

# KEY HIGHLIGHTS

## Uganda Country Study June 2017

### 1. About Uganda

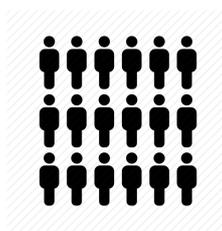
Uganda (from the Swahili “Buganda”), officially the Republic of Uganda, is a landlocked country in East Africa covering an area of about 241,550.7 square kilometres and lying on the equator.

Uganda is bordered on the east by Kenya, on the north by South Sudan, on the west by the Democratic Republic of the Congo, on the southwest by Rwanda, and on the south by Tanzania.

The southern part of the country includes a substantial portion of Lake Victoria, which is also shared by Kenya and Tanzania. The financial and administrative capital and largest city in Uganda is Kampala. Kampala was recently named the most liveable city in East Africa and is the 13th fastest growing city in the world.



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38,319,241



\$84.93B (PPP)

*How is Uganda doing in terms of Information, Communication Technology, Education, Science Technology and Innovation which are the pillars of the African Leadership in ICT and Knowledge Society Development (ALICT) course?*

## 2. Information Communication Technology

The ICT sector in Uganda is organised along three key functions namely: policy, regulation and implementation/service provision. The Ministry of Information and Communication Technologies provides the policy framework. The Uganda Communications Commission (UCC) and the National Information Technology Authority Uganda (NITA-U) are the main regulatory bodies. Local governments, development agencies, academia and the private sector provide services.

The development of the Knowledge Society in Uganda continues to be grounded in Uganda Vision 2040. The Vision notes that ICT and ICT enabled services industries hold great promise for job creation, accelerated economic growth and increased productivity for both the public and private sectors.



### **How will Uganda achieve an increase in employment in the ICT sector?**

Uganda has identified and defined key initiatives to increase employment in ICT from 1 Million to 3 million by 2020. The initiatives are as indicated below:

Extending the National Backbone Infrastructure and enhance its connection to international submarine cables;

Completing the deployment of Digital Terrestrial Television broadcasting so as to fully realise of the “digital dividend”;

Promoting the production of low-cost, locally assembled computing devices;

Establishing ICT parks and regional incubation centres;

Developing and implementing a Business Process Outsourcing strategy; and

Reviewing and improving the national ICT training curriculum at all levels including teacher ICT pedagogy capacity.

### **In terms of ICT Infrastructure, Uganda had achieved the following by 2015:**

Laying of 1536.39Km of Optical Fibre Cable to create the National Data Transmission Backbone.

Connection of NDT backbone to other regional backbone infrastructure at the borders of Southern Sudan (Elegu) and Kenya (Malaba and Busia).

Expansion of the Government Metropolitan Area Network into a Wide Area Network covering the towns of Kampala, Entebbe, Bombo, Mukono, Jinja, Busia, Tororo, Malaba, Kumi, Mbale, Soroti, Lira, Gulu, Masindi, Nakasongola, Luwero, Mbarara, Kasese, Fort Portal and Kyenjojo.

Connection of a total of 45 sites with Kampala and Entebbe.

Seven public universities have also been connected to the national backbone.

Distribution infrastructure for digital TV Broadcasting was installed for the greater Kampala area.

The next phase of the project aims to connect Kabale, Katuna, Malaba, Masaka and Mutukula and, crucially, provide an alternative route to the undersea cables at Mutukula through mainland Tanzania to

the East African Submarine cables. All other districts will be reached using the last-mile connectivity technologies such as WiMax.

Uganda is also making impressive gains towards realising the digital dividend of migrating to digital terrestrial broadcast. The UCC fulfilled the international switch-off of Analogue TV Transmission on the 17 June 2015 with digital cover in place for the preceding 18 months in the greater Kampala area. A phased switch-off of the analogue signal was undertaken in other areas during July and August 2015.

Uganda developed a national e-health policy in 2013 which informed the migration of the country's Health Management and Information System (HMIS) to a fully web-based system accessible to all districts.

The Ministry of Health has also invested in implementing m-Trac, an initiative to improve healthcare delivery by enabling real-time data collection, verification, accountability and analysis of aggregate data.

### Challenges in the ICT Sector in Uganda

In as much as the country has recorded several positive developments, there are critical issues slowing down the progress.



1. The health sector has not managed to fully implement the e-health policy due to poor connectivity and power supply at many facilities has hindered operationalization and usage.
2. Bandwidth availability. While the number of Internet users continues to increase the amount of bandwidth available to each user is declining. As a landlocked country, Uganda does not have direct access to any of the continents sub-marine cable systems and access to these needs to be provided by overland linkages. Several connections to are already in place to many of its neighbours. Uganda will need to continue to invest in providing more international bandwidth to the country.
3. Extent and quality of the country's internal internet backbone. The National Backbone Infrastructure Project is well placed to continue to improve the network but focus is required on providing last mile access and access to the more rural parts of the country. Some private sector investment is occurring on the back of increasing mobile subscriber numbers through wireless connections, but the number of fixed line users remains low.
4. The cost of international internet bandwidth remains relatively high in Uganda compared to international norms and is often cited as a key restraint to continued ICT developments in the country. One reason for this is the relatively high bandwidth costs charged by the international submarine cable consortium, but another large reason is the cost of maintenance of the various overland links to this system, especially given issues of infrastructure damage and vandalism.
5. Lastly, the lack of local content and locally developed e-services as constraints on further development of the sector. These deficiencies are largely the result of a general lack of suitable skills.

## 2. Education

The formal education system in Uganda is managed and directed by the Ministry of Education and Sports and follows a 7 – 4 – 2 structure with seven years of primary education followed by four years of lower secondary education and two years of upper secondary education. Primary education is free and compulsory and learners exit Grade seven by writing the Primary Leaving Certificate Examination (P7). The Uganda Certificate of Education is written at the end of grade eleven (S4), and the Uganda Advanced Certificate of Education at the end of grade 13 (S6).

Learners obtaining university entrance at the end of grade 13 can continue onto two, three or more years of tertiary education. Starting immediately after primary education and partially running in parallel with secondary education is the Business, Technical, Vocational Education and Training (BTJET) track that includes craftsmen level training, technician level training and graduate level training (administered by universities).

Key metrics according to the Ministry of Education and Sports (MoES) 2015 Statistical Abstract include a primary (P7) completion rate of **61.6%** and a transition rate to secondary education of **63.2%**.

Uganda has a relatively high primary repetition rate of **7.2%** with the highest rate of **9.1%** in grade four and grade six.



The lower secondary completion rate is only 36.2%. Of those completing upper secondary school, 83% are eligible for university entrance. Overall quality is therefore considered low. Indications of this, according to the MoES 2015 EMIS data are that only 51.9% of grade six students attain grade appropriate literacy levels, and only 41.8% of grade nine learners attain grade appropriate Mathematical proficiency.

According to the Global Innovation Index (2015), tertiary education in Uganda comprises 198 tertiary institutions (universities, teacher training colleges, colleges of commerce and technology and other institutions) of which 115 (72%) are privately owned. There are 40 universities, 8 of which are public universities and a total of 9 other degree awarding institutions. Seventy-four percent of all higher education institutions are private and account for 51% of all enrolments.

Uganda's tertiary institutions realised an increase since the advent of Universal Primary Education (UPE) and this has been supported by a highly competitive government sponsorship programme based on A-level examination results. Total enrolment increased by 18 percent from 169,476 in 2009 to 201,376 in 2013 with significant increases in female enrolment. Female enrolment in 2014 stood at 44% of all enrolments. Universities continue to enrol most the post-secondary students with universities accounting for 71% university of student enrolment followed by 26% for other tertiary institutions (and 2.6% for other degree awarding institutions).

### ICT in Education

To date, Uganda has developed content for mathematics, biology, chemistry, geography and some primary subjects.

In 2013, the Department of Secondary Schools within the MoES reported progress on the Digital Science project to provide teacher development and resources for the implementation of ICT enabled Science teaching. The initial target of 100 schools was subsequently expanded to 300 schools with each school receiving six computers and a wide screen television set and teachers receiving both initial and on-going professional development support.

A total of 100 head teachers and 1,650 science and mathematics teachers were trained in the utilization of digital science methodologies and that over 3,000 students had received hands on computer skill training.

Computer Studies (CS) is taught as a separate subject in secondary schools and, at the end of the 4 years of lower secondary, is externally examined by the Uganda National Examinations Board (UNEB). CS aims is to equip learners with computer and ICT skills in order to develop their problem-solving skills (including analysis, interpretation and information processing and dissemination skills) and increase work efficiency by teaching them to apply these skills to other subjects

### **Challenges facing the education sector in Uganda**

Despite enormous gains made by the education system in Uganda in recent years with the advent of universal primary and secondary education, several challenges remain.

The lack of an effective and universally implemented Early Childhood Development (ECD) programme is one of them. Policy directions need to be stronger with a suitable allocation of financial resources and public awareness.

Ugandan basic education still suffers from low quality of education at all levels. This is coupled with low completion rates at primary and high dropout rates, especially among girls at secondary.

The implementation of ICT tools to improve the quality, accessibility and cost-efficiency of basic education is generally poor with several small and uncoordinated projects occurring from time to time.

In the BTVET and HE sectors. The NDPII lists some of these as:

- An inadequate skills mix to support increased production and expansion;
- Poor work readiness of many young people leaving formal secondary and tertiary education and entering the labour market for the first time;
- Inadequate linkages between institutional and workplace learning;
- Continuing challenges providing sufficient skills in the artisanal, technical and professional fields; and
- A lack of synergy between the various post-school sub-systems and a lack of clarity in each sub-system's role.

### **3. Science, Technology, and Innovation (STI)**

The Government of Uganda recognizes that science, technology and innovation (STI) are critical to Uganda's socio-economic growth and transformation. The Government also recognizes the key role that STI and the accelerated use of applied technology, research and innovation plays in fostering research and development and in building the human capital that Uganda requires for the future knowledge-based economy (National STI Policy, 2009). Currently, Research and Development (R&D) is mainly confined to institutions such as universities, colleges, vocational institutes and Government research centres with limited applicability to production and delivery of services.

The government launched the National Science, Technology and Innovation Plan (NSTP) 2012/2013-2017/2018. The plan notes that aim of building "A prosperous Science and Technology led Ugandan Society". The NSTP provides some detailed policy actions, for example, providing short, medium and long term priorities and targets for the sector in tandem with the goals and objectives of the Second National Development Plan (NDPII).

There has been some overall progress in the country's science and technology status in terms of diffusion of old innovation and human skills development. In 2014, the percentage of expenditure to research related activities by Ugandan universities was 0.75% and 0.84% for public and private universities respectively.

The College of Computing and Information Science at Makerere University was re-launched by the United Nations Industrial Development Organization (UNIDO) and Microsoft as the first Microsoft Innovation Centre in Uganda.

The Presidential Support to Scientists, with an annual allocation of UGX8 billion provides support to scientists in the development and commercialization of local innovations and the establishment and nurturing of a number of S&T institutions and enterprises.

Uganda has developed its first ever electric vehicle called the Kiira EV. The integration of informal sector artisans, under non-disclosure agreements is amazing, in its construction that is particularly promising for future STI efforts. The Kiira EV is expected to go into production in 2018 with a model that will continue to involve informal sector workers.

## Challenges facing the STI sector

In 2016, Uganda was ranked 99 out of 128 countries in the Global Innovation Index (GII) with a score of 27.1 and was classified as an achiever in innovation although it was also rated as an Inefficient Innovator indicating that, given its current GDP, its innovation score should be higher.

According to the GII 2015 report, although Uganda appears to have numerous policies relating to research and innovation, its current challenge is to get a policy mix that creates an environment conducive to learning and interaction among actors in the public sector, private businesses, and civil society.

Out-dated laws that make it difficult to address contemporary issues and do not adequately empower UNCST to effectively oversee the development of STI.

**Intellectual Property (IP).** A number of IP laws have been updated in the past decade but many scientists and innovators are unaware of the protections these laws offer them and so do not leverage them to their competitive advantage. This may be part of the reason for low levels of interaction between role players.

Unsustainable STI funding models are also a challenge. Public universities and other research organizations do receive direct government grants but, on average, only 2% of these funds are allocated to research and innovation activities (GII, 2015).

### In Conclusion...

- There has been a proliferation of policy and strategy initiatives that have taken place over the past decade. Many, particularly those in the ICT, Education, and STI sectors, are in line with Uganda's vision of transforming itself into a middle-income country by leveraging the development of a modern knowledge and innovation based economy. These policy and strategy initiatives have laid a solid foundation for progressing and realizing this vision.
- A great number of Ugandans still live at or below the poverty line and are economically dependent on agriculture, generally poorly educated, and culturally relatively conservative.
- There have been some gains made in terms of access to ICT such as improved access to broadband Internet services, mobile phone growth, and general telecommunication liberalization. There have been some advances made in terms of making government more accessible, transparent, and efficient. However, Uganda is performing poorly in ICT sector development and was ranked 157 out of 175 in 2016. Nevertheless, current fibre optic infrastructure projects should lead to further gains being realized for more people. One notable exception to this is access to electricity, especially in rural areas. This will likely continue to limit any further ICT gains in terms of quality, accessibility and price.
- There have been several efforts to transform the education sector. Enrolments have increased and gender parity, especially in primary education, has effectively been reached. Poor quality and throughput rates remain stubborn challenges. Current curriculum revisions, especially to the lower secondary curriculum aim to bring about a better match between education outcomes and job market requirements, as well as increased enrolments into post-primary and tertiary programmes related to STI or in areas demanded by the economy. Efforts in all these areas are being hampered by the slow and relatively uncoordinated implementation of ICT in the various education systems.

Development and implementation of the National Science, Technology and Innovation Plan 2012/13 – 2017/18 (2012) has had some positive effects on STI, including an increase in research and development capacity. Space is slowly being created for local and foreign investment to spur Research and development (R&D) and innovation.

The STI sector is challenged by a lack of legal and regulatory frameworks, especially regarding Intellectual Property (IP) protection, weak and overlapping research institutions, and a lack of institutional and administrative reforms to facilitate STI and R&D. There is also inadequate partnering between the various public and private role players. Further, universities offer inadequate course provision in science, technology, and engineering despite these subjects' critical contribution towards innovation and enrolments in such programmes remains below 25% of all students. Funding of research institutions is also inadequate while the indigenous technologies that are developed lack promotion and exploitation.

### **KEY Actors/Players**

- ⇒ Ministry of ICT and National Guidance
- ⇒ Uganda Communications Commission
- ⇒ National Information Technology Authority Uganda
- ⇒ Mobile Network Operators
- ⇒ Internet Service Providers
- ⇒ Radio and Television Broadcasters
- ⇒ Ministry of Education and Sports
- ⇒ National Curriculum Development Centre
- ⇒ Uganda National Council for Higher Education
- ⇒ Uganda National Examinations Board
- ⇒ Global Partnership for Education
- ⇒ Japan International Cooperation Agency
- ⇒ Ministry of Science, Technology and Innovation
- ⇒ Uganda National Council for Science and Technology
- ⇒ Makerere University
- ⇒ National Information Technology Authority Uganda

Over 5,000km of optic fiber has been laid as a result of public and private (Airtel, MTN, UTL, Africell, Roke Telecom, Infocom, and Google) efforts

1

Uganda's capital, Kampala was recently named the 13<sup>th</sup> fastest growing city in the world.

2

According to the Global Innovation Index (2015), tertiary education in Uganda comprises 198 tertiary institutions (universities, teacher training colleges, colleges of commerce and technology and other institutions) of which 115 (72%) are privately owned.

3

A great number of Ugandans still live at or below the poverty line and are economically dependent on agriculture, generally poorly educated, and culturally relatively conservative.

4

Uganda was the first country in Africa to develop curriculum aligned digital content through the use of Microsoft Partners in Learning programme.

5

There have been several efforts to transform the education sector. But they are being hampered by the slow and relatively uncoordinated implementation of ICT in the various education systems.

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## INTERESTING FACTS ABOUT KS DEVELOPMENT IN UGANDA

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