Community Networks Policy Brief
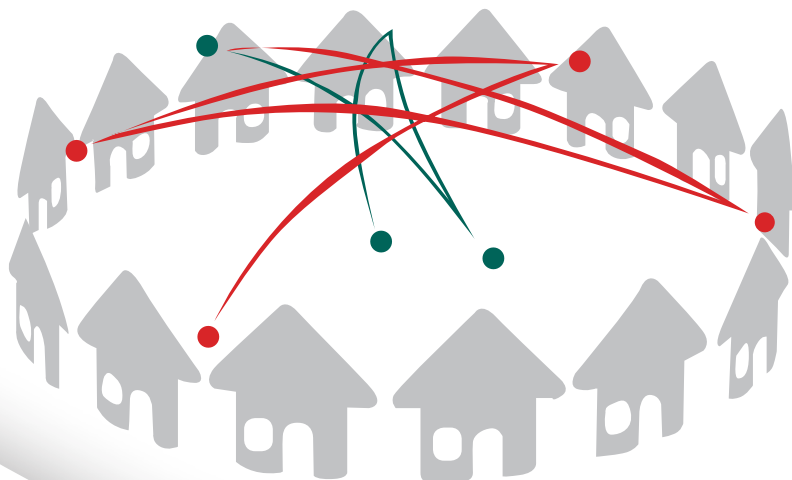
A democratic approach to internet access. Bottom-Up Citizen Models to Universal and Affordable Access in Kenya.

KICTAnet
KENYA ICT ACTION NETWORK

Policy Brief

Community Networks, a democratic approach to internet access. Bottom-Up Citizen Models to Universal and Affordable Access in Kenya

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TABLE OF CONTENTS

Executive Summary

Information and Communications Technology (ICT) is a key enabler in achieving Kenya's vision 2030 which aims to transform the country into a globally competitive middle-income knowledge-based economy. Kenya has become a regional ICT leader in East and Central Africa and among the top innovations hubs in sub Saharan Africa. Even as the country celebrates the milestones achieved, those living in rural and underserved areas are still left behind. Access to affordable internet, digital skills gaps, lack of locally relevant content and platforms are still fundamental barriers to meaningful access and usage. The business model that determines pricing based on recovering capital expenditure incurred during infrastructure deployment will not work when connecting those who are already economically disadvantaged.

Community networks are telecommunication infrastructure built with and for the community to support economic and social activities. These networks are emerging as complementary access models that adopt a holistic approach in addressing the digital inclusion barriers such as digital skills, locally relevant content and applications. They also contribute to local economies, workforce development and fostering social connections. Although community networks have existed for over a decade, the number of these networks in Africa is still few compared to the unconnected population. Lack of awareness, high license, spectrum fees and equipment costs are some of the barriers to entry and growth for community networks.

This policy brief looks at the existing policy and regulatory frameworks including the national broadband policy, ICT policy,

licensing framework of telecommunication operators, and frequency spectrum licensing in enabling community networks.

The policy brief also addresses the high spectrum fees which make the Internet inaccessible to poor communities. It recommends the creation of spectrum policies and regulation that specifically target affordable access for the underserved. This can be achieved by expansion of license-exempt frequencies, and adoption of dynamic spectrum licensing and spectrum sharing. It also recommends the streamlining of licensing procedures to make them accessible to communities.

The policy brief also calls for the creation of an enabling policy and regulatory environment for the growth of community networks. For example allowing community network providers to access the NOFBI national fibre optic backbone since the wealth generated by such access will be far greater for the economy than any revenue from network traffic charges. Policies for infrastructure sharing will enable upcoming community networks to have access to the infrastructure of established operators.

Community Network leadership and participants should also be sensitized about the existence of the USF and encouraged to apply to access the fund to build their networks. There is, therefore, a need to have a policy to support capacity building and innovation, especially for women and girls to enable them to have equity in internet access. Finally, there should be a structured dialogue between all stakeholders to find ways these recommendations can be implemented to make community networks ubiquitous.

[1]Digital Lives - Meaningful Connections for the Next 3 Billion
https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2018-11/digital_lives_report.pdf

1.0

Introduction

Internet access provides individuals and communities with important tools for social-economic development leading to improved living standards. The UN recognized this impact and included the right to access within Goal 9 of the SDG which states as follows:

> *"Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in the least developed countries by 2020."*

The internet is a revolutionary and transformative tool impacting both social and economic landscapes. Sub-Saharan Africa has not been left behind in the digital revolution and remains the region with the fastest mobile subscriber growth with an estimated 600 million subscribers by 2025.

Access to the internet and digital platforms have expanded markets for farmers in rural areas eliminating the need for middlemen between farmers and customers, content creators, extended access to job opportunities beyond country borders through remote working, promoted knowledge sharing, and cultural practices among many other advantages to the connected.

Both economic and social benefits have been enormous for example, employment opportunities for the deployment and maintenance of telecom infrastructure and call centers. In the informal sector there have been many economic benefits both micro and macro; like selling of recharge cards, and phone repairs, to more advanced benefits like research and development in manufacturing, education, entertainment, and sports.

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[2]UN Sustainable Development Goals https://www.undp.org/content/undp/en/home/sustainable-development-goals.html
[3]GSMA The Mobile Economy https://www.gsma.com/mobileeconomy/sub-saharan-africa/

Indeed, Julius Yego, the 2015 Javelin World Champion learned his trade through watching Youtube videos. Individuals, communities, and businesses are now using mobile phones for communication, banking, receiving agricultural and health information. The availability of affordable phones and ease of use are some of the contributing to successful mobile penetration. In Kenya, for example, the cost of cash transfer remittances dropped by up to 90 percent after the introduction of M-Pesa, a digital payment system.

ICT is a key enabler in achieving Kenya's vision 2030 which aims to transform the country into a globally competitive middle-income knowledge-based economy. In 2019, the government of Kenya launched the "Big Four" agenda which has four priority areas drawn from vision 2030. These are food security, affordable housing, universal healthcare, and manufacturing.

In the last decade, Kenya has experienced tremendous growth in the ICT sector. The Kenyan government has been investing in critical infrastructure such as optic fiber to enable reliable and fast connectivity. The first government investment in optic fiber was the East African Marine System (TEAMS), a 5,000-km fiber-optic undersea cable went live in October 2009.This cable with a 5.2Tbps upgradable capacity connects Kenya's Mombasa port to Fujairah in the UAE.

In March 2020, (Djibouti Africa Regional Express) DARE1 landed in Mombasa becoming the fifth undersea cable broadband infrastructure to link Kenya with the rest of the world after landing of SEACOM, Easts African Marine Cable System, Eastern African Submarine Cable System (EASsy) and Madagascar linked, Lion2.

TEAMS connects to the National Optic Fibre Backbone, an over 6,000 Km network which connects all the 47 counties in Kenya. There are 200 digitized services offered through Huduma E-Centers countrywide and a comprehensive online government-to-citizen services platform, eCitizen. Kenya has become a technology start-up hub with digital platforms contributing to the uptake of ICTs.

[4]World Bank digital dividends 2016 http://documents1.worldbank.org/curated/en/961621467994698644/pdf/102724-WDR-WDR2016Overview-ENGLISH-WebResBox-394840B-OUO-9.pdf
[5]Kenya Vision 2030 https://vision2030.go.ke/
[6]TEAMS - The East Africa Marine System https://teams.co.ke/
[7]East Africa's Largest Submarine Cable Lands in Mombasa https://subtelforum.com/east-africas-largest-submarine-cable-lands-in-mombasa/
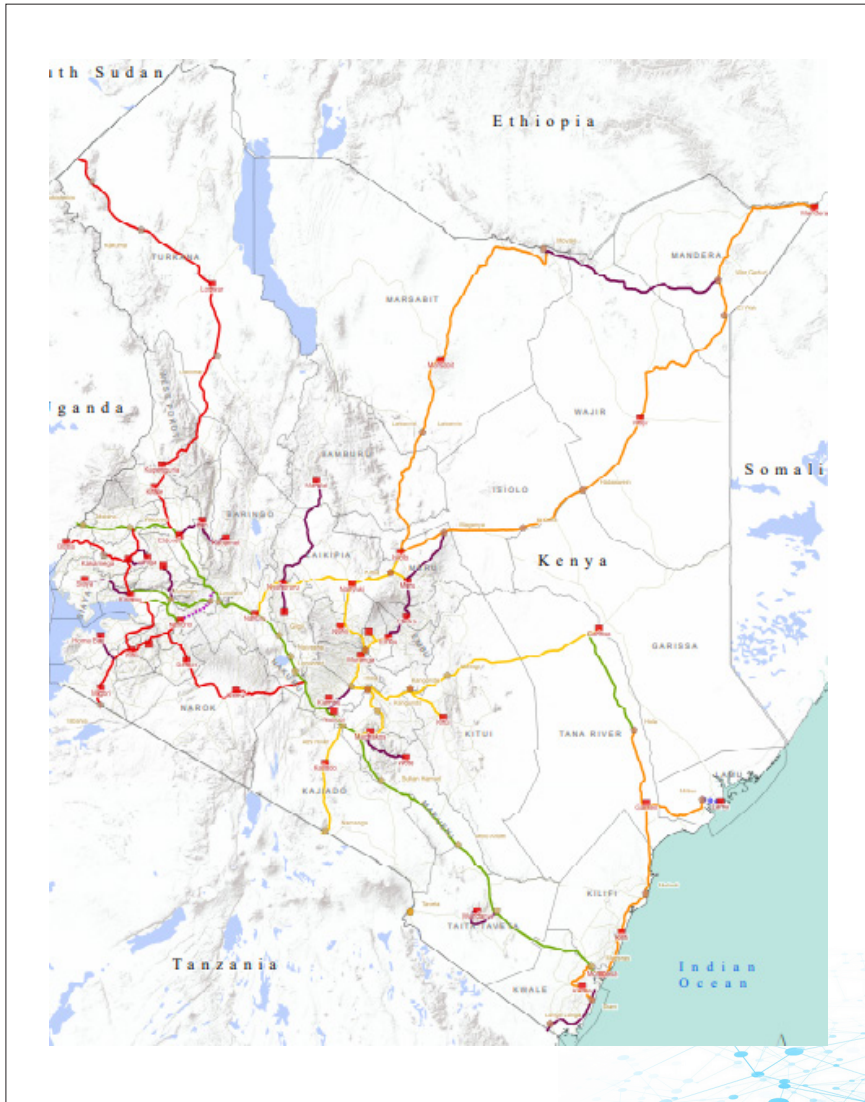
ICTA National Fibre optic transmission network map

8National Optic Fibre Backbone (NOFBI) http://icta.go.ke/national-optic-fibre-backbone-nofbi/
9Kenya launches Huduma e-centre to cut bureaucracy https://www.bbc.com/news/world-africa-24855993
10eCitizen - Gateway to all government services https://www.ecitizen.go.ke/
11National ICT policy 2019 https://www.ict.go.ke/wp-content/uploads/2019/12/NATIONAL-ICT-POLICY-2019.pdf
12CA Sector Statistics Report Q3 2019-2020 https://ca.go.ke/document/sector-statistics-report-q3-2019-2020/

When it comes to mobile coverage, population coverage for 2G was 94.4%, 78% 3G and 37% 4G. As of 2020, Broadband (internet speeds more than 256 Kbps) subscription stood at 22.3 million with mobile broadband accounting for 97.6%, with 3G subscribers at 14m and 4G subscribers at 7m out of a population of 47.6 million people. The subscribers do not necessarily mean the total number of the population with broadband access because a subscriber can have multiple broadband plans.

Even with the progress, digital dividends have not been symmetric, 25.3m people representing 53.1% of Kenyans especially those living in rural areas still remain unconnected to broadband internet. Fixed broadband networks are beyond reach for most Kenyans, as indicated in the latest released statistics for quarter 3 of 2020 in which the total fixed broadband subscriptions from all Internet Service Providers (ISPs) combined was 531,600 subscriptions representing about 1% of the population. In the absence of affordable and reliable internet connection, Kenya's rural population who are mostly youth, lack the skills and tools that can enable them to contribute and participate in the knowledge-based economy thus impacting negatively on the achievement of the country's vision 2030.

The digital divide continues to create social, economic, and political polarization between the economically advantaged and the disadvantaged. Over the years, internet speeds and connections in cities such as Nairobi have continued getting better while rural areas fall behind even further as the cost of living in Kenya rises while job opportunities become scarce. The unconnected are unable to take advantage of the socio-economic benefits of the internet.

When it comes to telecommunications, communities especially those in grassroots such as rural areas and informal settlements are thought of as having a purely passive role and then as beneficiaries. With the reality that these areas are perceived not to be commercially viable, it's difficult to design solutions to connect these unconnected populations without involving them.

Communities have a wealth of knowledge and resources that include:
- key information - Due to the uniqueness of communities, it's challenging to implement blanket solutions. Communities have all the insider information needed and are able to do this at a lower cost.
- key resources – Communities are able to mobilize locally available resources such as time, food, physical spaces which contribute to sustainability.

[13]https://www.internetsociety.org/wp-content/uploads/2017/08/CommunityNetworkingAfrica_report_May2017_1.pdf
[14]Understanding Community Networks in Africa https://www.internetsociety.org/wp-content/uploads/2017/08/CommunityNetworkingAfrica_report_May2017_1.pdf

The wrong perception is that these communities always demand funds that only the government and donors can provide. It's vital to get buy-in and constantly engage with them to ensure that they see how the network serves their interest. For example, in most of the community networks, members not only host masts and equipment at no cost, but they also provide security and protection to the network equipment.

The picture of the affordability of broadband internet in Kenya can be painted better when income per person is compared with data prices. A study by KICTANet on Kenya's *UNESCO Internet Universality ROAM-X Indicators* found that Entry-level fixed broadband as of 2019 was KES 2,900 (USD 29) for a 5 Mbps link from Safaricom, KES 2,499 (USD 24.9) for 5 Mbps link from Zuku, and KES 1,500 (USD 15) for a 2 Mbps link from Poa Internet. The monthly cost of a 100MB, 500MB, and 1GB prepaid mobile broadband data plan (expressed as a proportion of monthly GDP per capita) was 47.8%., 47.5%, 47.9% respectively. According to the 2017 ITU data, 0.7GB accounts for 4% of the average monthly income per person. The statistics paint a grim picture of internet affordability by the masses.

The same study by KICTANet notes that infrastructure both rail, electricity, roads, fiber, and cellular networks were concentrated near the center of the country stretching from the coastal region on the east to Lake Victoria on the west with populations living in the north and south of the country lacking the critical infrastructure to enable them access Internet services.
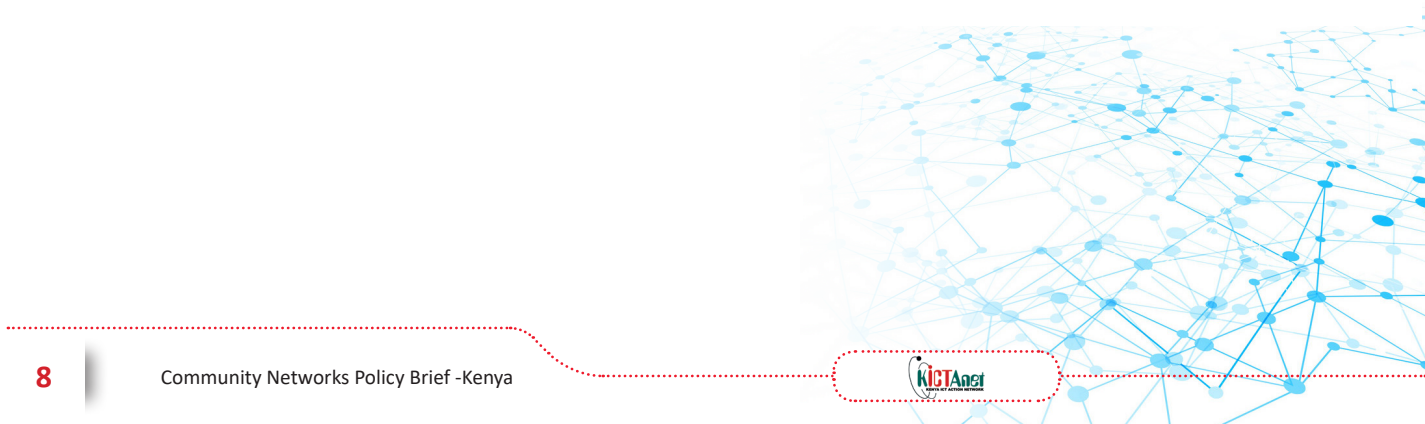
2.0.

Bottom-Up Citizen Models to Affordable Access

Community networks are a complementary approach to connecting the unconnected. These networks are deployed, operated, and maintained by organized groups of community members. At the core of these networks is a community, mostly an organized group, for example, a cooperative or a community based or non-for-profit organization coming together to address digital exclusion barriers such as availability, affordability, and access to connectivity.

In Africa, community networks are more than telecommunications infrastructure, they exist in support of existing economic and social activities. Beyond access, they create a platform that promotes building local capacities, creation, and distribution of locally relevant content. One of the advantages of these community-led initiatives is the holistic approach in addressing digital inclusion. They contribute to local economies, workforce development, and fostering social connections.

Community networks mostly utilize Wi-Fi technologies both for backhaul and hotspots unlicensed spectrum due to lower equipment costs and availability. The provision of access, this usually through private Wi-Fi hotspots mostly to homes and businesses, public Wi-Fi hotspots serving community members with portable devices and public access centers which have computers for example schools, and community internet cafes.

Communities have a wealth of knowledge that remains untapped, these communities are able to mobilize resources and information enabling them to deploy and operate connectivity infrastructure at lower costs. Due to the uniqueness of communities, it's challenging to implement blanket solutions. The uniqueness of these networks is that they are community-centric which is

[15]Botton-up connectivity strategies https://www.apc.org/sites/default/files/bottom-up-connectivity-strategies_0.pdf
[16]Views of The First Mile of Broadband Connectivity in Communities http://ci-journal.net/index.php/ciej/article/view/1123/1093

reflected in how the infrastructure is deployed and maintained, pricing of services is done and which content is carried on the network. The vision of connecting the community goes beyond access to the internet, it's usually aimed at facilitating more efficient ways of sharing information, collaborations among individuals and groups, catalyzing local economies by introducing new business models and improving access to quality education and opportunities. When controlled by local organizations, the infrastructure can be developed strategically to meet current and future local needs.

The adoption of a holistic approach to digital inclusion enables contextualizing meaningful connectivity with local realities. Community networks represent a paradigm shift in the telecommunications sector in which communities play a proactive role in building their networks complementing existing commercial models. For this to be achieved, there needs to be an enabling policy and regulatory environment.

3.0.

Policy and Regulatory Frameworks in Kenya

3.1 Kenya National Broadband Strategy (2018-2023)

Kenya's national broadband strategy adopted in 2018 aims to transform the country into a globally competitive knowledge-based society enabled by affordable, secure, and fast broadband connectivity. The strategy defines broadband as "Connectivity that delivers interactive, secure, quality, and affordable services at a minimum speed of 2Mbps to every user in Kenya".

The broadband strategy identifies the gaps in the available technical and related capacity for broadband, and opportunities to further enhance capacity and innovations in the broadband arena by advocating for initiating mechanisms that promote peer to peer learning opportunities to facilitate knowledge exchange among communities such as the establishment of a national community networks development program in collaboration with strategic partners to develop capacity, provide guidance, mentorship, and handholding for startup community networks.

The broadband strategy also calls for creating strategies to encourage local businesses, especially in rural and underserved areas to adopt the use of ICTs through harnessing the power of community-led initiatives to help spread interest and uptake.

Finally, the strategy advocates for other broadband investment models like the "Bottom-up strategy citizen model". The bottom-up or local community model involves a group of end-users organizing themselves into a jointly owned and democratically controlled group (frequently a co-operative) capable of overseeing the contract to build and operate their own local broadband network.

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[17]National Broadband Strategy - Communications Authority of Kenya https://ca.go.ke/downloads/publications/national-broadband-strategy/

3.2 Broadband Policy, Legal and Regulatory Environment under NBS, 2018- 2023

The strategy highlights a number of pending policies, regulations, and legislation that would create a more enabling environment in the broadband sector. One of the pending policies on infrastructure focuses on affordability, broadband as critical infrastructure, spectrum management, and rural broadband infrastructure.

The strategic actions under this are:

- Infrastructure sharing
- Legislation updated to include broadband as a critical infrastructure
- Spectrum refarming; repurposing of spectrum bands to more efficient technologies or new services.
- Establish Public-Private Partnership (PPP) regulations for broadband that would enable rural infrastructure operators to offer services to multiple mobile network operators
- Work with a range of partners, to launch initiatives focused on connecting the unconnected and under-connected such as through the use of High Altitude Platform Station (HAPS), especially in rural and remote areas to provide more affordable, fast and flexible backhaul of broadband services, and further become a key link to emergency communications in the wake of natural disasters

The strategy also identified strategic areas of focus on laws and regulations and aims to undertake the following regulatory actions:

3.3. Licensing and Authorization

- Make the local licensing processes more efficient as well as reduce barriers to entry in order to enable faster and less costly deployment of connectivity infrastructure.
- Open up rights of way and access to facilities removing hindrances to passive infrastructure sharing and enhance competition.

3.4. Spectrum management

- Ensure spectrum is well utilized by a periodic re-evaluation of spectrum allocations thus reducing barriers to entry for service providers and promoting competition.
- Flexible spectrum policies allowing for flexible spectrum sharing and use in unserved and underserved areas.
- Spectrum policies to support both licensed and unlicensed spectrum allocations
- Policies that support both coverage and capacity of networks especially to underserved areas and populations.

3.5 Open Access

Open access is 'the possibility for third parties to use an existing network infrastructure to provide services.' This is to be considered in areas where there are economic bottlenecks that hinder competitive supply and there exist publicly funded national broadband networks. The strategy states that there appears to be an agreement on open access to national broadband infrastructure. Thus, the regulatory action aims to promote fair, reasonable, and non-discriminatory access to broadband networks especially roll-out has used public funding.

4.0.

National ICT Policy 2019

The 2006 National ICT policy was reviewed in 2019 in order to make it relevant to the rapid technological advancements experienced, legal and administrative changes experienced in the last decade as well as new emerging trends. With regards to broadband network deployment and access, the ICT policy states that:

4.1 Wireless Data Infrastructure: -The Government will facilitate the ubiquitous deployment of new-generation high-speed wireless broadband connectivity infrastructure, in order to reduce from- the curb and in-building deployment costs, improve the cost-effectiveness of broadband delivery and access and provide effective, reliable, secure internet infrastructure. All new government network builds and deployments will consider a wireless-first approach. This requirement especially applies to the village, small community, and government building networks.

4.2 Universal Access:- The government will seek to ensure that the Universal Service Fund is prudently managed to drive universal access and that service is provided in areas service providers do not consider economically viable;

4.3 Radio Frequency Spectrum: - Use of the radio frequency spectrum should contribute to the promotion of national interests, development, and diversity, including increasing the amount of spectrum available for assignment, improving sharing conditions among different radio communication services and increasing the number of licenses dedicated to community services:

To enhance public safety, security, and emergency preparedness, spectrum fees may be waived for the provision of ICT services

in unserved and under-served areas and for public institutions that provide critical lifeline support services. The institutions may also include those that provide critical public services such as national security, public safety, and emergency services. Such institutions will be determined by the ICT regulator. A Wireless Broadband Spectrum policy will be developed to promote the acceleration of uptake of Broadband services as enshrined in the National Broadband Strategy

5.0.

Licensing Framework for Telecom Operators

Communications Authority of Kenya adopted the technology-neutral, unified licensing framework that categorizes network operators and content service providers in broad market segments as follows:

- Network Facilities Providers (NFP) – This license category allows for communications infrastructure (both terrestrial and satellite) ownership and operations by providers. Under the national NFP license, there exist three tiers, tier one is for the country-wide deployment of communications infrastructure and also permits national reservation and allocation of spectrum for mobile service providers, tier 2 is for the countrywide deployment of communications infrastructure but the exclusive allocation of spectrum at the regional level and tier 3 is for the deployment of communications infrastructure within a county, similarly, spectrum allocation is county-specific. Providers incur an initial license fee of KES 15 million for tier 1 and tier 2 while tier 3 costs KES 200,000. In addition to this, providers will incur annual operating fees, spectrum fees on the basis of bandwidth and coverage.

- Applications Service Provider (ASP) – This license category is for end-user service providers and attracts an initial license fee of KES 100,000. Additionally, providers pay an annual fee of the higher of KES 100,000 (US$1200) and 0.5 percent of Annual Gross Turnover is payable. The license is for providing Application Services.. Examples of licensees are the KENIC Domain Registry, Domain Registrars, website and cloud hosting, and software-based services and solutions.

- Content Services Provider (CSP) - This license category is for content services material, information services, and data processing service providers. The initial license fee is KES 100,000 (US$1200) and an annual fee of higher KES 100,000(US$1200) and 0.5 percent of Annual Gross Turnover is payable.

6.0.

Frequency Spectrum Licensing

Frequency spectrum licensing is implemented according to the provision of Section 36 of the Kenya Information and Communications Act, 1998, all radio communication equipment in Kenya must be owned and/or operated under a license, issued by CA and which must be kept in force at all times by regular payment of the prescribed license fee.

The procedures for authorization and administration of licenses cover the following radio frequencies:

- Private Radio Networks (HF/VHF, Private Paging)
- Fixed, Cellular Mobile and Public Paging Services
- Amateur Radio License
- Citizen Band Radio License
- Aircraft Station License
- Maritime (Ship) Station License
- 2.4GHz and 5GHz Frequency Bands

The license category consists of fixed wireless access, cellular mobile, point to point links, point to multipoint links, trunked radio systems, and paging. To offer public services, providers are required to first obtain a license from CA. The process includes:

- Submitting an application form for the relevant license, requested documentation, detailed network layout, and a non-refundable fee of KES 1,000 (estimated $10) .
- CA will then review the application referencing the national Table of Frequency Allocations (TOFA) for the proposed frequency band as well as other technical considerations.
- Technical analysis follows for frequency identification and reservation should the application pass the initial requirements

[18]Telecommunications market structure under the unified licensing framework
[19]Licensing Procedures - Communications Authority of Kenya https://ca.go.ke/industry/frequency-spectrum/licensing-procedures/
https://ca.go.ke/wp-content/uploads/2018/03/New-Market-Structure-Under-The-Unified-Licensing-Framework-January-2016.pdf

- CA will then communicate to the applicant with communicating the reservation terms and conditions which includes payment of the license fee and radio equipment approvals.
- The licensee will be required to pay annual renewal fees which are calculated by CA on the basis of received returns submissions as well as the reconciliation of the authority's records.

For low power access systems in the 2.4GHz and 5GHz license-exempt frequency bands, the authority requires that short-range devices comply with the maximum Effective Isotropic Radiated Power (EIRP) and transmitter and receiver spurious emissions outlined in the use of radiofrequency short-range guidelines.

Table 1.0 below captures the Frequency Bands that are relevant to community broadband networks.

Frequency Bands	Type of Device	Maximum Radiated Power or Field Strength Limits & Channel Spacing	Relevant Standard	Additional Requirements	Kenya TOFA* Remarks
2400-2483.5 MHz	Wideband Wireless Systems. WAS/ RLANs	100mW EIRP No duty cycle No channel spacing	EN 300 328 EN 301 489-1,17 EN 60950	CEPT/ERC/ REC 70-03	Adequate spectrum sharing mechanism (e.g. Listen-beforeTalk, DetectAnd-Avoid) shall be implemented by the equipment

[20] CA procedure for licensing https://ca.go.ke/wp-content/uploads/2018/03/Procedure-for-Licensing-use-of-Radio-Frequencies.pdf

5150-5350 MHz	Wireless Access Systems/Radio Local Access Network (WAS & RLAN) indoor use only.	200mW EIRP Dynamic Frequency Selection (DFS) & Transmitter Power control (TPC) Modulation schemes obligatory	EN 300 836-1 EN 301 893 EN 301 489- 1,17 EN 60950	ITU-R M.1625 Rec. ITU-R M.1450-4, Resolution 229 (Rev.WRC12)	WAS- indoor use 200mW max EIRP density of 10mW/ MHz in any 1 MHz (=0.25mW/25 kHz in any 25 kHz band), must employ TPC at least 3dB and DFS.
5470-5725 MHz	Wireless Access Systems/Radio Local Access Network indoor and outdoor use	1W EIRP Dynamic Frequency Selection (DFS) & Transmitter Power control (TPC) Modulation schemes obligatory	EN 300 836-1 EN 301 489- 1, 17 EN 301 893 EN 301 489- 1,17 EN 60950	ITU-R M.1625 Rec. ITU-R M.1450-4, Resolution 229 (Rev.WRC12)	Max transmitter power of 250mW[3] with Max mean EIRP of 1W and a Max mean EIRP density of 50mW/MHz in any 1MHz band
5725-5875 MHz	Non-specific SRD	25mW EIRP No duty cycle restriction No channel spacing	EN 300 400 EN 301 489- 1, 3 EN 60950	EPT/ERC/ REC 70-03	

Source: Communications Authority

* TOFA: National Table of Frequency Allocations

Those seeking to deploy and operate Wi-Fi systems, hotspots, point to point and point to multipoint systems within the 5GHz frequency band are required to submit duly filled forms. These will be reviewed by CA to ensure they comply with the set requirements e.g. the proposed equipment complies with guidelines, including the type approval/acceptance status of the proposed radio equipment.

Additionally, wireless access systems on shared non-protected basis apart from those operating with restricted coverage e.g. a campus or a building are required to pay an annual fee of KES 10,000 per terminal or sector.

7.0.

Universal Service Access Fund

The Universal Service Access Fund (USF) is implemented in accordance with section 84p of the Kenya Information and Communications Act, 1998.

"Universal service" means access of one hundred percent by a designated population that is reasonably able to privately subscribe to and use particular communication systems and services of a specified quality on an individual, household or institutional basis including, among others, to the provision of— (a) public voice telephony; (b) Internet access; or (c) Other services by which people access efficient, affordable and modern communications systems and services; "unserved areas" means geographic areas where no designated level of universal access is currently available;

The fund exists to support access and usage of communication systems and services for socio-economic development by all citizens especially those in rural, remote, and underserved areas where the market is unable to deliver such services in a financially viable manner. Additionally, the fund seeks to promote the creation of locally relevant content and technologies, human capacity development, and extending communication services to public centers such as schools and hospitals. The funds may be applied to projects and programs that promote access for all and maybe disbursed through subsidies, loans, or grants.

8.0.

Policy and Regulatory Recommendations

8.1 Access to Spectrum

Community networks in Africa mostly utilize Wi-Fi for hotspots and in some instances backhaul due to it being license-exempt as well as the availability of low-cost Wi-Fi devices. Challenges with congestion and signal interference affect the quality of connectivity services. Licensed spectrum is able to overcome these challenges due to the fact that it's protected from interference, however high spectrum fees make it inaccessible for community networks due to limited funding.

We recommend the creation of spectrum policies and regulations that specifically target affordable access in rural areas. We encourage the following strategic innovations in spectrum management that could improve affordable access to broadband for rural, remote, marginalized, and underserved communities.

- Specific set-asides of International Mobile Telecommunications (IMT) spectrum on a primary or secondary basis for use by social-purpose service providers in rural areas.
- Expansion of the license-exempt Wi-Fi frequencies, in line with good practice in other countries, to expand opportunities for Wi-Fi service provision.

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- Adoption of dynamic spectrum licensing such as TV White Space (TVWS) technology or LTE services such as Citizens Broadband Radio Service (CBRS). The Communications Authority of Kenya has already conducted public consultation on the dynamic spectrum access framework for Authorisation of the use of TVWS.

This will open up the potential for small operators and community networks to access spectrum in order to deliver access to underserved (or unserved) communities.

8.2 Spectrum sharing

There should be provisions made for spectrum sharing to promote efficient use of the spectrum. Creation of incentives such as reduction of regulatory fees or extending the licensing term for incumbents who share in areas where there's an underutilized or idle spectrum.

8.3. Innovative Licensing

An innovative approach is required when it comes to licensing for community networks. Licensing procedures need to be streamlined and easy to comprehend and accessible by grassroots communities. Policymakers should consider effective engagement strategies of grassroots communities, small operators, and community network experts in policy formulation to ensure local realities are incorporated.

8.4 Operator Licensing

Kenya is already implementing a tiered licensing framework. The license should be broadened to also include local social-purpose operators such as community networks providing affordable access on a not-for-profit basis.

8.5 Access to Backbone and Backhaul Infrastructure

Backhaul capacity remains the largest expense for operators and barrier to affordable access. The value

[21]the Kenya Information and Communications (Universal Access and Service) Regulations, 2010 https://ca.go.ke/wp-content/uploads/2018/02/Universal-Access-and-Services-Regulations-2010-2.pdf
[22]Internet Society Policy Brief: Spectrum Approaches for Community Networks https://www.internetsociety.org/wp-content/uploads/2017/10/Spectrum-Approaches-for-Community-Networks_20171010.pdf
Adoption of dynamic spectrum licensing such as TV White Space (TVWS) technology or LTE services such as Citizens Broadband Radio Service (CBRS). The Communications Authority of Kenya has already conducted public consultation on the dynamic spectrum access framework for Authorisation of the use of TVWS.
Public Consultation on Dynamic Spectrum Access Framework for Use of TV White Spaces 2020 https://www.kictanet.or.ke/?mdocs-file=41532

of network infrastructure in terms of the social and economic growth supersedes revenue or taxes generated from it. Thus, not only should broadband be recognized as utility infrastructure, costs should be made as low as possible in order to generate the maximum amount of traffic on backhaul networks. Establishing strategic interconnection points where community networks operators especially those in rural and underserved areas can have open-access to national networks such as NOFBI. Additionally, capacity on the NOFBI can be set aside and made available for bottom-up rural broadband initiatives.

8.6. Increase transparency on the Universal Service Fund

With respect to funding, disbursements and operations, leverage open data to avail to the public insights around contributions, disbursements, project design, and selection. This data should be disaggregated by gender and other factors (e.g., age, income), where possible.

Public consultations on the use of USF resources could also facilitate innovative ways for bottom-up initiatives to leverage them to initiate and sustain context-appropriate methods of advancing affordable access and meaningful use of the internet, including reaching marginalized groups. Supports the use of the fund for Community Broadband Networks. Nascent Community Networks should be made aware of the existence of this fund and encouraged to apply to access this fund to build their networks. In fact, the 2016 Acces Gap survey recommended that the USF subsidy should be awarded to benefit consumers and user groups.

8.7. Gender-responsive approaches to capacity building and innovation should be mainstreamed

There are gendered differences in access and meaningful use of ICT devices and the internet as indicated in various reports. The gender digital divide is rooted in the existing socio-cultural norms that restrict women from owning their own devices, lack of time to explore opportunities due to the responsibilities they bear in their households and in society, income inequalities (with women generally earning less income than men, therefore unlikely to prioritize ownership of devices and internet). Bottom-up capacity building initiatives understand local contexts should be supported to design and implement programs that address women's digital exclusion.

[23]ITU Expanding the telecommunications operators ecosystem: Policy and Regulatory Guidelines to enable local operators https://www.itu.int/en/ITU-D/Conferences/GSR/2020/Documents/APC-Local-Operators_contribution-GSR20.pdf
[24]ITU Expanding the telecommunications operators ecosystem: Policy and Regulatory Guidelines to enable local operators
https://www.itu.int/en/ITU-D/Conferences/GSR/2020/Documents/APC-Local-Operators_contribution-GSR20.pdf
[25]Universal service and Access Funds
http://webfoundation.org/docs/2018/03/Using-USAFs-to-Close-the-Gender-Digital-Divide-in-Africa.pdf

8.8. Partnerships

Operator to Operator Partnerships - Established operators like Radio and TV companies, and telecommunication companies should be encouraged to share their infrastructure, especially masts with upcoming community network operators. Communities can partner with existing backhaul providers to get discounts on broadband plans. The discounts will eventually lead to a lower cost of operating the network.

Local to Local partnerships - Establish mechanisms that promote peer to peer learning opportunities to facilitate knowledge exchange among communities such as the establishment of a national community network development program in collaboration with strategic partners to develop capacity, provide guidance, mentorship, and handholding for startup community networks.

8.9. Consultation

There should be regular consultation between all stakeholders in face-to-face town hall meetings and online through webinars and email lists like the KICTANet list to establish ways these recommendations can be implemented to make community networks ubiquitous.

[26]CA Access gap consultancy https://ca.go.ke/wp-content/uploads/2018/02/ICT_Access_Gap_Study.pdf
[27]KICTANet ICT Policy Discussions https://lists.kictanet.or.ke/mailman/listinfo/kictanet

9.0.
Conclusion

Community networks can provide a democratic way for communities to get affordable internet access. Community networks can provide connectivity to homes, businesses, schools, and hospitals. Public funds like the CDF, USF, and County government budgets should be able to facilitate community networks. Governments should put in place favorable policies that promote community networks, that include but are not limited to giving wayleave access, encouraging infrastructure sharing, and providing tax relief to community network operators.

KICTAnet

About KICTANet

The Kenya ICT Action Network (KICTANet) is a multi-stakeholder platform for people and institutions interested and involved in ICT policy and regulation. The Network is a think tank dedicated to bringing evidence, expertise, and more voices into ICT policy decision-making. KICTANet promotes public interest and rights-based approach in ICT policy making.

OUR PILLARS

POLICY ADVOCACY: We work to bring stakeholders together to discuss the best policy alternatives and also monitor the progress of policy development processes.

CAPACITY BUILDING: To ensure continuity and diversity in the policy development, we bring in new voices in the different stakeholder backgrounds through training and events.

RESEARCH: Our policy advocacy and capacity building are supported by evidence based research through an established working group on both current and emerging issues.

STAKEHOLDER ENGAGEMENT: Have structured dialogue between all stakeholders through collaborative initiatives in face-to-face Town Hall meetings, and in the KICTANet's interactive mailing list where stakeholders engage regularly on ICT policy issues

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