage**

8. Team composition and minimum qualification and experience Requirements for the Key Experts

The key team shall be well qualified and experienced professionals as required and appropriate for the execution of the assignment. They should possess the relevant academic backgrounds as well as professional experience alongside necessary resources to undertake the tasks of such nature. These include equipment and software required for the delivery of the entire exercise. The key experts shall personally carry out (with assistance of other non-key experts and staff deemed appropriate) the services as described in this TOR. The key experts to be provided by the consulting firm for this assignment are as follows: -

a) Team Leader

- i. At least a Master's degree in telecommunications/Education/Social Sciences or a related discipline from a university recognized in Kenya.
- ii. Minimum ten (10) years of demonstrable experience providing consultancy/advisory/research services on last-mile Internet access, school's connectivity projects/programmes and Digital Access Advisory and Research.

- iii. Specific five (5) years' experience in undertaking studies on digital education or last-mile connectivity studies and delivering capacity building programmes within the Kenyan ICT space.

b) 2No. ICT Infrastructure Specialists

- i. At least a Master's degree in Telecommunications/Electrical/Electronic Engineering, Computer Science/ICT/IT or related field from a University recognized in Kenya.
- ii. Minimum ten (10) years of demonstrable general experience on research projects or digital advisory services.
- iii. Minimum 5 year of demonstrable specific experience in research and consultancy on educational infrastructural projects

c) 2No. Education Policy Analysts

- i. At least a bachelor's degree in Law or education with a bias on ICT adoption in education from a university recognised in Kenya.
- ii. At least eight (8) years demonstrable experience providing advisory/consultancy services in Telecoms, Digital Access Advisory and Research projects.
- iii. Minimum 5 year of demonstrable specific experience in policy , research and consultancy on educational infrastructural projects

d) Data Analyst

Minimum qualification and experience include:

- i. At least a Master's degree in Data Science/Computer Science/Statistics/ICT or a related field from a university recognised in Kenya.
- ii. At least five (5) years demonstrable experience of working with large datasets in education or connectivity domains.
- iii. Minimum 3 year of demonstrable specific experience of data analysis, presentation within educational infrastructure projects

e) GIS Specialist

. Minimum qualification and experience include:

- i. At least a bachelor's degree in Geography/GIS or a related field, from a university recognised in Kenya.
- ii. At least five (5) years demonstrable experience developing and managing Geographical Information Systems.
- iii. Minimum 3 year of demonstrable specific experience of developing and managing Geographical Information Systems within educational infrastructure projects

f) Economist

. Minimum qualification and experience include:

- i. At least a bachelor's degree in Economics/Commerce or related degree from a university recognised in Kenya.
- ii. At least eight (8) years demonstrable experience providing advisory/consultancy services in Telecoms, Digital Access Advisory and Research Projects.
- iii. Specific three (3) years' experience in developing cost models.

9. ESTIMATED TIME INPUTS FOR KEY EXPERTS

The number of key experts and the estimated time input for each key expert for the assignment are presented in Table 4.

Table 4: Estimated Time Inputs for Key Experts

S/No	Key and support Staff	No	Estimated Time Input (staff-weeks)
1)	Team Leader	1	52
2)	ICT Infrastructure Specialist	2	20
3)	Education Policy Analyst	2	20
4)	Data Analyst	1	24
5)	GIS Specialist	1	24
6)	Economist	1	20
Total		8	160

10. Responsibilities of the Client (ICT Authority)

The consulting services shall be contracted by the ICT Authority on behalf of the Ministry of Education. The ICT Authority shall provide information on the existing and planned fiber infrastructure nodes across the country to aid the consultant map out the education institutions and other public and community sites.

The client shall also provide any necessary support to the consultant to be able to access the nodes where need be.

The Client will obtain from MOE and provide to the Consultant the following as and when required by the consultant:

1. Schools and learning institutions data including geo-location information
2. Services that are to be accessed by schools and communities which includes but not limited to NEMIS, KEC, KNEC Assessments, TPAD, LMS and Digital Content Resources
3. Data, studies and literature considered relevant for accomplishing identified tasks;
4. Access to key officials within the relevant Ministry and other relevant official entities and/or any others as applicable;
5. Help convene key stakeholders and support cooperation with the Government of Kenya and other organizations whose activities and programs may be considered relevant to this project, to enable the consultants to have access to the information necessary to carry out their work program;

11. Responsibilities of the Consultant

The consulting services must ensure that the tasks identified above are performed in a result-oriented manner with the sole objective of achieving outputs and outcomes expected from the assignment as has been described in the details above.

12. PROPRIETY RIGHTS OF CLIENT IN REPORTS AND RECORDS.

All the reports, data, and information developed, collected, or obtained from the implementing agencies etc., Client, and other Institutions during this exercise shall belong to the Client. No use shall be made of them without prior written authorization from the Client.

ii. At the end of the Services, the Consultant shall relinquish all data, manuals, reports and information (including the database, codes, and related documentation) to the Client and shall make no use of them in any other assignment without prior written authority from the Client.

Annex 1: Context

- In the quest to **close the broadband connectivity divide in education**, the GoK notes that significant institutional strides have been made to connect Universities, TVETs and a set of primary, junior and senior schools as well as other tertiary institutions. Such institutional strides include the work done by the ICT Authority, Communications Authority (through the use of the Universal Service Fund [USF]), the UNICEF's Giga initiative, initiatives by the UK's Digital Access Programme (DAP) among others.
- Despite these strides, **most educational institutions are still unconnected**. At present, there is no precise data that informs what percentage of the schools are connected although only an **estimated 4% is reported**. For strategic decision making by GoK, the data on how Internet access between public and private schools compare, is vital.
- It is also important for GoK to **extend connectivity to the unconnected or underserved institutions through the least cost approach, where it leverages existing and nearby infrastructure (in collaboration with the private sector)**, while still delivering meaningful connectivity.
- **"Meaningful Connectivity,"** according to the International Telecommunication Union (ITU) refers to a level of connectivity that allows users to have a safe, satisfying, enriching and productive online experience at an affordable cost.
- Successful connectivity to schools (both private and public) can also **enable Internet extension to the nearby government facilities** such as health centers and other government offices.
- A **proper assessment** of the present reach of fibre nodes that can be leveraged to deliver last-mile access to both the educational (schools, TTCs, TVETs and universities) and nearby public institutions is therefore key.
- The assessment can help inform what **metrics** (e.g. power, E-readiness of facilities to host network equipment, realistic distance of consideration from nearby fibre nodes, cost among others) should be considered for sustainable roll-out of connectivity for the last-mile institutions and the models of sustainability through **"Gap Financing."**
- This document outlines the **consultancy assignment** for the envisioned assessment.