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EAST AFRICA GUIDE -
DATA INFRASTRUCTURE

Contents

Foreword

From data centres to new mobile and cable connectivity, data infrastructure is capturing the attention of investors, who can only benefit from greater insight into the regulatory ramifications of operating in this sphere.

This guide provides a bird's eye view of the data infrastructure sector across three jurisdictions in East Africa – Kenya, Tanzania and Uganda.

It was compiled by the lawyers in our Kenyan, Tanzanian and Ugandan practices included as key contacts at the end of this publication.

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Kenya

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KENYA

Overview

Kenya's dynamic telecommunications market has grown significantly in the past two decades. Mobile connectivity in the country is reported to have risen from 37% to 49.6% from 2014 to 2019[1], putting Kenya at the top of GSMA's[2] list of most improved countries in the region for mobile connectivity.

Apart from high consumer readiness and experience, ample infrastructure coverage is the other significant factor that has enhanced connectivity in the region. For instance, five fibre optic international submarine cables have landed in Kenya in recent years, namely SEACOM, East Africa Marine Cable System, East Africa Submarine Cable System (EASsy), Madagascar-linked Lion2 and Djibouti Africa Regional Express (DARE 1). This has dramatically reduced the cost of phone calls and internet access, making these services affordable to the greater population.[3]

There is a concerted move to increase competition in the telecommunications sector. In early 2020, the Competition Authority of Kenya and Communications Authority of Kenya (CA) initially approved the merger between Airtel Kenya and Telkom Kenya (Kenya's second and third largest telecoms companies respectively), with the new merged operator anticipated to provide greater competition in the market. The merger stalled later in 2020 due to Ethics and Anti-Corruption Commission (EACC) investigations but has recently been revived following a court order clearing the merger.[4]

The Kenyan Government has in the past few years prioritised infrastructure investment, launching several projects through its ICT capacity investment arm, the ICT Authority. It is currently rolling out the National Optic Fibre Backbone, a project initiated in 2007 to ensure connectivity in all 47 counties of Kenya.

A priority for investors has been scaling up network capacity in Kenya. In support of this, the CA issued 329 telecommunication licences in the financial year 2018/19.[5] As at June 2020, two telecommunication operators had received licences to begin 5G testing in Kenya, demonstrating the country's desire to keep up with jurisdictions such as Nigeria and South Africa. On 26 March 2021, Safaricom announced the activation of 5G in Nairobi, Kisumu, Kisii and Kakamega with planned expansion to one hundred and fifty sites across nine towns in the next year.[6]

In Nigeria, the 5G plan is still in its development stages: the Nigerian Communications Commission launched the Draft Consultation Document for Deployment of Fifth Generation Technology in Nigeria in August 2020.[7] In South Africa, Vodacom and MTN launched their 5G networks in 2020, and mobile data-only network operator Rain activated Africa's first commercial 5G network.[8]

Fibre optic cables

Roll-out of the National Optic Fibre Backbone continues, with the aim of expediting communication across counties and making it easier and quicker for citizens to apply for national identity cards, passports and registration of birth and death certificates. The main project participants are the Government of Kenya and the Chinese Government as funding partners, the Ministry of ICT, Innovation and Youth Affairs providing oversight, the ICT Authority as the implementing agency, and Huawei and Telkom Kenya as technical and operational partners.[9]

As at March 2021, the backbone section of the project has been completed and fibre installed in all 47 counties. Metropolitan fibre civil works have also been completed in 35 of the 47 counties. The available international bandwidth for 2018/19 stood at 4707.46 Gbps and the number of broadband subscriptions has grown strongly, rising from 5 327 859 in 2015 to 22 198 610 in 2019. This indicates continuous growth in the sector with the potential for more expansion.[10]

Footnotes

[1] Mobile Internet Connectivity 2020 Sub-Saharan Africa Factsheet, accessed **here.**
[2] GSMA is an industry organization representing the interests of mobile operators worldwide, uniting more than 750 operators with almost 400 companies in the broader mobile ecosystem. For more details please see its website **https://www.gsma.com/.**
[3] TeleGeography, Worldwide Submarine Cable Map, accessed **here.**
[4] Business Daily, Court clears Telkom, Airtel merger, 11 February 2021, accessed **here.**
[5] CA Annual Report for Financial Year 2018-2019, accessed **here.**
[6] Safaricom switches on 5G across Kenya, accessed **here.**
[7] The Draft Consultation Document for Deployment of Fifth Generation Technology in Nigeria, accessed **here.**
[8] South Africa's Broadband Market Gains 2020, accessed **here.**
[9] NOFBI is currently at Phase 2. More on the project can be found **here.**
[10] CA Annual Report for Financial Year 2018-2019, accessed **here.**
[11] Turkana County Government Press Release, Governor Nanok Launches Installation of Fibre Optic Cable, 23 October 2020, accessed **here.**

Another major fibre project recently piloted by the ICT Authority is construction of the 630-km high-speed fibre optic cable at Nadapal, which is set to enhance connectivity in mostly rural counties such as the upper Rift Valley and Northern Kenya areas.[11] Through other government agencies, the National Government has also entered into private-public partnerships (PPPs). For instance, in April 2016, the Kenya Power and Lighting Company (a public company that transmits, distributes and retails electricity to customers throughout Kenya), entered into a PPP with Safaricom plc. Through this partnership, Safaricom has been able to connect Kenyans to the internet by running its fibre optic cables on Kenya Power's 4 000 km of infrastructure throughout Kenya.[12]

Other major fibre optic operators in Kenya are Access Kenya, Wananchi Group (Kenya) Ltd, Kenya Data Networks, Telkom Kenya, Jamii Telecom and Airtel Kenya. While Safaricom takes a decisive market share lead over other mobile network operators in mobile data subscriptions, Wananchi Group (Kenya) and Jamii Telecom are close behind Safaricom in fixed data subscriptions.

Communications towers

The majority of communications towers are owned by mobile network operators such as Safaricom, Airtel, YU (now owned by Airtel) and Orange (now Telkom Kenya).[13] This could change in step with the global trend towards tower companies acquiring and managing tower infrastructure.

Tower companies now own more than two-thirds of the world's 4.3 million investible towers and rooftop sites, and demonstrate how specialised expertise can turn passive infrastructure from a depreciating asset to a potential source of long-term, recurring revenue.[14]

The tower company approach to managing telecommunication assets is gaining momentum in East Africa following recent acquisitions of tower assets in the region. In 2018, American Tower Corporation (ATC) was reported to have reached an agreement to acquire 723 telecommunications towers held by Telkom Kenya for an undisclosed sum.[15]

Satellite communications

By the end of the 2018/19 financial year, the CA had assigned frequencies for five additional satellite earth stations and five private very small aperture terminals (VSAT) stations.[16] Further, satellite bandwidth capacity has grown to 5.58 Gbps from a mere 0.27 Gbps in 2014.[17]

Sector statistics reports for 2019/20 indicate that international bandwidth capacity maintained a stable average over the year but has dropped slightly to 5.48 Gbps.[18] An increase in satellite communications has been lauded as a contributing factor to the 21.51% growth in internet subscriptions.

As at February 2021 however, only five companies were licensed to land satellite stations in Kenya, namely Globalstar Inc, Inmarsat Ltd, Iridium Satellite, Thuraya Satellite Communications Ltd and Viasat Kenya Ltd. Of these five licensees, three are foreign companies. No additional assignments of frequencies with respect to earth stations were made in the first quarter of 2020/21.[19]

Submarine cables

Three entities currently have submarine cable landing rights in Kenya, and investors usually establish submarine cables in partnership with these licensees. The DARE 1 cable, for instance, is a three-fibre pair subsea cable operated jointly by the Government of Kenya through Telkom Kenya, Djibouti Telcom and Somalia's Somtel.[20]

The ventures are structured in such a manner that each party owns part of the fibre in the cable, with the licensed partner undertaking the operation and maintenance of the cable in the Kenyan territory. Other operators, subject to applicable laws, regulations and commercial negotiations, then purchase Indefeasible Rights of Use (IRUs).[21]

Regulation

Information and communications technology (ICT) development is at the heart of Kenya's Vision 2030, which is the country's development programme for 2008 to 2030. Vision 2030 is central to the sector's regulation, which is led by the Ministry of ICT, Innovation and Youth Affairs. This Ministry formulates, administers, manages and develops policy in the ICT sector, which the CA then implements. The ICT Authority, which is also set up under the Ministry, is tasked with rationalising and streamlining the management of all government ICT functions and enforcing ICT standards within government. It also promotes ICT literacy, capacity, innovation and enterprise in Kenya.

The Sector Policy

In August 2020, the Ministry of ICT, Innovation and Youth Affairs published National ICT Policy Guidelines, 2020, known as the Sector Policy. This is intended to guide all regulation and create an enabling environment for growth of the sector by facilitating universal access to ICT infrastructure and services all over the country. To this end, it prioritises the creation of infrastructure for always-on, high-speed, wireless internet across the country.

Further, the Sector Policy enables infrastructure and frameworks that support the growth of data centres, pervasive instrumentation (the Internet of Things), machine learning and local manufacturing while fostering a secure, innovation ecosystem. The Sector Policy also encourages infrastructure sharing and co-location for efficiency of use.[22]

The Kenya Information and Communications Act

The authority to make regulations on infrastructure sharing lies with the Cabinet Secretary, in consultation with the CA. This is according to the Kenya Information and Communications Act 2 of 1998 (KICA).

To construct, own and operate infrastructure in Kenya, one must be licensed by the CA. The type of licence depends on the nature of the infrastructure and the intended activity, as follows:

- a network facilities provider licence for establishing and operating communication infrastructure using all/any forms of technology;
- a submarine cable landing rights licence for establishing submarine cable systems within Kenyan territorial waters;
- an international gateway systems and services licence for establishing and operating international gateway systems and providing related services; and
- a contractor licence for supplying, installing and maintaining the communications infrastructure.

Interconnection regulations

The Kenyan Government places emphasis on infrastructure sharing and co-location. This is reflected in the current legal framework on interconnection of fixed links and facilities.

The Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations, 2010 **(Interconnection Regulations)** govern all interconnect licensees and interconnecting licensees. In particular, they govern the form and content of interconnection agreements, access and facilities.[23]

The Interconnection Regulations define an 'interconnect licensee' as a provider of a telecommunications service who, in accordance with a licence issued by the CA, is required to provide interconnection services to other telecommunications licensees.[24]

Footnotes

[12]   Kenya Power company website, accessed **here.** See also: CA Proposed National Broadband Strategy (2018 – 2023), p. 57 and 129, accessed **here.**
[13]   Powering Telecoms: East Africa Market Analysis by GSMA, accessed **here.**
[14]   ITU News Magazine, June 2017, accessed **here.**
[15]   The East African, Telcos sell off towers in Africa to improve balance sheets, 21 May 2018, accessed **here.**
[16]   CA Annual Report for Financial Year 2018-2019, accessed **here.**
[17]   CA Annual Report for Financial Year 2018-2019.
[18]   Sector Statistics Report (Q3 2019 – 2020), accessed **here.**
[19]   Sector Statistics Report (Q1 2020 – 2021), accessed **here.**
[20]   KBC, East Africa's largest submarine cable lands in Mombasa, 6 March 2020, accessed **here.**
[21]   E Sutherland, Undersea cables and landing stations around Africa: Policy and regulatory issues, provided in Cooperation with: International Telecommunications Society (ITS) (2014), accessed **here.**

Footnotes

[22]   Preamble, The National Information Communication and Technology Policy Guidelines, 2020 (Kenya Gazette Notice 5472, 7 August 2020).
[23]   Regulation 3, Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations, 2010.
[24]   Regulation 2, Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations, 2010.

An 'interconnecting licensee' means a provider of telecommunication services who has interconnected or requested to interconnect its telecommunications system to the telecommunications system of an interconnect provider.[25]

To encourage infrastructure sharing, an interconnection licensee is required to accept all reasonable requests for access to its telecommunications system at the network termination points offered to the majority of the interconnecting operators.

All interconnection agreements have to be filed with the CA for approval.[26] In practice, the CA does not reject disputes based on interconnection agreements that have yet to be filed for approval and instead advises the parties to file for the necessary approvals.[27]

The Interconnection Regulations further provide that where parties enter into negotiations for an interconnection agreement and fail to reach consensus within six weeks[28] of the commencement of negotiations, the CA may intervene.[29] Moreover, where there is a request by a licensee to interconnect and the other party fails to do so, the CA can require the other party to interconnect on the basis of public interest.[30] If an interconnection agreement is still pending approval, the parties may agree on interim conditions and notify the CA.[31]

Interconnection agreements cannot be terminated unless there is a fundamental breach of the agreement which the offending party has failed to remedy within reasonable time. The terminating party must also provide written notice to the offending party and the CA of its intention to terminate specifying the reasons for termination.[32] The CA has taken the stance that an agreement cannot be terminated unilaterally, and that the procedure set out in the regulations must be followed.[33]

Importation Regulations

In setting up telecommunications infrastructure, operators often have to import the telecommunications equipment to be used. This must be done in accordance with the Kenya Information and Communications (Importation, Type Approval and Distribution of Communications Equipment Regulations, 2010 **(Importation Regulations).**

Under the Importation Regulations, one cannot import, supply or distribute electronic communications equipment for commercial use without a licence from the CA.[34] In addition, all communications equipment must be submitted to the CA for type approval or type acceptance.[35]

Type approval is used to check the compatibility of communications equipment with any operating communication network and the performance of such equipment to national standards. Type approval should be obtained in respect of equipment which has not previously been type-approved. The CA periodically publishes a list of type-approved and rejected equipment.[36] One may seek type-acceptance if another jurisdiction has approved the equipment.

Communications equipment is exempt from type-approval requirements under the Importation Regulations if the equipment is temporarily imported into Kenya for re-export.[37]

Licence terms and conditions

There are varying requirements, fees and terms and conditions applicable to each licence.[38] Notably, all telecommunications licensees are required to have at least 30% Kenyan shareholding according to the Sector Policy. The shareholding requirement is higher than the 20% shareholding requirement set in the previous National Information and Communications Technology Policy (January 2006).

The local equity participation requirement has been a sore point for investors in Kenya, with most opting to seek an extension from the Ministry as they strategise on how to restructure operations. It is also arguably a barrier to investment in the sector.

Other major licence terms that apply across the board for all telecommunications licensees include:[39]

- A requirement to notify the CA of any change in shareholding or change of control of the licensee. This is especially so in light of Sector Policy requirements on local shareholding. The CA therefore has a vested interest in ensuring that all telecommunications licensees maintain compliance in their equity ownership.

- A prohibition on cross-subsidisation and undue discrimination in provision of its services.

- The filing of quarterly compliance returns confirming their compliance with sector regulations as well as accounting requirements.

Other laws applicable to data infrastructure

- The Environmental Management and Co-ordination Act (Chapter 387 of the Laws of Kenya)

  Due to the impact that construction of telecommunications infrastructure may have on the environment, the appropriate environmental reports must be submitted to and approvals obtained from the National Environment Management Authority (NEMA). This is in line with the Constitution of Kenya (2010) **(Constitution)**, which contextualises the importance of sustaining the environment, noting that land is a very emotive issue in Kenya.[40]

- Land Regulations

  Land rights are very important to the bankability of an infrastructure project in Kenya. Under the Constitution, foreigners may only acquire land in Kenya under a leasehold agreement valid for up to 99 years. In addition to this, it is key for investors to obtain rights of way, easements and other similar rights necessary for transmission and distribution to and from the proposed sites.

The Land Registration Act 3 of 2012 has consolidated the land registration regimes in the country and made it easier to deal with land. The Land Control Act (Cap. 302) is also important as it has provisions in relation to agricultural land that may pose a significant hurdle when it comes to foreign investment, and further shows the importance of effective partnerships between investors and locally incorporated companies.

- Construction Regulations and Employment Regulations

The laying of data infrastructure requires engaging contractors. Under section 15 of the National Construction Authority Act 2011, contractors must be licensed by the National Construction Authority. Therefore, any party engaging contractors must ensure that the contractor is properly licensed. It is an offence to carry out the business of a contractor without this licence.

Telecommunication companies are also required to abide by employment regulations and requirements to the extent that they have any employees. These include meeting occupational safety and health requirements (OSHA), paying national health insurance and social security benefits (NHIF and NSSF) and paying a monthly industrial levy to the National Industrial Training Authority (NITA).

Footnotes
[25] Regulation 2, Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations, 2010.
[26] Regulation 6(1), Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations.
[27] Communications Authority, Dispute between Essar Telecom Kenya Limited and Air Touch Connections Limited (Interconnection Determination No.1 of 2010), para 3.5.
[28] Note that the set period for negotiating an interconnection agreement is 6 weeks unless the CA decides to extend the period
[29] Regulation 5(9), Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations.
[30] Regulation 5(11), Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations. See also: CA (then the Communications Commission of Kenya), Determination on Interconnections Rates for Fixed and Mobile Telecommunications Networks, Infrastructure Sharing and Co-Location; and Broadband Interconnection Services in Kenya Interconnection (Determination No. 2 of 2010), pg. 4.

Footnotes
[31] Regulation 6(6), Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations.
[32] Regulation 16(2), Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations.
[33] Communications Authority, Dispute between Essar Telecom Kenya Limited and Air Touch Connections Limited (Interconnection Determination No.1 of 2010), para 3.9.
[34] Regulation 17(1), Kenya Information and Communications (Importation, Type Approval and Distribution of Communications Equipment) Regulations, 2010.
[35] Regulation 3(1), Kenya Information and Communications (Importation, Type Approval and Distribution of Communications Equipment) Regulations, 2010. Updated list of type-approved equipment (January 2021) can be accessed **here.**
[36] Regulation 19, Kenya Information and Communications (Importation, Type Approval and Distribution of Communications Equipment) Regulations, 2010.
[37] CA, Telecommunications Licensing Procedures, accessed **here**.
[38] Templates of standard NFP and SCLR licences can be accessed **here** and **here.**
[39] Mwenda A, Kibutu TN, Implications of New Constitution on Environmental Management in Kenya (July 2012), accessed **here.**

Challenges

Regulatory challenges

- Over-regulation

  The telecommunications sector in Kenya is heavily regulated both by sectoral laws and non-sectoral regulations such as land laws, labour and employment laws, company laws, etc. This heavy regulatory burden has at times served as a deterrence to investors (particularly foreigners) establishing their presence in Kenya. While it is prudent from the Government's perspective to ensure proper regulation of a sector that has great economic impact, this has to be carefully balanced with the needs of the investors. The regulations must ensure enough flexibility to enable innovation and easier market entry. A delicate balance between effective regulation and liberalisation of the sector is imperative in ensuring the health of the sector.

- Local equity participation

  Local equity participation requirements are a particularly sore point for sector players, sometimes acting as a deterrent to potential investors. Foreign investors are often reluctant to divest shareholding to Kenyan entities or individuals.

  A less restrictive approach has been adopted in countries such as Singapore where direct and indirect local equity participation requirements were abolished and a local incorporation requirement adopted. These companies, though incorporated in Singapore, can be fully owned by foreign entities.[41]

  While countries using the local equity participation approach argue it ensures investment in the local economy, increasing requirements for foreign investment has been linked to a decline in domestic economies.[42] Taking an approach that lowers barriers to trade and favours trade liberalisation would allow Kenya to benefit from foreign investment revenue while creating local job opportunities and maintaining a positive relationship with foreign investors.

- Uncertainty in regulation

  The overall tonal direction of the Sector Policy seems to indicate an increase in regulation in the ICT sector in the near future. For instance, the Sector Policy outlines the need for regulation of data centres, specifically providing that the Government will develop guidelines for current and future data centres to avoid inefficient public and ad hoc private investments. The Sector Policy emphasises oversight over access, licensing operators, and regulating and pricing commercial access to infrastructure built with public funds. The intention is to promote a fair use policy by which privately established infrastructure may on fair commercial terms be made available by one operator to others.[43] This is likely to result in some pushback from sector players, noting that it is not clear how the mere provision of physical facilities such as a data centre for third-party use satisfies the meaning of a telecommunication service or system under the KICA.

  Another key factor will be ensuring that there is effective support to companies regarding local equity participation requirements. The current Sector Policy is unclear on whether multiple extensions may be sought to comply with the 30% shareholding requirement, and how long entities compliant with the 2006 Policy have to comply. A formal clarification from the Ministry or the CA on this issue would be invaluable in providing clarity to investors on their structuring options.

- Discretionary powers of the CA

  One of the known advantages of having written law is predictability in implementation. Kenyan legislation gives wide discretion to the CA in a variety of matters without any set standards or principles to guide in the exercise of this discretion. A disconnect therefore arises between practice and reasonable expectations. For instance, in the realm of interconnection agreements, the CA is granted wide discretion to intervene and compel a party to provide interconnection services on the premise of public interest. However, the law does not define what amounts to public interest and in which circumstances the regulator is permitted to compel a party to provide interconnection services.

  Licence terms and conditions, as well as regulations, also grant the CA discretion on how to dispense licences. For instance, the Kenya Communication Regulations (2001) provide that where an application is made to transfer a licence, the Authority shall in considering the application have regard to the same requirements as when granting a new licence, but in the same way maintain its discretion to refuse to approve such an application. A predictable approach on how the CA exercises its discretion would contribute to greater certainty in the industry.

- Reactionary laws

  Many of the laws in Kenya observably react to situations instead of anticipating them. This often results in regulation that is ill-fitting to current realities and not dynamic enough for the ever-evolving ICT sector. For instance, the Interconnection Regulations apply retrospectively to interconnection agreements entered into before these regulations came into effect.[44] Existing licensees therefore had to incur costs to bring their agreements and activities into line with these laws. In addition, the Sector Policy provisions on regulation of data centres appear to be a reaction to the increase in data centres in Kenya and may therefore result in the same challenge.

- Vagueness and lack of consistency in laws lead to further uncertainty

  The Sector Policy presents gaps in the implementation of proposed regulation of data centres and local equity participation requirements. Without established practice to form a point of reference, many investors are unsure of the trends that will follow and are reluctant to invest in the market.

Infrastructure roll-out challenges

- **Fibre optic cables**: There is an over-reliance on the private sector when it comes to data infrastructure. The lack of financial capital to fill in the divide between private investment and telecommunication demands poses a problem to the successful implementation of fibre optic infrastructure in the country. In addition to this, the lack of regulation specific to fibre optics, as in developed countries, potentially facilitates unfair competition.

- **Satellite:** The lack of enough financial investment in VSAT connectivity is a problem that investors face when rolling out satellite infrastructure. This coupled with the lack of technical know-how in the industry has slowed the growth of the satellite communication industry. A more curated approach focusing on PPPs may boost development.

- **Submarine cables:** With the success of Angola's South Atlantic Cable System between Brazil and Angola, collaboration is lauded as the cornerstone of ICT and communications development. An increase in collaboration between the public and private sectors in different regions will significantly improve submarine cable infrastructure while increasing investment in the sector, both of which are challenges to the successful roll-out of such infrastructure.

Footnotes

41 Pinset Masons, Singapore's foreign investment regime, 26 November 2020, accessed **here**.
42 IMF, Global Trade Liberalization and the Developing Countries, accessed **here.**
43 Para. 6.1.2, National ICT Policy Guidelines (2020).

Footnotes

44 Definition of Interconnection Agreement under Regulation 2 of the Kenya Information and Communications (Interconnection and Provision of Fixed Links, Access and Facilities) Regulations, 2010.

- **Data centres:** There is a lack of clarity on regulation and licensing of data centres. Guidance on this point from the Ministry of ICT, Innovation and Youth Affairs and the CA will be key in ensuring increased investment in data centres.

- **General challenges:** Other factors affecting the roll-out of data infrastructure include general delays by the regulators in granting licences, approvals and authorisations, resulting in delays in the laying of communication infrastructure. This has been exacerbated by the prevailing COVID-19 health crisis which has caused frequent closures of government offices.

Government prioritisation

Owing to competing economic priorities in the country, the sector is often relegated to the background when other, more politically sensitive issues come to the fore. Funding challenges faced by the sector regulator result in compromised service delivery. Government-backed infrastructure is also impacted, resulting in an overreliance on the private sector and foreign players for investment in the ICT sector. What this ultimately means is that the price to access telecommunication services may be driven up by commercial overheads and profit objectives.

Conclusion

There is no doubt that increasing data infrastructure will ultimately result in higher connectivity in Kenya. Increased connectivity and greater mobile penetration fit squarely into the country's Vision 2030 agenda under the social and economic pillars. It will also boost the education goal under Vision 2030, aiding in the integration of ICT into teaching and learning in schools.

Investment in infrastructure creates job and business opportunities that assist in alleviating poverty nationally. Increased internet penetration provides innovative business solutions that Government could harness in addressing key economic challenges. Mobile phones and the internet have become essential around the globe. As more and more people worldwide connect to phone services, countries such as Kenya continue to experience growth as a result of improved information flow and access to banking and other essential services. This is clear from the GSMA statistics on mobile penetration, which show that countries with better mobile access rates are typically economically stronger than countries with less connectivity.[45]

With increased mobile and internet penetration, the ICT and communication sector presents an opportunity for the adoption of new ICT trends in the market, examples being pervasive instrumentation (Internet of Things), machine learning and over-the-top (OTT) services. Furthermore, since Kenya is a growing technology hub, the market is ripe for more data centres and co-location facilities for servers.

Finally, it is important that the Government continues to prioritise infrastructure investment and encourage the formation of PPPs in the sector. Effective investment in telecommunications infrastructure is likely the key to continued inclusive growth in Kenya.

All in all, Kenya continues to prove itself a ripe market for investment in data infrastructure.

Footnotes
[45] Deloitte for GSMA (2011), What is the impact of mobile telephony on economic growth? accessed **here**.

Tanzania

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TANZANIA

Overview

Tanzania is the second-largest telecoms market in East Africa behind Kenya. The country's telecoms sector contributed USD 859 million to real GDP in 2018, up from USD 672 million in 2014, an increase of 28%. This growth was attributed to the increase in mobile usage and the expansion of broadcasting and internet services.

The key players[1] in the telecoms sector are the two fixed-line operators, Tanzania Telecommunications Corporation **(TTC)**, formerly known as Tanzania Telecommunications Company Limited **(TTCL)** and Zantel, along with seven operational mobile networks. They are Airtel, Halotel, Smile, Tigo, TTC, Vodacom and Zantel with market shares of 27%, 13%, 0.024%, 25%, 2% 31% and 2% respectively.

With the launch of mobile broadband services in Tanzania, the mobile network operators have become the leading internet service providers. Operators are hoping for revenue growth in the mobile data services market, given that the voice market is almost entirely prepaid and average revenue per user for voice continues to fall. As a result, they have invested in network upgrades.

Data infrastructure in Tanzania has improved significantly through investments in the fibre-optic network. Internet connectivity has been boosted through the East African Submarine Cable System **(EASSY)**, an initiative of the World Bank, the African Development Bank and other development banks, and the SEACOM cable system. There has also been investment in local internet exchange points, migration to internet protocol version 6 **(IPv6)** and construction of the National ICT Broadband Backbone **(NICTBB)**.

The Government-backed NICTBB connected to SEACOM in July 2009 and EASSY in April 2010, and now extends over 7 500 km in regions and districts across the country. Meanwhile, the Fibre Consortium, comprising Airtel, Tigo, Vodacom and Zantel, has laid over 1 500 km of backbone fibre linking the major cities of Dar es Salaam, Dodoma, Arusha and Moshi.

The Fibre Consortium has also constructed about 400 km of metro fibre in Dar es Salaam, Dodoma, Morogoro, Mwanza and Arusha.

Technologies such as very small aperture terminal **(VSAT)** internet, GSM, 3G, 4G, LTE and microwave are used extensively throughout Tanzania.

A feather in Tanzania's cap is that it had fully migrated from analogue to digital technology ahead of the agreed deadline of June 2015.

All these infrastructure improvements have assisted in reducing internet access and voice costs, and in extending internet connectivity to more Tanzanian businesses and consumers. Citizens in rural areas are not being overlooked and the Government has introduced a Universal Communication Fund to facilitate the development of telecoms in these areas.

Government, through the TTC, has played an active part in the development of Tanzania's data infrastructure. TTC, which has a mandate to develop telecoms services and manage infrastructure, was formed in January 2018 after the Government acquired Bharti Airtel's 35% stake in its predecessor, TTCL.

Credit for the connectivity improvements must also go to the country's mobile network operators and service providers for introducing new technologies such as 4G LTE data networks and e-commerce services, and for helping narrow the digital divide.

By January 2021, mobile penetration in Tanzania had reached an estimated 82.7% of the country's population of 60.61 million. There were 15.15 million internet users, representing an internet penetration rate of 25%, and 5.40 million social media users comprising 8.9% of the total population.

As more people and companies are connected, access costs – which are high – will continue to fall and, as digital devices penetrate into previously underserved areas, digital services such as e-commerce and fintech are expected to grow accordingly.

Footnotes
[1]   Tanzania Communications Regulatory Authority (TCRA) quarterly communication statics October to December 2020

Liberalisation of the ICT sector

ICT development has accelerated rapidly in Tanzania since 1994, when the sector began liberalising. The catalysts were the Communication Act of 1993 and the National Telecommunication Policy 1997, which provided the framework for sector reforms and private sector engagement.

A milestone in the liberalisation agenda was reached with the enactment of the Tanzania Communication Regulatory Authority Act of 2003 **(TCRA Act)** and the establishment of the Tanzania Communication Regulatory Authority **(TCRA)** in 2003 as an independent regulator for the postal, broadcast and communication industries.

The TCRA Act, which introduced a convergence licensing framework, mandated the TCRA to promote competition and economic efficiency in the sector, protect consumer interests and take responsibility for licensing matters.

Liberalisation and the converged licensing regime have brought many new players and services into the market, including voice-over-internet protocol **(VoIP)** telephony, third and fourth generation (3G, LTE) mobile services and wireless broadband. These developments have boosted the internet sector, which was previously hampered by the low level of development of the traditional fixed-line network.
By February 2005, Tanzania had fully liberalised its telecoms sector, which is among the most open in Africa. Despite taking back control of the incumbent telecoms operator, TTC, the Government has actively embraced competition in the telecoms market. Foreign participation has been encouraged with a view to promoting economic growth and social development.
For example, the World Bank, in collaboration with other stakeholders, including mobile operators and the private sector, has sponsored Digital Tanzania Programme **(DTP)**[2] aimed at assisting the country harness its digital potential. It aims to ensure that all citizens have access to high-quality, low-cost connectivity, that public services are easily accessible online and that the digital economy is driving growth, innovation and job creation.

Regulation

Government position on technology

The Tanzania Development Vision 2025 highlights the importance of leveraging ICT alongside the necessary skills and capabilities to realise a well-educated and learning society; and a strong, competitive economy capable of sustainable growth and shared benefits.

The National ICT Policy 2016 articulated 10 main focus areas in harnessing ICT in Tanzania: strategic ICT leadership, ICT infrastructure, the ICT industry, human capital, the legal and regulatory framework, productive sectors and service sectors, the public service, local content and universal access.

The Government established the Ministry of Communication, Science and Technology in 2008. Later renamed the Ministry of Communication and Information Technology, this Ministry is charged with the responsibility to create a conducive environment for investment, introduction and use of ICT in national development efforts and Government operations.

The eGovernment Strategy was put in place in September 2012. The eGovernment Agency is responsible for the design and implementation of ICT-enabled public services at a local and national level.

Sector policy on data infrastructure

The National ICT Policy 2016 contains several commitments on the part of Government to support infrastructure development in the ICT sector. In relation to broadband services, this entails creating a conducive environment for public-private collaboration in exploring various means of financing access to accessible, reliable and affordable broadband services countrywide.

With regards to infrastructure development, Government's commitments, also outlined in the National ICT Policy 2016, include supporting public-private collaboration, countrywide development of e-ready infrastructure and a supportive framework to guide infrastructure deployment and sharing.

Data infrastructure laws and regulations
The main laws and regulations governing the ICT sector in general, and data infrastructure in particular, are:

• The Tanzania Communications Regulatory Authority Act of 2003, which established the TCRA as the regulator of telecoms, broadcasting and postal services. The TCRA is responsible for licensing operators, enforcing licence conditions, allocating and managing radio spectrum, regulating tariffs and monitoring licensees' performance.

• The Electronic and Postal Communications Act of 2010 (EPOCA) provides a comprehensive regulatory regime for electronic communications service providers and postal communications service providers. This includes, among other things, establishing the Central Equipment Identification Register for detachable 81M card and built-in SIM card mobile phones, content regulation, the issuing of postal communication licences, regulating competition and dealing with offences pertaining to electronic and postal communications.

• The Cybercrimes Act of 2015 deals with offences relating to computer systems and ICTs and provides for the investigation, collection and use of electronic evidence.

• The Electronic and Postal Communications (Licensing) Regulations, 2018 **(EPOCA Licensing Regulations)** make provision for the TCRA to issue the following types of licences:

  - network facilities licences;
  - network services licences;
  - content services licences;
  - application services licences;
  - postal and courier services licences;
  - installation and maintenance of electronic communication equipment licences;
  - importation and distribution of electronic communication equipment licences;
  - the sale of electronic communication equipment licences;
  - VSATs licences; and
  - spectrum usage licences.

In addition, the regulatory authority is responsible for electronic communication numbering and addresses and channel aggregators.

Licensing requirements

The four main licence categories that apply to the data infrastructure sphere are: network facilities licences (NFL), network service licences (NSL), application services licences (ASL) and right-of-way and infrastructure siting licences:

• A NFL authorises ownership and control of electronic communication infrastructure. Examples of facilities within the scope of this licence include: earth stations, fixed links and cables, public payphone facilities, radio communications transmitters and links, satellite hubs, satellite control stations, space stations, submarine cable landing centres, switching centres, towers, poles, and ducts and pits used in conjunction with other network facilities.

• A NSL provides authorisation to operate electronic communication networks to deliver services. Examples of network services are: bandwidth services, broadcasting distribution services, cellular mobile services, access applications services and space segment services.

• An ASL authorises the reselling or procurement of services from network service operators. The salient feature of this licence is that the licensee does not own or operate network infrastructure. Examples of licensees are: internet service providers, virtual mobile service providers, payphone service providers, PSTN providers, public cellular service providers and providers of IP telephony, public payphone services and public switched data services.

• A right-of-way and infrastructure siting licence authorises the licensee to undertake infrastructure siting and attendant right-of-way requirements that may be required. Municipal council approval should be obtained for right-of-way and environmental impact assessment certification from the National Environmental Management Council.

Footnotes

2   DTP is classified under three major components namely Digital Ecosystem, Digital Connectivity and Digital Government Platform and services. The three components focus to promote industrialization, better and improved government services, creation of youth employment for social economic development hence economic growth. DTP is implemented by the government of Tanzania.

The NFL, NSL and ASL licence categories are further subdivided into four market segments to reflect their corresponding markets, as follows:

- International market segment: The licensee is authorised to offer services from one or more of the four licence categories to the international market;

- National market segment: The licensee is authorised to provide services nationally;

- Regional market segment: The licensee is authorised to provide services in an administrative region; and

- District market segment: The licensee is authorised to provide services in an administrative district.

Also, TCRA may issue an NFL or NSL either as an individual licence or a class licence, depending on the economic and social effect the issuance of the licence will have. Individual licenses are issued through a tender and carry certain obligations, while class licenses are issued without any conditions.

The requirements for the NFL, NSL and ASL application are:

- Transmittal letter to the Director General of the TCRA.
- Photocopy of receipt of application fees.
- Duly completed application form.
- A certified copy of the applicant's certificate of incorporation.
- Business plan for proposed services, including the following:
  - manuals, brochures and technical specifications;
  - network rollout plan (coverage, customer base projections, construction plan, radio frequency);
  - network configurations;
  - services to be offered;
  - costing structure;
  - service pricing;
  - customer care strategy (quality of services);
  - projected financial statement, cash flow and balance;
  - financing plan;
  - capital investment ratio (equity: debt); and
  - human resources development strategy.

- Technical proposal on the services to be provided.
- Previous experience in the provision of the services.
- Company profile.
- Company memorandum and articles of association with a minimum of 25% of its authorised share capital issued and paid up as an ongoing obligation throughout the life of its licence.

Specific requirements for NFL and NSL applications are:

- Proof of financial capability in the form of a bank statement from a bank for the company or its shareholders for the past six months prior to submission of the application;
- Proof that the minimum paid-up capital of the company is not less than 50% of the authorised share capital. This is a requirement under regulation 21 (b) of the EPOCA Licensing Regulations (which appears to contradict the requirement of EPOCA). We understand that TCRA accepts proof of the 25% paid-up capital if only 25% of the shares have been subscribed and paid up;
- Shareholding structure (in compliance with section 26 of the EPOCA), including relationship with holding or subsidiary company, clearly indicating the ownership or shareholders of the latter; and
- Notarised memorandum of understanding or agreement between financiers (whether domestic or foreign) and the applicant.

Specific requirements for an NFL application are:

- Technical specifications for interoperability and compatibility of the system with other systems;
- Network rollout plan and its implementation schedule;
- Tariff structure;
- Availability of emergency services;
- Network plan and construction; and
- Performance bank guarantee from a bank registered in Tanzania.

Specific requirements for an NSL application are:

- Interoperability and compatibility of the system with other systems;
- Tariff structure; and

- Availability of emergency services.

The process for licensing in the individual licence categories (NFL, NSL and ASL) is as follows:

- The applicant submits an application or tender documents as called for by the TCRA;
- The TCRA informs the applicant within 28 days that the application has been registered;
- The TCRA evaluates the applications(s) or tender documents;
- The TCRA publishes, in any newspaper, a notice of every application it has received for the issue of a licence;
- Any person may, within 14 days of the publication of the notice, lodge written representations with the TCRA if he or she opposes the granting of a licence;
- Before issuing any licence with a term of five or more years, the TCRA consults with the Minister and the relevant sector Minister; and
- The TCRA has 60 days to consider an application and may either grant a licence or refuse the application.

Effect of regulation of the sector

The legal and regulatory environment is an important aspect in the promotion of data infrastructure in Tanzania. The converged regulatory environment established by the Government in 2003 has further promoted the ICT industry and simplified business operations in Tanzania.

However, there is a need to look at various ICT laws and regulations as well as intellectual property rights regulations if these infrastructural developments are to contribute significantly to the socio-economic development of Tanzania.

The next foreseeable step in the regulation of data infrastructure would be for the Government to reform the regulatory and institutional framework for data infrastructure development. The policies and regulatory framework need to be more conducive to data infrastructure investment by businesses.

Challenges

Data infrastructure developments since 2003, including the landing in Tanzania of two international submarine cables, EASSY and SEACOM, have enhanced the country's high-speed internet capacity and enabled landlocked neighbouring countries to be linked internationally through Dar es Salaam's submarine landing points.

This has therefore made Tanzania a regional hub of communications infrastructure. A change of policy focus is now required for these infrastructural developments to make a greater contribution to the socio-economic development of Tanzania. Currently, the share of the ICT sector to GDP is only 1.9%.

According to the World Bank report of 2009, every 10% increase in penetration of broadband in developing countries accounts for 1.38% of GDP growth.

Aware of the value of ICTA as a catalyst for growth, the Government has sought to create an enabling environment for investment through initiatives such as the NICTBB, development of public-private partnership policy and legislation, establishment of the Universal Communications Service Access Fund, development of internet exchange points and establishment of the country code top level domain.

These efforts have contributed to cost reductions of about 99% in backhaul transport bandwidth compared to 2009 while increasing telecommunication network coverage to 85% of Tanzania's total geographical area.

The Government has also attempted to strike a balance between regulation of the sector and creation of a conducive environment for foreign investment, particularly when it comes to market entry, terms of condition and operations. Similarly, the TCRA has played its part in allowing new players to enter and compete freely in the market.

In spite of these efforts and advantages, there are still a number of challenges that need to be addressed.

Chief among them are low broadband penetration in rural and urban underserved areas, the high cost of broadband services and the absence of a supportive policy framework for universal broadband access.

There are also challenges with regard to infrastructure development, such as a lack of appropriate frameworks for deployment and utilisation of ICT infrastructure, including data centres, right-of-way and e-readiness infrastructure. The investment cost of infrastructure is high and there is a lack of reliable power supply.

Furthermore, Tanzania has a small emerging skills capacity to support the data infrastructure sector in terms of research, development and support for innovation.

Conclusion

The data infrastructure sector is growing rapidly, supporting innovations such as mobile money and eGovernment – an evolution that is being encouraged through new legislation such as the eGovernment Act of 2019.

However, internet connectivity is still beyond the reach of most citizens living in rural areas and mobile data is particularly expensive with users in Tanzania paying more compared to other countries in East Africa.

The time has come for Government to reform the regulatory and institutional framework for the further development of the country's data infrastructure. There is a particular need for a review of intellectual property rights law, better policy frameworks for universal broadband access and the deployment of ICT infrastructure and, most important of all, an increased focus on reducing the cost of investment and ensuring that vital inputs such as a reliable energy supply are given sufficient attention.

Uganda

AF MPANGA
Brian Kalule
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Overview

The ongoing expansion and improvement of data infrastructure in Uganda is playing a major role in the country's economic development and boosting the contribution of the information and communications technology (ICT) sector to gross domestic product (GDP). This has risen from 2.5% in 2015 to[1] approximately 3.1% currently. It is estimated that the sector employs over two million people (with direct employment of about one million). A significant number of young people are engaged in activities such as ICT hubs, resale of value-added services and ICT innovation, bolstering much-needed youth employment.

As a whole, the communication sector's contribution to tax revenues has steadily increased over the years, from UGX 155.58 billion (approximately USD 42,465,753) in 2008 to UGX 484.42 billion (approximately USD 132,492,545) in 2014/15, before registering a slight drop to UGX 457.64 billion (approximately USD 125,205,479) in 2015/16[2]. By the second quarter of 2020 the total revenue collected was UGX. 975 billion[3] (approximately USD 267,123,287)

The total optical fiber network, both Government and private owned, spans around 12,000 km covering 49 percent of the districts in Uganda.[4] As a mode of boosting data infrastructure, Government launched the National Data Transmission Backbone Infrastructure (NBI) Optic Fiber network in order to boost the usage of internet among citizens and government departments.

There are 3517[5] mobile towers in the country, thereby leaving a gap of at least 3500[6] additional towers required to cater for full connectivity. As such, the uptake of ICT services, made possible through the substantial investments that Government and private sector players have made in data infrastructure, is changing the face of government service delivery and industries such as the financial sector.

Financial services have significantly increased their uptake of e-commerce channels, as demonstrated by ongoing growth in mobile money transactions, internet banking and e-wallets, paving the way towards a cashless economy. The total number of registered mobile money accounts stood at 27.7 million[7] at the end of September 2020. This translates into a financial service penetration rate of at least two registered lines for every three Ugandans.

Furthermore, several e-commerce companies have set up operations in Uganda, for example Jumia Uganda, Uber Technologies Uganda Ltd, Safe boda and Glovo Uganda, among others, which has also increased employment in the sector.

Various transactions can now be done online, such as payments for school fees and utility services such as water and electricity. Mobile payment of utility bills is the most used e-Government service (62.6%), followed by online registration for tax identification numbers (TINs).

E-payments have also become mainstream: 62.1%[8] of individuals have sent or transferred money within Uganda using an electronic method, most likely a mobile phone-to-mobile phone transfer involving mobile money. This has attracted several money payment systems to establish operations in Uganda. Collections of VAT, PAYE and excise duties from telecom companies amounted to UGX 523,121 million in FY 2016/17, compared to UGX 214,841 million in 2009/10.[9]

Data infrastructure growth and improvements in mobile infrastructure have also contributed to growth in the number of handheld computing devices, such as smart phones, in circulation. This has automatically resulted in growth in network-connected gadgets.[10]

Footnotes
[1] NBP, September 2018
[2] UCC Annual Market and Industry Report 2015/2016
[3] Industry Performance Report Q2 2020
[4] National Development Plan III (NDP III) 2020/2021- 2024/2025
[5] Uganda National Broadband Policy, September 2018
[6] Uganda National Broadband Policy, September 2018
[7] UCC Market Performance Report Q3 2020
[8] National Information Technology Survey 2017/2018 Report
[9] NBP, September 2018
[10] UCC Market Performance Report Q3 2020

As for Government, progress is being made in automating service delivery in Ministries, Departments and Agencies (MDAs) and Local Governments (LGs).

For example, by 2018, 248[11] websites had been developed across government MDA/LDs and approximately 297 systems/applications were in use across MDAs/LGs to promote internal efficiencies and support the provision of services to the public. During the COVID-19 lockdown of 2020, the judiciary adopted to e-court hearings system to dispense justice and the Uganda Registration Services Bureau adopted e-filings for business registrations and searches, among other things.

Furthermore, to improve service delivery and increase uptake of e-services, Government has developed common core infrastructure, such as the National Data Centre[12], and rolled out a series of horizontal shared services that cut across different public sector organisations and various e-Government systems across a range of MDAs/LGs. However, there is still duplication of IT applications and services within Government.

All in all, Uganda has made good strides in expanding and improving data infrastructure as an economic enabler, but there is still much to be done.

The state of data infrastructure in Uganda

- High-speed internet

  When internet was first introduced in Uganda, it was perceived to be merely another form of technology for advanced communication. As a result, not much attention and priority was given to the planning and development of its infrastructure. However, increased demand for digitisation in almost all sectors necessitated high-speed, reliable internet connectivity across the country. As a result, high-speed internet infrastructure is now planned in the same way as any other national public service such as roads, water, energy and oil pipelines.

In 2018, Government established the National Broadband Policy (NBP) to facilitate the implementation of the National Development Plan (NDP). The NDP recognises that the ICT sector plays a central role in enabling economic and social transformation. As such, Government has prioritised the development and deployment of data infrastructure to enable connectivity for all, digital inclusion and affordability.

At the end of June 2020, total internet connections stood at 18.9 million, translating into a penetration rate of 46 internet connections for every 100 Ugandans. This new growth is indicative of the conversion of previous voice-only customers into internet users[13]. Mobile handsets remain the dominant means of accessing the internet, accounting for 99.86% of subscriptions in June 2020, compared with only 27 351 fixed internet subscribers. The total number of mobile internet subscribers was 19 917 120 as at June 2020[14].

Growth in internet connectivity continues. At the end of September 2020, total internet subscriptions had, for the first time in industry history, crossed the 20-million mark[15]. This equates to one internet connection for every two Ugandans. This exceptional performance is mainly attributed to the shifting work culture caused by the COVID-19 pandemic, which led many businesses to adopt remote working methods.

- Fibre optic cable

  Strategic investments, such as the National Data Transmission Backbone Infrastructure (NBI) optic fibre network, was launched and it helped propel internet usage among citizens and government departments, and support the attainment of high-level development objectives such as the Sustainable Development Goals (SDGs)[16].

  Implementation of the NBI optic fibre network commenced in 2006/07, in tandem with the e-Government Infrastructure project [17], and is ongoing. Some successes to date include extending ICT services to community schools through interventions such as the Rural Communication Development Fund (RCDF).

  The NBI and eGovernment Infrastructure (EGI) project involves laying fibre optic cable to all major towns with transmission stations and has, since 2010, been the responsibility of the National Information Technology Authority (NITA), under the NITA – Uganda Act of 2009.

The NBI-EGI project comprises the following four phases:

Phase I
This entailed laying 168 km cable linking the towns of Entebbe, Mukono, Jinja and Bombo to Kampala, and including 27 Ministries and some Government Departments. This phase has been completed.

Phase II
In this phase, a total of 1 400.734 km of cable was deployed, connecting Busia, Tororo, Mbale, Malaba, Kumi, Soroti, Lira, Gulu, Elegu, Masindi, Kyenjojo, Fort Portal, Kasese, Bushenyi and Mbarara. This phase has also been completed.

Phase III
The NBI/EGI became operational in 2013/14 after NITA-U completed the extension of the NBI to the towns of Masaka, Mbarara and Kabale, and the Mutukula and Katuna border posts.

This phase also involved establishing an alternative fibre optic route to the undersea cables via Mutukula to Dar es Saalam; and completing the concentric rings across the country through the implementation of the Kyenjojo-Masindi route. Furthermore, a link was deployed across the border to Tanzania and Rwanda through Mutukula, Rusumo and back to Katuna to enhance regional connectivity. The border town of Katuna was connected through the laying of the Kampala-Katuna cable route.

Phase IV
Phase four has commenced and entails extending the ICT backbone to the West Nile districts of Pakwach, Nebbi, Arua, Yumbe, Koboko and Adjumani, Katakwi and Moroto. In addition, the three border points of Uganda at Oraba with South Sudan, Vurra and Mpondwe with DR Congo will be connected to the ICT backbone for regional connectivity and to enhance the redundancy of the NBI.

Currently, the total fibre optic network, both Government and private owned, spans around 12 000 km, covering 49% of the districts in Uganda and 24% of the sub-counties, with presence at all border points[18]. Owing to route duplication by operators in both the public and private sectors, the effective national coverage is less than 4 000 km and the fibre network route is limited to the major urban centres. Most rural areas continue to be underserved.

The NBP was put in place to enforce infrastructure sharing among operators, among other things, thus putting an end to wasteful infrastructure duplication. Operators are expected to share broadband infrastructure, according to the NBP, and not build new infrastructure where it already exists. This is known as the 'dig and bury once' policy[19].

On optic fibre penetration, 384[20] out of 612 sub-counties with 3G coverage do not have any fibre to support data backhaul. As such, there are limited or constrained access speeds. The penetration of the optic fibre network in rural areas is also poor. More than 60 districts do not have fibre in the ground while Kampala has around 282 km[21] of laid fibre cable.

Footnotes
11 National Broadband Policy, September 2018
12 NDI III 2020/2021-2024/2025
13 UCC Industry Performance Report 2Q 2020
14 UCC Industry Performance Report 2Q 2020
15 UCC Market Performance Report 3Q 2020

Footnotes
16 National Information Technology Survey 2017/2018 Report
17 https://www.nita.go.ug/projects/national-backbone-infrastructure-project-nbiegi
18 National Development Plan III (NDP III) 2020/2021- 2024/2025
19 Uganda National Broadband Policy, September 2018
20 Uganda National Broadband Policy, September 2018
21 Uganda National Broadband Policy, September 2018

- Mobile communications

  In the mobile sector, just 45%[22] of the country has 3G coverage, and this is mainly in urban areas, along main routes such as Kampala to Gulu, Kampala to Busia or Kampala to Mbarara[23].

- Towers

  There are 3 517 mobile towers in the country operated by the American Tower Company. These serve approximately 4 000 base transceiver stations (BTS), with an average tenancy ratio of just 1.14 BTS per tower which is very low by industry standards. Out of the available BTS, only 1 600 are 3G enabled. According to the Towerxchange report 2017[24], at least 3 500 additional towers are required to cater for full connectivity.

Sector policy on data infrastructure

Uganda's Vision 2040[25] consolidates previous national development strategies and future prospects and acknowledges the role ICT plays towards national development.

However, the NDP III notes a number of challenges that have emerged to hinder further growth of the sector.[26] Chief among these are the limited ICT infrastructure network; insufficient investment in research, the silo-based approach to planning, necessitating better coordination of ICT infrastructure development, and the need for innovation and human capital development.

The plan also recommends the digitisation and roll-out of e-services to all sectors, MDAs and Local Governments to harness the potential of ICT and rationalise ICT agencies to remove duplication and overlap of mandates.

The National ICT Policy 2014 seeks to address some of these gaps through deepening utilisation of ICT services by Government, private sector, not-for-profit ICT organisations and the wider citizenry. Furthermore, the ICT Sector Strategy and Investment Plan (ICT-SIP) aims to operationalise the NDP II and National ICT Policy priorities, through actions in ICT governance, human resource development, research and innovation, information security, promotion of ICT exports, and infrastructure development.

The National Broadband Policy (2018)[27] builds on the objectives of Vision 2014 and NDP I, NDP II and NDP III by highlighting the role of broadband internet as an enabler for socio-economic development. The policy also aims to coordinate the planning, development and management of all actors to prevent duplication, as well as to review the licensing regime in order to achieve universal access and service of communications.

The policy highlights five thematic areas that are key to ensuring increased access and use of ICT for national development: infrastructure, connectivity and devices; E-government service delivery, cross-sector infrastructure sharing, right mix of technology and network neutrality, promotion of research and innovation, regional integration and environmental consideration.

Further, the policy seeks to achieve 100% broadband connectivity at all district and sub-county headquarters, health centers tertiary institutions and secondary schools by 2020, and connectivity at 50% of primary schools. Additionally, the current RCDF Policy is aimed at ensuring affordable broadband connectivity and access by all communities in Uganda.

In 2017, the Ministry of ICT and National Guidance embarked on the Digital Vision Uganda initiative[28] to leverage technological innovations to meet various national and international goals, including universal inclusion and sustainable development. This campaign aims to achieve a unified action plan that draws on various initiatives from all sectors and focuses on technology-based empowerment. The strategy is still under development with implementation done in phases.

Other supporting policies and strategies include the National Information Security Strategy (NISS) 2011, Transition from Internet Protocol version 4 (IPv4) to Internet Protocol version 6 (IPv6) address Strategy 2011, National Postal Policy, E-waste Management Policy 2012, Migration from Analogue to Digital Terrestrial TV Broadcasting Policy 2011, and National Broadcasting Policy 2006.

Some policies and strategies championed by NITA-U include Institutionalisation of ICTs in MDAs and LGs strategy; Business Process Outsoursing Strategy and Model for Uganda; National IT Research, Development and Innovation Strategy, as well as the National IT Data Collection, Analysis and Dissemination Framework.
However, despite this outstanding policy framework, ICT access and affordability are still a challenge for sections of the population such as the indigent, rural populations.[29]

Regulation

Once dominated by state monopolies that struggled to deliver services to the nation, the ICT sector has undergone substantial liberalisation and a number of private sector providers operate in a very dynamic and competitive environment.

The key players in the sector are:

- The Government of Uganda through the Ministry of ICT and National Guidance which oversees the sector and provides the necessary policy framework to guide implementation.
- The Uganda Communications Commission (UCC) which regulates telecommunication sector and it is also responsible for managing and implementing the RCDF.
- National Information Technology Authority - Uganda (NITA-U) which regulates the sector and is also responsible for rolling out the operation of the NBI and e- government infrastructure.
- The mobile telecom operators (MTOs) such as MTN Uganda, Airtel Uganda, Africel Uganda and Uganda Telecom.
- Internet service providers (ISPs) which include, Smile Telecom, Roke Telkom, Simbanet/Zuku, Lyca Mobile, Tangerine Liquid Telecom, and Datanet.com LLC,
- Fibre companies such as Data net, Csquared Ltd, Bandwidth and Cloud Services Group, East African Broadband Services Ltd among others.
- Tower companies such as the American Tower Company (ATC), among others.[30]

The legislative framework for the development and deployment of data infrastructure is built on various laws and regulations, two key laws being the Uganda Communication Act 2013 and the NITA-U Act 2009:

- The Uganda Communications Act 2013 regulates telecommunications, broadcasting, radio communications, postal communications and data communication and infrastructure. One of the most important provisions of the Act is that it obliges licence holders to share infrastructure.
- The Uganda Communication Licensing Regulations 2019 provide for the regulation and licensing of telecommunication services.
- The NITA-U Act 2009 established NITA-U as the sector regulator. It is also responsible for providing high-quality information technology services to Government, among others. The NITA-U (E- Government Regulations) 2015 promote e-government services and electronic communications and transactions with public and private bodies, institutions, and citizens.

Licensing requirements

National Telecom Operator (NTO) licences are granted under strict coverage, spectrum, local listing and local employment requirements:

- All holders of NTO licences are required to cover the entire geography of Uganda so as to enable universal access and promote effective competition and quality of service.
- Spectrum, being a scarce and finite national resource, needs to be managed and utilised efficiently, optimally and rationally. In Uganda, these resources may not be owned by private telecom service providers. The principle for all operators is 'use it or lose it'. When selling a stake through a merger or acquisition, no operator can lay claim to spectrum.
- All NTO licence holders are required to list 20% of their shareholding on the Uganda Stock Exchange.

Operators are required to reserve a certain percentage of employment for citizens of Uganda. This applies to strategic and general positions.

Footnotes
[22] Uganda NBP, September 2018
[23] Uganda NBP, September 2018
[24] Uganda NBP, September 2018
[25] Uganda Vision 2020
[26] Third National Development Plan (NDP III)
[27] National Broad band Policy, September 2018
[28] National Information Technology Survey 2017/2018 Report

Footnotes
[29] National Information Technology Survey 2017/2018 Report
[30] https://www.ucc.co.ug/list-of-telecom-providers/

Challenges

- High costs

  The duplication of optic fibre routes by different operators has driven up the costs of maintaining the infrastructure, as well as internet prices, thereby denying internet access to many people.

  Generally, the cost of bandwidth in Uganda is considered high and could impede the growth of the local ICT sector. By way of example, the average monthly cost of broadband without a data cap (but with limited speeds) on a shared link is UGX 300 000 (approximately USD 84). This compares to bandwidth prices of around USD 5.37 per month in Iran, USD 37 per month in India and USD 12 per month in Syria[31]. Government should implement its policy on infrastructure sharing among operators in order to put an end to infrastructure duplication. Further, the Government should implement expansion of the NBI optic fibre. This will make data infrastructure more accessible and cost friendly.

- Social media tax/ Over The Top Services Tax (OTT)

  The social media tax has impacted negatively on mobile operator revenues. An unintended consequence of the tax is that Government does not generate the anticipated revenue as people curtail their social media use or find ways to circumvent the taxes through virtual private networks. As a result, the Excise Duty (Amendment) Bill 2021 is proposing to repeal the payment of OTT and introduce excise duty at a rate of 12% on internet data. This will make internet costs more expensive. In light of this, a nuanced analysis on the sector is necessary so as to balance government interests with accessibility to the internet and promoting innovation.

- Heavy handed regulatory action

  During the 2021 general elections, Government ordered all ISPs to shut down the internet for five days. The internet shutdown resulted in major losses for ISPs and e-commerce traders. These excessive measures by government understandably give pause to tech stakeholders in the region and could in the long term hinder investment.

- Onerous licensing requirements and fees

  The newly introduced licensing regulation 2019, requiring NTOs to undertake local listings, has caused shockwaves among existing operators and may deter further investment.

  In addition, in terms of the new regulation, the Uganda Communications Commission (UCC) dramatically increased licensing fees. These rose from USD 10 000 a year to USD 30 000 a year for ISPs, which is high compared to other parts of Africa. After the UCC was taken to court, the regulator agreed to reduce the licensing fees.[32] Regulations requiring investors to turn to the courts for remedies, such as this one, may deter investment. It is important that the Government avoids imposing overly stringent requirements that may deter investment but rather put in place incentives that attract investors – given the key role that ICT services are set to take in the National Development Plan.

- Capacity challenges

  Although the Ugandan market is highly liberalised and considered quite dynamic, it remains highly monopolised by a few entities, hindering optimal competition. Airtel Uganda and MTN Uganda together control 82% of the Ugandan market, with the former's share standing at 45% and the latter controlling about 37% of total mobile subscription. Uganda Telecom, which provides both fixed and mobile services, has only 8% mobile market share and Africell only 5%.

  The failure of the regulator to deal with the dominance of MTN and Airtel, despite market reviews indicating market dominance, has resulted in some operators remaining marginal and others being forced to exit the market. For example, Vodacom and K2 exited the market in 2018.

  ATC is also a dominant tower company in the market with over 70% market share. High costs have been a major barrier to entry. There may be need for UCC to implement adequate competition regulations with the aim of reducing the market dominance.

Conclusion

Three exciting developments pose opportunities for players in the ICT sector broadly and for data infrastructure providers in particular. These are preparations for 5G technology, a review of spectrum and efforts to promote innovation.

On the regulatory front, the UCC in consultation with the industry is reviewing spectrum band plans in preparation for 5G. Further to this, the regulator in collaboration with the industry is establishing the first technology test bed in the country.

Further, there is a proposal to build a Stateline Station in Uganda. The Plan is to launch the first satellite in 2022.

In the recent past, Government has taken the lead in the development and deployment of data infrastructure, as demonstrated by its extensive involvement and investment in ICT infrastructure, which by 2018 stood at USD 105 million.

That said, investor appetite is high owing to conducive market factors such as ample space for greater internet penetration and strong demand for digital services among consumers and businesses alike.

Footnotes
[31] National Broadband Policy, September 2018
[32] **https://www.monitor.co.ug/uganda/news/national/ucc-consents-to-reduce-licensing-fees-for-internet-1898434**

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We help our clients manage legal complexity and unlock opportunity in Africa.

We have an enviable track record of providing legal services to the highest professional standards in Africa. We work for clients across numerous African jurisdictions on corporate, finance, competition, taxation, employment, technology and dispute resolution matters.

With seven offices in five African countries and over 500 specialist lawyers, we draw on our unique knowledge of the business and socio-political environment to advise clients on a wide range of legal issues.

Everywhere we work, we offer clients a service that uniquely blends expertise in the law, knowledge of the local market, and an understanding of their businesses. Our aim is to assist clients to achieve their objectives as smoothly and efficiently as possible while minimising the legal and regulatory risks.

Our clients include domestic and foreign corporates, multinationals, funds and financial institutions, across almost all sectors of the economy, as well as state-owned enterprises and governments.

Our expertise is frequently recognised by independent research organisations. Most recently, our South African practice won the 2023 Chambers Africa Award for Law Firm of the Year in South Africa. In 2022, Bowmans won six IFLR Africa Awards including overall M&A Team of The Year; Jurisdictional Firm of the Year: South Africa; Loans Firm of the Year: South Africa; M&A Firm of the Year: South Africa; and Project Finance Firm of the Year: South Africa. We also advised on the deal named M&A Deal of the Year. At the 2022 Africa Legal Awards, we won four practice awards including Banking and Finance Team of the Year; Capital Markets Team of the Year; Tax Team of the Year and Transportation and Infrastructure Team of the Year.

Our Presence in Africa

Recognising the size and enormous diversity of Africa, our approach to providing legal services across the continent is intended to offer on-the-ground advice in the countries that matter for our clients. Our presence in Africa is always evolving to meet the changes that are shaping the future of this vast continent.

Currently, we have our own offices in five African countries: Kenya (Nairobi), Mauritius (Moka), South Africa (Cape Town, Durban, Johannesburg), Tanzania (Dar es Salaam) and Zambia (Lusaka).

We work closely with our Bowmans Alliance firms in Ethiopia (Aman & Partners LLP) and Nigeria (Udo Udoma & Belo-Osagie). These are two of the leading corporate and commercial law firms in their jurisdictions.

We have special relationships with firms in Mozambique and Uganda. We also have a non-exclusive co-operation agreement with French international law firm Gide Loyrette Nouel that provides our clients access to assistance in francophone west and north Africa.

We ensure that, whenever our clients need legal advice in other parts of Africa, we can assist them by tapping into our comprehensive database of contacts of the best firms and practitioners across the continent.
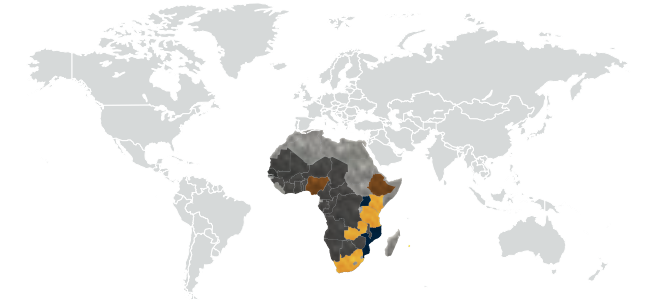
On the global front, Bowmans has long-standing and excellent relationships with a range of international law firms with whom we often work on Africa-focused client mandates. We are also a member firm of Lex Mundi, a global association of independent law firms in more than 125 countries, which gives us the ability to connect our clients with the best law firms in each of the countries represented.
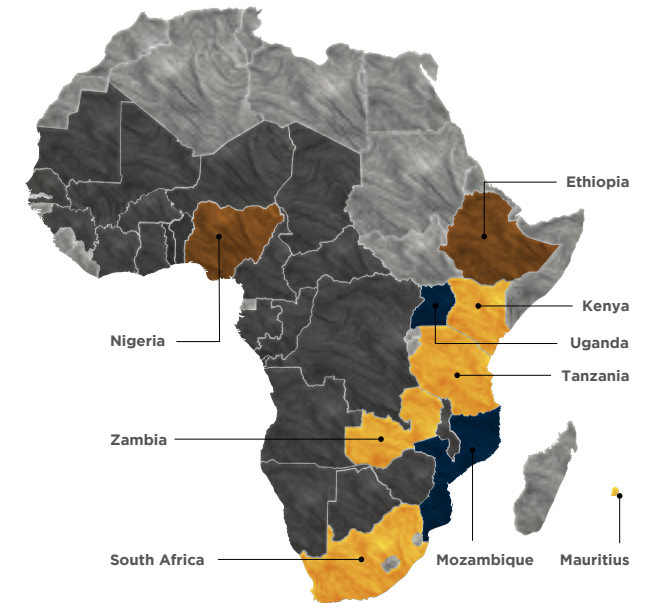
- Bowmans offices
- Alliance firms
- Special relationships
- Significant transaction or advisory experience

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