

### ANEXO III

#### REPORT OF THE CONSULTING SERVICE PROJECT IN AFRICA

**Title of consultancy service in Africa:**

The Establishment of a Multi-Purpose Data Warehouse and Service Facility

**Country:** Ghana

**Ambit:** Regional/Local

**Sector in which the consultancy service will be carried out in Africa:**

Infrastructures and Information and Communication Technologies (ICT)

**Presentation of the Organism/Institution:**

C. K. Tedam University of Technology and Applied Sciences (CKT-UTAS) was established by an Act of Parliament (ACT 1000) which came into effect on 23rd August 2019. It was named after a Ghanaian Politician, Patriot and Statesman, Clement Kubindewor Tedam from the royal family of Paga in the Upper East Region of Ghana. Before its establishment as a full-fledge University, it was a University Campus of the University for Development Studies.

It is the premier public university of the Upper East Region of Ghana. At CKT-UTAS, we offer a supportive environment to engage in cutting-edge research and offer our students a high-quality range of academic and professional programmes in basic and applied sciences, mathematics, and computing technology for the socio-economic development of Ghana and beyond.

We are dedicated to the well-being and success of our students, providing them with extraordinary experiences and networks that allow them to grow and develop, explore new interests, and fully realize their potential for successful careers in their chosen fields of study.

The University has achieved several cutting-edge and ground-breaking research outcomes, some patented in the Applied Sciences, as well as in ICT, Mathematical, Earth, Environmental Sciences.

Moreover, the University has collaborations with some World-class Universities and institutions both home and abroad such as the University of Electronic Sciences and Technology of China, University of Sapienza in Italy, the Brandenburg University of Technology in Germany, Kofi Annan ICT center in Ghana and Navrongo Health Research Center.

Practical outcomes of work with projects such as the Green Growth project with DANIDA, the National Aflatoxin Management Project with the Ghana Standards Authority are achieved with level of excellence.

There is also a dynamic partnership for exploration and evaluation of Minerals with the Northern Development Authority (formerly the Savannah Accelerated Development Agency) ecological zone.

The University is surrounded by many tourism sites and scenes. Imagine travelling abroad to explore ecosystems of tropical savanna vegetation with clusters of drought-resistant trees such as

baobabs or acacias, couple with opportunities to experience seeing crocodiles that live with the indigens in a very friendly manner.

**Identification of the consultancy service required in the scope of the identified sectors, as well as the framework of development policies in which said project is framed.**

A feasibility study for the establishment of a data warehouse and service facility to enable the gathering, analysis and sharing of large-scale agricultural, health and climate change data and the training of highly skilled researchers and fieldworkers.

The Government of Ghana (GoG) through the Ministry of Communication and Digitalization strives to promote the development of the country into a Knowledge-Based Society and a smart economy through the tool of ICT. This is clearly outlined in the ministry's objectives as derived from the Coordinated Programme of Economic and Social Development Policies (2017-2024) and the Sector Medium Term National Development Policy Framework (2022 -2025), which seeks to:

- Enhance application of ICT in National Development.
- Expand the digital landscape.
- Enhance Climate Change Resilience.

The ministry in recent years made significant attempts towards improving digital infrastructure and services that have direct linkage to agriculture, health, and climate change awareness. For example:

- The deployment of an in-house software by the Ghana Meteorological Agency which allows weather observers at various stations to easily send data to a database at the Head Office. The ministry in its 2022 fiscal year budgetary estimates made provisions to:
  - Procure and install Automatic Weather Observatory Systems and Weather Stations and refurbish existing Weather Surveillance Radars.
  - Continue to collaborate with both Local and International Agencies to train its staff and the general public, particularly, fisherfolks and farmers on climate change and its impact.

It is evident from the above that significant attempts are being made by the government to improve the sectors of agriculture, climate change and health through the means of ICT infrastructure and services. However, there exist a significant gap between government policies and efforts and the research community due to lack of a common data source and analytic facilities for research purposes in the country. This proposal, therefore, seeks the establishment of a data warehouse and service facility to provide a common platform for gathering, storing and analyzing data from key areas such as agriculture, climate change and health.

**Specific content of the study or technical assistance to be carried out (Formulation, presentation and feasibility of the proposal and innovation of the proposal).**

To achieve the objective of this proposal, the technical consultancy assistance sought is in two parts as outline below:

- Establishment of a data warehouse for large-scale data gathering and analytics:

The analysis of logistics, equipment and technology requirements are central to the establishment of a functional data warehouse. Technical consultancy assistance is therefore sought to assist identify using standard procedures and methods, how to model a functional data warehouse; taking into consideration the identification and procurement of equipment; the most appropriate medium and tools for gathering multi-disciplinary data from agriculture, climate change and health; and the most technically efficient and cost-effective modes of storing and sharing such data. An extensive review and analysis of existing frameworks and potential source of data feeds and their form will have to be conducted in order to identify the resources required for establishing the facility.

- Training of researchers and fieldworkers.

The second part is to train researchers and fieldworkers on data ethics, large-scale data gathering, management and analytics techniques. This will require a comprehensive assessment of knowledge level of fieldworkers in the various sectors and skill level of faculty in managing and analyzing large-scale data. This will allow the design of appropriate training schemes that will make the needed impact.

**Reference to the availability of financing for the subsequent execution of the actions contemplated in the feasibility study.**

Though the proposal is still at the inception stage and there are no finances set aside for its implementation, the University plans to leverage on the following sources to implement it.

- i. A part of Internally Generated Fund (IGF) set aside by the University for ICT infrastructure development will be used to partly finance the project.
- ii. Support will be sought from the GoG through the GETFund support for ICT infrastructure development.
- iii. Also, support from both local and international donor agencies and institutions will be solicited to finance the project.

**Potential opportunities for Canarian companies that may arise from the subsequent execution of activities contemplated in the project in which the consulting service is framed.**

Several mutual opportunities beneficial to the host institution and Canarian companies will be created during implementation and after the project is completed and running. Some of these opportunities that may be beneficial include:

- i. Collaboration with Canarian companies for the supply of equipment and consumables for the construction of the project and running afterwards.
- ii. Collaborations in terms of technology transfer, where experienced Canarian company staff may serve as key consultants for training and the running of the facility.
- iii. Canarian companies may collaborate with the facility to collect data in specific areas or have access to data collected by the facility for research purposes.
- iv. Tourism and staff mobility; staff of the facility and Canarian companies may go on exchange programmes for research or recreational purposes thereby boosting the tourism subsector in both countries.

**Sectoral and business development strategies of the country, the region, or the municipality that proposes it.**

The region is bedevilled with many socio-economic problems ranging from tropical diseases outbreak (Cerebrospinal Meningitis, Malaria, etc.), long drought, floods, extreme poverty, just to mention a few. It is one of the least developed regions in the country.

The proposed project is therefore, strategically placed and fits well into several ongoing governmental and institutional interventions geared toward alleviating poverty in the region. For example, the GoG is currently running some interventions in the agricultural sector such as the Planting for Food and Jobs; Rearing for Food and Jobs; Government support for dry season farming with the renovation and expansion of ICOUR project in Navrongo. Also, the University is going into partnership with several institutions such as the NHRC, Savana research Institute (SARI) to facilitate cutting-edge research in health and agriculture, respectively. The potential impact of these interventions and activities can be enhanced by providing and critically analyzing relevant data to aid decision making and policy refinement thereby helping to achieve Sustainable Development Goals 3, 8, 10, 12, 13 and 17, as outlined in this proposal documents.



**Detail the novelty of the proposed service.**

The facility will be the first of its kind in this composite form of a data warehouse that leverages ICT for health, climate change and agriculture research in this part of the country. These three fields are interrelated and therefore having the appropriate data on them can be a great source of scientific data for conducting research that will inform policy direction in the health, agriculture, and climate change ecosystems.

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For example, extreme rainfall and drought events have increased over the years and have continued throughout the last decade. These are often associated with high temperatures, intense heat during the first of quarter of the year, low crop yields, etc.

Therefore, understanding the complex relationship between agriculture, climate change and health during the tool of ICT will be crucial for critical policy interventions.

Thus, the novelty of the proposed service is in the provisioning of a single hub data warehouse infrastructure with the potentials of providing important information through data analytic that can drive policy for the socio-economic development of the northern belt of Ghana in particular and Ghana as a whole.

**Identification of the Sustainable Development Goals (SDG) with which the proposal is aligned.**

This proposal ICT facility, when is established and well run, it will help achieve the following SDGs:

- Goal 3- Ensure healthy lives and promote well-being for all at all ages.
- Goal 8- Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.
- Goal 10- Reduce inequality within and among countries.
- Goal 12: Responsible consumption and reproduction
- Goal 13: Take urgent action to combat climate change and its impacts.
- Goal 17: Partnerships to achieve the goals.

Thereby lead to a better world for all.