



REPUBLIC OF KENYA

MINISTRY OF INFORMATION
COMMUNICATIONS AND TECHNOLOGY

NATIONAL INFORMATION &
COMMUNICATIONS TECHNOLOGY (ICT) POLICY

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1 FOREWORD

The achievement of an information society and knowledge economy is one of the main priorities of the Government towards the attainment of the development goals and objectives for wealth and employment creation as espoused in Kenya's Vision 2030. The review of the ICT Policy of March 2006 is inspired by first, the need to align it with the New Constitutional dispensation in Kenya and Vision 2030 that seeks to transform our country into a leading information and knowledge hub of the region. Specifically, the driving force behind this review is to take on board the lessons learnt from the Vision 2030 Medium Term Frameworks and the three underlying pillars namely the Economic, Social and Political.

Secondly, the review is meant to provide a pro-active policy and regulatory framework that is not only in synch with contemporary technological realities and dynamics, but also expected to guide the orderly development of the ICT sector in such a way as to ensure maximum developmental impact for the benefit of all Kenyans. In reviewing this policy, the Government has taken cognizance of the tremendous impact of globalization and rapid changes of technology. These changes have invariably affected the traditional approach to the management of public affairs and service delivery, which increasingly informs the need for more pro-active policy and regulatory response.

The ICT sector is dynamic and the Government will regularly review ICT policies to resonate with the rapid technological advances, changing public needs and evolving global trends. Emphasis will be placed on policy implementation initiatives, programmes and projects. The overarching focus will be to provide access to ICTs, especially broadband to all Kenyans and seamless connectivity to the East African Community member states with proactive collaboration at regional and international levels.

This revised Policy will provide a clear and compelling roadmap to drive social, economic, cultural and political transformation through the effective use of Information and Communications Technology (ICT) in the years ahead. The Policy complements and builds upon Vision 2030 and provides many of the key strategies essential for achieving Kenya's national development targets. As we review the policy, we will concentrate on speeding up the building of high-speed, mobile, secure and ubiquitous new generation information technology infrastructure, developing modern technology-enabled industrial system, implementing the national big data strategy and enhancing national cyber security.

By harnessing the power of online technologies, state-owned enterprises are expected to improve their sourcing, sales and logistics systems; streamline operations and identify, track market trends and boost their marketing, research and innovation capabilities. Operation of private-sector companies will become more efficient, translating into productivity gains and creating new markets for innovative products and services. The relevant strategies, policies and action plans have and will continue to bring about revolutionary transformation in Kenya.

In conclusion, it is my conviction that this policy instrument shall continue to set the pace in the right direction to further development of our economy in general and the ICT sector in particular while ensuring that all stakeholders benefit fully from the consequent benefits.

Joe Mucheru

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2 VISION AND MISSION STATEMENTS

Vision

A prosperous and competitive ICT-driven Kenyan society.

Mission

To improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable, affordable and secure ICT-enabled services.

3 PREAMBLE

This Information and Communications Technology (ICT) Policy has been formulated through the process of public consultations. The Policy is premised on the following principles:

- (a) ICT is a developmental tool that should be widely accessible and utilized by the general population;
- (b) There will be a technology neutral approach in the adoption and regulation of ICT systems and services in the promotion of competition;
- (c) Innovation will be promoted for the benefit of consumers, producers and service providers while at the same time protecting the interest of innovators; and
- (d) Investing in human resource development and capacity building will also be prioritised.

The ICT Regulator, the Communications Authority of Kenya (CA) will be expected to adopt and implement the highest standards of procedural efficiency, transparency and responsiveness to technological changes.

Consideration was given to the review of the current legislative framework within the context of convergence to identify any inadequacies that may hamper effective regulation. As part of the legislative review it has been established that the deployment of ICT networks capable of delivering a range of services raises critical issues related to the quality of service and protection of personal information. In this context, legislative provision will be made inter alia to eschew minimum quality of service standards; the publishing of industry performance reports intervention of the ICT Regulator and foster a multi-agency approach in the management of national cyber security.

4 INTRODUCTION

4.1 ICT and Vision 2030

The Vision 2030, Kenya's Long Term Development Blue Print aims at creating a globally competitive and prosperous nation, transforming Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. Vision 2030 three pillars, namely the Economic, Social and Political are anchored on macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor. The Economic Pillar which captures the expectations of the ICT market seeks to improve the prosperity of all regions of the country and all Kenyans by achieving a 10% GDP growth rate by 2017.

The strategy of Vision 2030 is to undertake reforms in eight key sectors that form the foundation of society for socio-political and economic growth: Infrastructure, ICT, Energy, Science, Technology and

Innovation (STI), Land Reform, Labour and Employment, National Values and Ethics, Public Sector Reforms, Ending Drought Emergencies and Security and Peace Building and Conflict Resolution.

In the Medium Term Plan II 2013-17 of the Vision, six priority sectors that make up the larger part of Kenya's GDP (57%) and provide for nearly half of the total formal employment that were targeted are: Tourism, Agriculture, Livestock and Fisheries, Wholesale and retail trade, Manufacturing, IT enabled services (previously known as business process off-shoring), Financial services, and Oil and Gas.

Information Communication and Technology is identified as enabler or foundation for socio economic transformation. The vision recognizes the role of Science, Technology and Innovation in modern economy in which new knowledge plays a central role in boosting wealth creation, social welfare and international competitiveness. This will be done through: - economic and institutional regime that utilises existing knowledge; creation of new knowledge and entrepreneurship; educated and skilled population; dynamic information and communication infrastructure that facilitate processing and dissemination; and effective innovation system and research.

4.2 Rationale for Policy Review

The review of the policy has been necessitated by the rapid changes and developments since 2006 in order to keep in tandem with the current technology. These developments include convergence of ICT technologies, migration from analogue to digital TV broadcasting and its effect on broadcasting market segment and radio spectrum, mobile money services; 3G and 4G services with introduction of related new services, increased demand on bandwidth and Quality of Service (QoS) and harmonization of ICT policies in the East African region. In addition, the enactment of the Constitution of Kenya 2010 provides for several rights including access to information

4.3 Guiding Principles of the National ICT Policy

4.3.1 Constitutional Principles and Values

Uphold the Constitution of Kenya, respect essential values of human rights, equality, freedom, democracy, social justice and the rule of law.

4.3.2 Technology and Convergence

Keep pace with change in technology and convergence of services by adopting technology neutral policies

4.3.3 Universal Access

Facilitate universal access to electronic communications services at an affordable cost to the consumer.

4.3.4 Open Access

Open access principles where possible should ensure maximised, efficient and fully-leveraged use of available infrastructure and services, through encouraging and incentivising infrastructure sharing, spectrum re-farming, and optimal interconnection, balanced with the need for fair returns on investment.

4.3.5 Competition

Develop an ICT sector with adequate competition in all relevant markets in products, function and geographical reach while at the same time promoting investment and innovation.

4.3.6 Innovations

Provide an enabling environment with focus on encouraging innovation, attracting investment, protecting intellectual property and promoting ease of doing business Standards.

Pursue and support standardization of ICT products and services for quality assurance and adherence to the national and international standards.

4.3.7 Internationalization, National Cohesion and Integration

The maintenance of global connectivity and the promotion of One Kenya shall be a key tenet of electronic communications.

4.3.8 Entrepreneurship

Recognizing the role of the ICT sector as a critical pillar in national development and enabler of business to achieve set goals of being a regional leader in knowledge based economy.

4.3.9 Public Consultation and Participation

Facilitate public consultation and participation when implementing national ICT-related projects with a significant societal, citizen and business impact.

4.3.10 Privacy and Security

Privacy and security of the person and property shall be paramount in the deployment of ICTs.

4.3.11 Recognition of the UN Sustainable Development Goals

The Sustainable Development Goals (SDGs) and targets will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet. Implementation of the SDGs addresses science, technology and innovation, capacity building, data monitoring and accountability; among other issues which are of great importance to the ICT sector. ICTs will be crucial in achieving all the SDGs, since ICTs integrate and accelerate all three pillars of sustainable development – economic development, social inclusion and environmental sustainability – as well as providing an innovative and effective means of implementation in today's inter-connected world.

In terms of specifically strengthening the means of implementation, ICTs have a key role to play through: enhancing international cooperation and coordination; promoting technology transfer; capacity building; forging multi-stakeholder partnerships; and enabling and improving data monitoring and accountability.

4.3.12 Agenda 2063

Agenda 2063 is a Vision and Action Plan which calls for action to all segments of African society to work together to build a prosperous and united Africa based on shared values and a common destiny. It is a global strategy to optimize use of Africa's resources for the benefits of all Africans.

Declared at the 50th Anniversary of the establishment of the OAU, it aims at encouraging discussion among all stakeholders, on how the continent should effectively learn from the lessons of the past,

build on the progress now underway and strategically exploit all possible opportunities available in the short, medium and long term, so as to ensure positive socioeconomic transformation within the next 50 years.

4.4 ICT Status in Kenya

The Constitution of Kenya, 2010, the Kenya Communications Act (No. 2 of 1998) and as amended by the Kenya Communications (Amendment) Act, 2009, and the Kenya Information and Communications (Amendment Act) 2013 provide the main framework for regulating the communications sector in Kenya. Other statutes include the Media Act, 2013 and the Kenya Information and Communications Technology (ICTA) Order 2013; among others.

Currently, Kenya is one of Africa's fastest growing ICT markets where ICTs have increased productivity in all spheres of production process and enabled expansion of skills, contributing to improved standards of living for Kenyans. The Economic survey 2016 report provides an overview of the ICT sector performance and development trends in Mobile Telephony Service, Fixed Telephony Service, Internet/Data Service, Registered Domains, Broadcasting, Postal and Courier Service and Tariffs. Some of these key indicators are given below:

Contribution to Gross Domestic Product: The contribution of ICT to GDP dropped from 1.2 % in 2014 to 0.9 % in 2015. This could be due to low value addition on ICT inputs which are mostly imports.

Fixed Telephone: Between 2014 and 2015, Telkom Kenya decommissioned the fixed wireless network due to the obsolete technology, expensive maintenance cost and high competition from other telephone technologies. Consequently, subscribers under Code Division Multiple Access (CDMA) network were migrated to the company's mobile network. This resulted in a decline of fixed wireline capacity from 340 thousand in 2014 to 75 thousand in 2015. However, the wireline connections, increased by 77.1 per cent from 48 thousand in 2014 to 85 thousand in 2015.

Mobile Network Services: In 2015, the mobile telephone capacity declined by 3.5 per cent to 62.8 million owing to the exit of Essar Kenya (YU) limited. Airtel Kenya and Safaricom took over subscribers and infrastructure from the exiting operator, respectively. However, Equitel, which is a Mobile Virtual Network Operator (MVNO) on Airtel infrastructure, entered the market during the same year. This led to an increase of 12.1 per cent mobile connections to stand at 37.7 million subscribers in 2015. The growth in the subscribers resulted in an expansion in used mobile capacity from 51.7 per cent in 2014 to 60.1 per cent in 2015. In the mobile money sector, the number of agents increased by 16.4 per cent from 123,703 in 2014 to 143,946 in 2015. Similarly, the number of mobile money transfer service subscribers grew by 2.8 per cent to 26.8 million over the same period. Total amount of money transacted through mobile money platforms expanded by 18.7 per cent to KSh 2,816 billion during the review period.

International Telephone Traffic: The international telephone traffic increased by 11.4 per cent from 1,053 million minutes in 2014 to 1,173 million minutes in 2015. This was a reversal from the declines that had been recorded since 2013. The outgoing and incoming international telephone traffic increased by 17.9 per cent and 6.3 per cent, respectively, in 2015. The increase in the international mobile traffic was partly due to the reduction of international mobile rates within the East African Community, except Tanzania, through the One Network Area Initiative that enhanced the standardization of the calling rates. The decline in fixed line traffic may be attributed to the decommissioning of the fixed wireless network during the review period.

Roaming Traffic: Total roaming traffic more than doubled to 194.8 million minutes in 2015. Similarly, both outbound and inbound roaming more than doubled to 91.2 and 103.6 million minutes, respectively, during the review period. The increase in roaming traffic may partly be attributed to the reduced calling rates within the East African Community (EAC) and the visits by high-level dignitaries during the review period.

Domestic Traffic: The total domestic telephone call traffic increased by 27.7 per cent from 30.7 billion minutes in 2014 to 39.2 billion minutes in 2015. Mobile to mobile telephone traffic increased by 28.2 per cent to 39.1 billion minutes, to account for 99.7 per cent of the total domestic telephone traffic. Mobile to fixed telephone traffic increased by 13.3 per cent to 75.4 million minutes. However, fixed to fixed telephone traffic registered a drastic decline from 23.3 million minutes in 2014 to 5.3 million minutes in 2015 mainly attributed to the decommissioning of the fixed wireless network.

Message Services Traffic: . The number of messages sent via MMS rose by 13.9 per cent to 13.7 million in 2015. The total number of messages sent via Short Messaging Services (SMS) increased by 3.3 per cent compared to a 38.2 per cent increase recorded in 2014. The number of international SMS received declined by 19.0 per cent to 131.1 million in 2015 compared to a 60.7 per cent increase recorded in 2014 . The slowed growth in SMS was associated with high uptake of Over the Tops (OTTs) platform such as Whats App and use of social media during the review period.

Internet: The number of licensed Internet Service Providers (ISPs) increased by 24.9 per cent from 177 in 2014 to 221 in 2015.. The estimated internet users also expanded by 35.9 per cent to 35.6 million users over the same period. Total wireless internet subscriptions increased by 45.4 per cent to 23.8 million with the terrestrial mobile data subscribers having the largest share. Total wired internet subscriptions increased by 20.2 per cent to 115,111 with fixed fiber optic data accounting for 96.7 per cent of the total wired subscriptions in 2015. Fixed fiber optic data subscriptions grew by 37.1 per cent to 111,354 subscriptions in 2015. However, fixed Digital Subscriber Line (DSL) data reduced significantly from 14,512 subscriptions in 2014 to 3,732 subscriptions in 2015.

Bandwidth Capacity: Available bandwidth capacity increased by 83.0 per cent from 847,523 megabits per second (mbps) in 2014 to 1,550,768 mbps in 2015. The increase in the bandwidth capacity was attributed to fiber installation in the counties during the review period. The utilized bandwidth capacity increased by 71.6 per cent to 854,551 mbps in 2015. The ratio of total utilized bandwidth to available capacity shrank from 58.8 per cent in 2014 to 55.1 per cent.

Fibre Optic Coverage: Every county headquarter has been reached by the National Optic Fibre Broadband Infrastructure (NOFBI) in addition to other fibre optic cables owned by private companies, Kenya Electricity Transmission Company (KETRACO) and Kenya Power and Lighting Company (KPLC).

2G Coverage: Geographical coverage is 45% of Kenya's land area, but 94.4% of the population is already covered.

3G Coverage: Geographical coverage is 17%, but 78% of the population is covered

Broadband Subscriptions: The total wireless broadband subscriptions increased from 4.2 million to 7.1 million. Fiber to home and office increased by 35.9 per cent and 37.2 per cent, respectively.

Fixed and Mobile Telephone Charges: In 2015, the telephone services installation and subscription fees remained unchanged at KSh 3,394 and KSh 580 per month, respectively. During the period, the average call cost per minute of fixed to fixed local calls decreased from KSh 4.50 to KSh 3.00 while that of fixed to mobile remained unchanged at KSh 9.00. The average call cost per minute of mobile-to-

mobile decreased from KSh 3.10 in 2014 to KSh 3.08 in 2015 while that of mobile to fixed remained unchanged at KSh 3.25. However, the average price of SMS went up from KSh 1.00 to KSh 1.25.

Internet Domains: The total number of Internet domains grew by 33.8 per cent to 51,543 in 2015. The number of “.co.ke” domains increased by 35.5 per cent to account for 92.7 per cent of the total registered domains in 2015. The growth in the number of registered Kenyan based domains was mainly attributed to the reduction in renewal and average annual fees from KSh 2,320 to KSh 580 and KSh 2,300 to KSh 650, respectively,

Broadcast Services and Subscriptions:

The number of Frequency Modulation (FM) for radio increased to 608 while television frequencies rose to 302 in 2015. The number of digital signal distributors in the country increased to five due to the entry of the self-provisioning and common carrier signal distributors in the market. The number of digital TV stations increased to 62 due to the migration from analogue to digital platform. Digital Terrestrial Televisions (STBs) subscriptions more than tripled to 3.7 million in 2015 while cable TV and direct to home satellite subscriptions increased by 44.6 per cent and 18.3 per cent, respectively. The number of radio stations increased by four to 139 stations in 2015.

ICT Penetration Rate (Total Population): During the year under review, ICT penetration rate improved for all categories except that of the fixed line, which declined from 0.52 in 2014 to 0.19 in 2015. The improvement in the uptake of ICT was partly attributed to the affordability of mobile phones in the market; cheaper internet bundles offered by mobile operators and finalization of phase one of laying the fiber optic cables across the country. The internet penetration stood at 54.2 per cent in 2015 with that of wireless internet increasing to 53.9 per cent. Total broadband penetration increased to 16.4 per cent in 2015 from 9.9 per cent in 2014. The bits per second per capita (Bps/person) increased by 66.9 per cent to 20,293.0 in 2015. The mobile money penetration remained unchanged.

ICT Penetration Rate (3 years and above): This measures the ICT penetration for the population aged three years and above which is considered capable of owning and using ICT equipment. The mobile penetration stood at 94.0 per cent while internet penetration stood at 59.6 per cent in 2015. Broadband subscriptions increased to 18.1 per cent in 2015 from 10.9 per cent in 2014.

Employment: There was a marginal decline in the level of employment by telecommunication operators from 6,201 in 2014 to 6,147 in 2015. Over the same period, employment in the ISPs increased by 25.3 per cent to 7,817. This was partly due to the laying of fiber optic in the country.

Newspaper Circulation and online Newspaper Readership: In 2015, the circulation of daily English and Kiswahili newspapers declined by 3.4 per cent and 10.2 per cent, respectively due to online readership of newspapers. Similarly, the number of weekly English newspapers in circulation decreased by 5.8 per cent over same period. However, the average online users went up by 53.7 per cent in 2015.

Post and Courier Sector: The total number of PCK post offices in Kenya has reduced from around 900 in 2000 to 623 in August 2016. A 2014 postal sector study report noted the population service penetration to be approximately one post office per 65,000 people. However, the regional penetration varied from one post office per 25,000 persons in Nairobi to one post office serving 178,000 in the northern counties.

4.5 Challenges:

Despite the strides made, the ICT sector is still faced with some challenges. These include:

- (a) Unavailability of ICT services in unserved and underserved areas and for persons with disabilities.
- (b) How to harness ICT for efficient and effective government, economic growth and job creation for the youth.
- (c) Frequent ICT infrastructure accidental damage and vandalism
- (d) Limited country-wide ICT awareness that hinders cultural and attitudinal change.
- (e) Threats of Cybercrime.
- (f) Regional disparities in adoption and utilization of ICT services slowing speed of regional integration.
- (g) Inadequate policies and legal frameworks at both the national and county government levels.
- (h) Inadequate competent and skilled human capacity.
- (i) Provision of ICT for Persons with Disability
- (j) Inadequate and responsive complaints/dispute resolution mechanisms for e-services

4.6 Overarching Policy Objectives

The main policy objective for the government is to ensure that service delivery to the public is fully supported by high-quality ICT infrastructure.

4.7 Broad Strategies

- (a) Institute innovation clusters that will generate a critical supply of highly-skilled technical personnel required to drive the information society and encourage universities to scale up education and incubation of ICT solutions, including through partnerships with industry;
- (a) Facilitate broadband access to all citizens and ensure broadband connectivity of all public facilities by 2020;
- (b) Promote entrepreneurship, investment in the ICT sector and encourage local-assembly ecosystem that will spur the light manufacturing industry in order to guarantee affordable communication devices;
- (c) Ensure availability of spectrum resources to support the development of ICT infrastructure and accessibility countrywide;
- (d) Facilitate access to devices and development of local content.
- (e) Facilitate deployment of the Internet of Things (remote sensing and control of connected devices) for the public infrastructure and environmental management.
- (f) Promote use of simple, user friendly online complaints/dispute resolution tools for e-services
- (g) Promote a multi-agency approach in the management of National Cyber security and child online protection.

5 ICT INFRASTRUCTURE AND ACCESS

5.1 Infrastructure Development

The increase in the uptake of internet based and other ICT related services, requires appropriate infrastructure to enable social and economic growth. Thus, an infrastructure-related policy that governs how a country's infrastructure is developed and managed is fundamental to the supply of services which enable growth and facilitates the path to affordable and wide spread access to ICT services. Without enabling infrastructure, all other components cannot exist. Policy which governs how a country's infrastructure is developed and managed is therefore fundamental to the supply of services which enable growth.

5.2 Deployment of ICT Infrastructure

The development and provision of a robust ICT infrastructure underpins sustainable growth in the sector. Towards this end the Government will continue to promote availability and access to efficient, reliable and affordable ICT infrastructure at County, National and International levels. The Government will support the building of high-speed, mobile, secure and ubiquitous new generation ICT infrastructure networks through high-speed links and high-speed wireless broadband networks at town and village levels. This is aimed at providing and implementing sufficient Internet capacity to schools, colleges, and businesses; and to provide effective, reliable and secure Internet infrastructure.

In some cases, particularly in underserved and rural areas, it may not be economical to duplicate broadband infrastructure. In these cases, sharing of infrastructure will be encouraged as a way to reduce deployment costs and improve the cost-effectiveness of broadband delivery. Notably, areas where infrastructure sharing may be required are the same areas where price sensitivity for broadband services is significant. Thus, healthy competition will be promoted at the service and retail levels.

In Kenya there is a devolved system of governance according to the Constitution of Kenya, 2010, which placed telecommunications and ICT a mandate of the National Government. Therefore, the Government will continue investing in backbone infrastructure to extend NOFBI network coverage and at the same time put measures in place to encourage private investments and rollout of ICT services across all Counties.

Licensed operators will be given coverage obligations to address the underserved and unserved areas in the Counties. The Communications Authority will support licensing of County-based service providers to offer last mile access solutions.

5.3 Financial Technology Services

- (a) In order to develop a modern Internet system, an action plan will be put in place to integrate the mobile internet, cloud computing, big data and the internet of things with modern manufacturing; promoting e-commerce, industrial networks, Financial Technology banking and a new system supporting high-tech manufacturing in agriculture, tourism, energy, finance, public services and logistics.
- (b) Internet-based companies will be encouraged to increase their presence in the international market.

5.4 Open Access and Infrastructure Sharing

The Government will promote a policy environment that fosters competition, universal access to services and affordable quality services. One of the major bottlenecks identified to achieving this relates to access to critical and essential infrastructure. This issue is also highlighted in the National Broadband Strategy which states that access to critical and essential infrastructure will determine the failure or success of achieving published broadband targets. The Strategy notes the relatively poor level of broadband penetration. Among various provisions, it proposes the creation of a fair and competitive environment, particularly enabling service-based competition and open access to infrastructure rolled out through public investment. Best practices provides that a predictable and

technology neutral competitive environment premised on open access principles can deliver better results.

Objectives of promoting open access and infrastructure sharing is to create a clear and uniform regime that takes into consideration all technologies and services:

The policy aims to balance the requirements for an open access regime with the reality that more investments are needed in the last mile for connectivity. The need to ensure a return on investment by those who invest in the last mile is a good reason why policy should be balanced and cautious.

5.5 Infrastructure Sharing/ Open Access Policy Objectives

- (a) Develop an efficient, high capacity national ICT infrastructure to enhance service delivery to the public with special emphasis on governance, health and educational institutions;
- (b) Promote investment in ICT infrastructure and access by creating an enabling and supportive environment and by giving incentives, such as fiscal and tax incentives, to private sector players who make investments into the development of ICT infrastructure;
- (c) Promote an integrated, converged, technology neutral and secure ICT infrastructure to support delivery of the various services,
- (d) Create an enabling environment to facilitate development and deployment of ICT infrastructure in the counties to support devolved government and structure,
- (e) Promote equitable access and sharing of natural sites, rights of ways, physical infrastructure and co-location of ICT facilities by licensed operators based on technical and commercial considerations, to ensure resiliency and redundancy to support disaster recovery plans.
- (f) Promote and create a fair and competitive environment through the encouragement of open access to ICT infrastructure based on technical and commercial considerations
- (g) Encourage and promote the sharing of public ICT, utility, rights of way to ensure resiliency and redundancy in order to support disaster recovery plans ,
- (h) Ensure that data centre infrastructure build out is carried out in cognizance of globally approved standards for purposes of ensuring quality of service under open access, carrier neutrality model and security
- (i) Promote access of ICT Infrastructure and Services with special attention to Persons with Disabilities/special needs
- (j) Ensure future ICT infrastructure deployment by government agencies, operators, independent tower companies and utility companies is structured to prevent duplications and waste of scarce ICT resources.
- (k) The government will provide support infrastructure such as energy, security, roads to support the faster, safer and cheaper deployment and maintenance of ICT infrastructure.
- (l) The government will also provide for infrastructure planning and design that allows for the development, maintenance and sharing of ICT Infrastructure.”

5.6 Strategies

The government will undertake the following key measures:-

- (a) Encourage deployment of innovative technology solutions to provide internet connectivity at affordable rates across the country;

- (b) Promote broadband as an instrument of economic development, and accelerate uptake of broadband in Kenya among government institutions, businesses and private citizens in an equitable, transparent and customer-centric way;
- (c) Ensure the availability and reliability of broadband connectivity through a continued monitoring of the market and through the setting up of a quality of service regulatory framework;
- (d) Provide industry players with access to government-owned infrastructure assets
- (e) Ensure the development of broadband-enabled open and interoperable e-services, promote availability of affordable Internet connection prices and encourage competition in the sector;
- (f) Make available spectrum for and ensure orderly deployment of ultra-high-speed mobile/wireless technologies such as Long Term Evolution (LTE)/4G and other advance mobile communications networks;
- (g) Encourage expansion of high speed broadband to reach all Counties by implementing the National Broadband Strategy to ensure deployment and provision of quality broadband services to all citizens;
- (h) Enhance access to ICTs by persons with disabilities
- (i) Ensure availability of adequate ICT numbering resources and addressing resources to support current and future ICT services that require numbers
- (j) Promote number portability as a framework that increases competition by ensuring that consumers are able to change service providers while maintaining their numbers
- (k) provide support infrastructure such as energy, security, roads to support the faster, safer and cheaper deployment and maintenance of ICT infrastructure
- (l) Cooperate with other government departments and agencies to ensure that all new developments such as commercial malls, residential estates, roads, railways and pipelines are required to have provision for deployment of ICT infrastructure such as ducts, service holes, etc. to be shared among service providers;
- (m) Encourage growth of infrastructure sharing through public private partnership initiatives, independent tower companies, Mobile Virtual Network Operators and joint ventures;
- (n) Encourage service providers, utility firms and government to share information on available excess ICT resources that may be leased and any planned future network deployments to prevent network duplications and waste of scarce ICT resources;
- (o) Provide support infrastructure such as energy, security, roads to support the faster, safer and cheaper deployment and maintenance of ICT infrastructure.
- (p) Support initiatives that promote the adaption of IPv6 and put in place measures to ensure that public services provided utilizing the IP protocol and the communications infrastructure and relevant applications are compatible with IPv6. Also raise awareness among information service providers on the importance of making their services available over IPv6.

5.7 Broadcast Signal Distribution

The Government will continue to license broadcast signal distribution services depending on the market growth and the availability of the required radio frequency spectrum resources to ensure that the use of broadcasting infrastructure is maximized. All licensed signal distributors will be required to provide services to licensees on an open access and non-discriminatory basis.

5.8 Internet Exchange Points

Internet exchange points (IXPs) can help strengthen local Internet eco-system, develop the local Internet industry, improve Internet quality and affordability in local communities; strengthen local Internet connectivity, develop local Internet industry, improve competitiveness, and serve as a hub for technical activity, encourage local service hosting and local content development and applications.

The Government will encourage and promote partnerships that seek to enhance peering and interconnection through deploying additional IXPs and use of deployed infrastructure, including national and international fibre cables, and local data centre development.

5.9 Data Centres

Data centres are critical ICT infrastructure that ensures business continuity by protecting businesses critical applications and data against loss that could arise from natural disasters, acts of terrorism, sabotage, and technical faults among others.

5.9.1 Policy Objectives

The government will:

- (a) Promote Data Centre infrastructure buildout carried out in cognizance of globally approved standards for purposes of ensuring quality of service and security under open access, carrier neutral model;
- (b) Develop incentives to ensure and protect investment in the field of data centre;
- (c) Facilitate the development and enactment of legislation on shoring up economic and market-driven incentives for localization to support growth in IT service consumption – as an engine to spur data centre growth
- (d) Ensure that Data is processed fairly and lawfully in accordance with the rights of citizens and obtained only for specific, lawful purposes.

5.9.2 Strategies for Data Centres

The government recognizes the important economic role of data centres across all sectors of the economy and in order to deliver value to stakeholders and to guide the continuous growth of the same in both public and private sectors; it will adopt the following strategies:

- (a) Ensure government Ministries, Departments and Agencies share and optimize Data Centre ICT infrastructure in order to save costs by eliminating the need for infrastructure expenses incurred by individual agencies and also provide cost efficient, scalable and secure environment for Government data and information;
- (b) Promote the local hosting of information particularly public information;
- (c) Ensure the security of the Government information is managed in a harmonized manner;
- (d) Ensure optimal use of human capacity (mainly ICT staff);
- (e) Encourage neutral data centre providers (third party independent of the companies);
- (f) Encourage businesses to partner and invest jointly in data centre infrastructure deployment or share data centre infrastructure to minimize network duplications;
- (g) Encourage local ownership in data centre companies;
- (h) Ensure availability of basic infrastructure especially reliable cost-effective grid power;

- (i) Ensure provision of suitable guidelines on installations of the data centres and other ICT infrastructure for safety and environments, network integrity, resilience, redundancy and diversity.

5.10 Complementary Infrastructure

The lack of adequate complementary infrastructure has hampered provision of efficient and affordable ICT services in the country.

5.10.1 Policy Objectives:

- (a) Provide support infrastructure, such as reliable power and roads;
- (b) Support infrastructure for software development;
- (c) Implement a combination of technologies, policies and procedures which will support public key cryptography; and
- (d) Promote of local manufacture and assembly of ICT equipment and accessories.

5.10.2 Strategies

The Government will:

- (a) provide incentives to enable development of infrastructure for public good and to strengthen mechanisms that ensure open access for all players and users;
- (b) ensure universal and open access to reliable and affordable broadband infrastructure by all citizens and for other EAC member states that are landlocked;
- (c) harmonize ICT policy, legal and regulatory framework with the other East African Community member states; and
- (d) Promote provision of reliable ICT broadband infrastructure connecting all the capitals and major cities of the East African Community member countries.

5.11 Rights of Way (Way leave)

The approvals of rights-of-way and clearance to all service providers are critical for the development of the telecommunications infrastructure.

5.11.1 Policy Objectives

The Government will facilitate the recognition of ICT infrastructure as a utility and will promote policies to facilitate and streamline the process for obtaining permits for the deployment of ICT infrastructure.

5.11.2 Strategies

To protect the ICT infrastructure along the way leaves the Government will:

- a) Work with County Governments to develop harmonized way leaves guidelines that protect the ICT infrastructure and optimize usage;
- b) Ensure future road designs incorporate affordable, common crossing ducts to facilitate service providers to provide ICT services and prevent road damages whenever crossing is needed;
- c) Protect way leaves encroachment by developers especially land owners whose property front major highways and other access roads;

- d) Consider harmonizing way leave charges by national and county governments so as to prevent multiple charges during ICT infrastructure deployment;
- e) Promote infrastructure sharing along way leaves through structured and coordinated ICT infrastructure deployment among service providers, government agencies and utility companies.
- f) Pricing of wayleave applications should be conducive to buildout of networks in unserved and underserved areas.

5.12 Disaster Management

The Government will avail incentives to ICT Service Providers to provide facilities for emergency communication and prediction, monitoring and early warning of disasters.

6 SCIENCE, TECHNOLOGY AND INNOVATION

6.1 Introduction

The Policy objectives and strategies on STI are based on the Government of Kenya Framework for Science, Technology and Innovation.

6.2 STI and Vision 2030

The Kenya Vision 2030 recognises the critical role played by Research and Development (R&D) and Innovation in accelerating economic development in all the newly industrializing countries of the world. ST&I is one of the foundations for socio-economic transformation in the Kenya Vision 2030.

6.3 Policy Objectives

The main objectives of science, technology and innovation (ST&I) are to create indigenous ST&I capacities appropriate to national needs, priorities and resources, and to create an STI culture whereby solutions to socio-cultural and economic problems of the individual, the community and the nation are recognized and sought.

6.4 Link to National Vision

ST&I is one of the foundations for socio-economic transformation in the Kenya Vision 2030, enabling creation of new knowledge which plays a central role in wealth creation, social welfare and international competitiveness. At the economic front, STI will play a critical role in ensuring that productivity growth occurs, and that the economy is progressively transformed into a knowledge-based economy. Universities and research institutions will be critical drivers of innovation systems and the resultant developments in ST&I and application of knowledge, especially in biotechnology, value-addition, manufacturing, and ICT.

This will lead to industrial and entrepreneurial development with new products and services, and areas of economic growth. From a social development perspective, ST&I will be applied to provide solutions that will enhance natural resource management for public safety, food security and poverty alleviation as well as resolving human and animal health conflicts and developing a sustainable tourism industry.

6.5 National Priority Sectors for ST&I Policy Interventions

The national sectors significant to achievement of national growth and development targets are Agriculture and Rural development; Health and Life Sciences; Trade and Industry; Human Resource Development; Physical Infrastructure; Energy; Environment and Natural Resource Management; Information Communication Technology (ICT); and Space Science Technology. Specifically, the following areas of innovation will be given a high priority: biotechnology; space science; telecommunications, electronics and computers; and automobile and nuclear electricity.

6.6 Kenya National Innovation System (KNIS)

An innovation system essentially refers to the interactions among diverse group of actors involved in the production, diffusion and use of new, and economically useful knowledge. An effective innovation system is required for a country to harness the potential offered by modern science and technology to its social and economic advantage. Kenya's current innovation system lacks coordination among the actors, is linear and fragmented, has limited linkages between academia, industry and government; the academic curricula and graduate skill sets are not well-aligned to industry needs and, has inadequate funding and support for innovations. Generally, it does not effectively serve critical national needs. The government will therefore adopt a new Kenya national innovation system (KNIS) to ensure that the education and research system (universities, TVET institutions, sector-based research centres, national research and education network and schools), the business system (from start-up informal businesses to large and multi-national companies), the intermediate organisations, ST&I infrastructure (financial, information, IPR regime, regulatory, incubation centres, science and technology parks, special economic zones, etc.) and framework conditions in which they operate interact, dynamically and effectively respond to national needs of the stakeholders (consumer, private sector and Government) , while continuously learning from these interactions.

7 CONTENT AND APPLICATIONS DEVELOPMENT

7.1 Policy Objectives

The overall objective will be to promote development of local content in ICTs for greater access and relevance to the citizens.

7.2 Strategies

The Government will:

- (a) Support locally based development of ICT applications and multimedia content for productivity;
- (b) Encourage the use of Kiswahili as the National language and local languages in developing content;
- (c) Encourage the development of content that captures and preserves knowledge and culture of local communities;
- (d) Promote electronic publishing, collection and preservation of local materials; and
- (e) Encourage the development and management of information and knowledge resources as a national heritage.

7.3 Local Content

7.3.1 Policy Objectives

Promote production of relevant local digital content production to spur ICT uptake while providing employment opportunities for the youth.

7.3.2 Strategies

To promote local digital content, the Government will:

- (a) Adopt Open Data principles: - in order to share historical/archive data that can be a rich source for the creative and broadcast industry;
- (b) Promote Animation Labs (A-Lab):- Government will support incubation labs focused on animation & film production that is largely computer generated;
- (c) Develop policies and legislation that take into consideration age appropriate content that upholds national values through content ratings: -
- (d) Recognise digital content as copyright material and actively protect the rights of copyright owners through law enforcement to prevent digital content piracy; i.e. Copyright Protection

7.4 Gaming content

7.4.1 Policy Objectives

Promote the software industry with a focus on entertainment as one of the fastest growing global industries.

7.4.2 Strategies

The Government will employ the following strategies in order to tap into this market:

- (a) Specialized Certification Programs: work with industry to promote acquisition of high-end programming skills required to deliver high quality gaming software;
- (b) Subsidies: introduce fiscal incentives like capital investment subsidy, reimbursement of levies, duties etc.; to promote this segment.
- (c) Sensitize the public on the negative social impacts of internet social impacts of internet addiction and in particular gaming activities; Portion of gaming revenues can be channelled towards fighting challenges.

7.5 Access to Information

7.5.1 Introduction

The Government recognizes information as a resource, which must be generated, collected, organized, leveraged, secured and preserved for national prosperity.

7.5.2 Policy Objectives

To develop a framework for re-use of public sector information with a view to ensuring value addition by private sector in order to promote the development of local content and information industry in Kenya.

7.5.3 Strategies

- (a) Improve quality of public information by restructuring public information management to ensure timely access to accurate information on Government policies and programmes for informed decision making;
- (b) Revamp Government websites including making them accessible for persons with disability,
- (c) Digitize key Government registries;
- (d) Put in a framework to facilitate ease of accessing information held by public bodies

7.6 Data management

7.6.1 Policy objectives:

- a) Ensure data management built on broader ICT strategic expectation of “open by default”, security by design, privacy protection, innovation and public-private partnership.
- b) Promote standards of data governance that encourage responsible data flow

7.6.2 Strategies for data management:

- a) Establish guidelines for data management that ensure open access information sharing within government and as required by private sector while enforcing the required privacy standards.
- b) Develop and institutionalize legal framework to enable data information sharing across government (regional/national and county governments)

7.7 Data Protection

The Government will develop data protection legislation that ensures the protection of the confidentiality and integrity of citizens’ information. The legislation shall provide for collection, use, retention, security and disclosure of such information, including disclosure to law enforcement agencies.

7.8 Dot KE Domain Administration

The number of domain names as registered by the Kenya Network Information Centre (KENIC) is 58,259. To encourage more dot KE domain name uptake, CA, KENIC and other stakeholders will take measures which include proactive promotion of the dot KE domain name in consultations with other relevant stakeholders.

The Government will promote dot KE by exclusive use of .go.ke domains in all government business and communications

7.9 Broadcasting content

Broadcasting plays an important role in the lives of citizens worldwide and is the most effective means of reaching the largest number of people simultaneously.

The policy framework will continue to be focused on promoting the development of local content and establishing a market structure that attracts and protects national and international investment in the broadcasting content and services.

7.9.1 The Public Broadcaster and National Public Broadcasting Service

The Kenya Broadcasting Corporation (KBC) will be restructured to ensure its relevance and viability as the public broadcaster. KBC, operating commercially, with universal service obligations, and with Government support to sustain its universal service obligations will provide national public broadcasting and county broadcasting services in collaboration with County Governments. KBC may also establish a subsidiary to provide commercial broadcasting services subject to fulfilment of licensing and regulatory requirements. The Government may designate any other entity to provide public broadcasting services.

7.9.2 Private/Commercial Broadcasting Services

The main objective of granting of licenses for private broadcasting services will be the development of a diverse and pluralistic broadcasting landscape, while taking into account the viability of individual enterprises as well as the industry as a whole. Private broadcasting service providers will be expected to provide a diversity of programming content, contribute to job creation and human resource development.

The CA shall issue broadcast licences in a fair, timely, and competitive manner.

Private broadcast licenses will not be granted to any political party, or affiliate of a political party. To avoid hoarding of the scarce frequency resources, CA will develop guidelines with appropriate regulatory safeguards to ensure broadcast licensees start operations within timeframes stipulated in their licences upon being granted broadcast licenses.

7.9.3 Community Broadcasting Services

Community broadcasting service providers, who are fully controlled by a non-profit entity, will be licensed to offer non-profit services that serve a particular community. They will be required to:

- (a) Offer a distinct broadcasting service dealing specifically with community issues, which are not usually dealt with by private or public broadcasting service covering the same area; and
- (b) Focus on the provision of programmes that highlight community issues, including, but not limited to; developmental issues, health care, basic information and general education, environmental affairs and local culture.

Licensing of community broadcasters will follow an approach where prospective service providers will make application to CA. The licenses will be granted after evaluation based on clear conditions and availability of frequencies in the service area. In order to promote the development of community broadcasting services, the CA will endeavour to reserve broadcast frequencies and/or television channels for this purpose. Community broadcast licenses will not be granted to any political party, or affiliate of a political party.

7.10 Policy Objectives

The overall policy objective for the broadcasting sector is to create, within the framework of the Constitution, an environment that enables broadcasting services to be provided in the public interest and to contribute equitably to the socio-economic and cultural development of Kenya.

7.11 Strategies

The Government will:-

- (a) Encourage the growth of a broadcasting industry that is efficient, competitive and responsive to audience needs and susceptibilities;
- (b) Ensure the development of broadcasting services that reflect a sense of Kenyan identity, character, cultural diversity and expression through the development of appropriate local content;
- (c) Promote diversity in ownership, control and programming of broadcasting services and availability throughout Kenya;
- (d) Promote fair competition, innovation, protection of intellectual property rights and investment in the broadcasting content industry;
- (e) Ensure adherence to social responsibility by encouraging the development of and respect for the Programming Code and other codes of practice by all broadcasting licensees;
- (f) Ensure universal access to, and viability of the public broadcasting service;
- (g) Require CA, in consultation with the broadcasting, media professionals and production industry as well as the public, to devise mechanisms to ensure increased local content in the various types of programming services including films, drama, children's programmes, documentaries and music;
- (h) Encourage media training institutions in conjunction with the broadcasting industry to nurture research into aspects of programming and curriculum development in the industry;
- (i) Require government agencies and private sector to promote local production of advertisements and create an enabling environment for the production and export of local broadcast and media products that will contribute towards job creation;
- (j) Require all broadcasters to act in the public interest and be guided by the programming code developed by CA and other codes of conduct which will inter alia address:
 - (i) broadcast of material suitable for children;
 - (ii) broadcasts that contain scenes of violence, sexually explicit conduct and offensive language;
 - (iii) audience advisories to assist audiences in choosing programmes;
 - (iv) the need to report news truthfully, accurately and fairly, without intentional or negligent departure from the facts;
 - (v) the need to exercise care in dealing with individuals' privacy in accordance with Article 31 of the Constitution;
 - (vi) The need to adhere to limitations on the freedom of expression and the freedom of the media in accordance with Article 33(2);
 - (vii) the need to accommodate diversity of opinion; and
 - (viii) Strict adherence by broadcast stations to regulations and guidelines issued for fair coverage during elections.

8 DEVICES

8.1 Policy Objectives

- (a) In order to grow broadband penetration, promote availability of affordable devices to citizens to ensure they can access services.
- (b) Towards deepening broadband penetration, work with manufacturers and vendors to avail low priced devices that are affordable to majority of the Kenyan population.

8.2 Strategies

The government will:

- (a) Support for Local Production/Assembly Line - for electronic devices through establishment of Special Economic Zones;
- (b) Promote ICT friendly tax regimes - (Zero-rated/Tax holidays) on devices to ensure affordability and penetration of ICT Services;
- (c) Discourage sale and use of counterfeit/substandard devices/handsets – by enhancing collaboration between relevant Government Agencies to enforce device standards from the point of entry/manufacture to their availability in the market;
- (d) Supporting standardization and compatibility – through harmonization of device standards that support different technologies;
- (e) Address environmental issues (green ICTs) - with input from relevant Government agencies to ensure the design, use and disposal of ICTs is sensitive to environmental requirements.

9 POSTAL AND COURIER SERVICES

9.1 Postal/Courier Market

The Government recognizes that all citizens have a right to access basic postal services and will ensure that the country has a vibrant and efficient postal sector across the physical, electronic and financial platforms in order to increase the sector's contribution to the country's economy. This will be achieved by, ensuring that postal operators provide affordable, equitable and efficient universal service, among other measures.

An effective postal and courier system is key to the development of e-commerce and other sectors of the ICT economy.

9.2 Policy Objectives

This policy aims to achieve the following objectives:

- a) Development and provision of high quality services and responsiveness to customer needs;
- b) Increased access to quality and affordable universal postal services;
- c) Promotion of private sector participation in the postal sector;
- d) Promotion of e-commerce activities in the country

- e) Enhancement of postal security;
- f) Promotion of R&D in the postal sector; and
- g) Increased cooperation with sub-regional, regional and global postal service organizations.

9.3 Strategies

- (a) Rollout of more postal service points;
- (b) Promote efficiency in postal operations especially the collection and distribution of mail and parcels;
- (c) Restructure Postal Corporation of Kenya to align with market/technological changes and to diversify to new revenue streams so as to remain commercially viable;
- (d) Promoting competition in all non-exclusive postal market segments;
- (e) Government support to enhance universal access to postal services across Kenya;
- (f) Review of the exclusive market segments, from time to time to allow for more competition;
- (g) Promoting the use of the postal network in the delivery of e-commerce services; and
- (h) Supporting the provision of financial services through the postal system.

9.4 Liberalisation of Postal Services

The Government has liberalised the competitive segments of the postal/courier sub-sectors such as fast mail and courier services where the private sector has continued to play an important role. Further liberalization will be undertaken in line with prevailing economic and market conditions. The policy also aims at creating an environment that attracts increased investments in the sector and allows the development of postal infrastructure and services that support national development goals.

The postal market is divided into the exclusive and non-exclusive market segments. The main player in the exclusive segments is the Postal Corporation of Kenya which provides among others the following services on an exclusive basis:

- a) Delivery of letters, postcards, printed paper and small packets with weights up to a maximum of 350grams. This limit will be reviewed in line with prevailing economic and market conditions and any variations published in the Kenya Gazette;
- b) Printing and issuance of postage stamps and philatelic materials; and
- c) Provision of private letterboxes and street posting boxes.

The non- exclusive and competitive services, which are provided mainly by the private sectors include the following:

- a) Courier services;
- b) Parcel services;
- c) Direct mail marketing services;
- d) Postal financial services;
- e) Electronic and hybrid mail;
- f) Distribution of publications; and
- g) Agency services.

9.5 Market Structure

The policy focus is on creating an environment that attracts increased investments in the sector and allows the development of postal infrastructure and services that support national development goals. The postal market is divided into the exclusive and non-exclusive market segments.

9.5.1 Exclusive Services

The Postal Corporation of Kenya will provide the following services on an exclusive basis:

- a) Delivery of letters, postcards, printed paper and small packets with weights up to a maximum of 350grams. This limit will be reviewed in line with prevailing economic and market conditions and any variations published in the Kenya Gazette;
- b) Printing and issuance of postage stamps and philatelic materials; and
- c) Provision of private letter boxes and street posting boxes.
- d) Standards and other conditions will be prescribed for universal service provision.

9.5.2 Non-Exclusive Services

Non-exclusive services will include:

- (a) Courier services;
- (b) Parcel services;
- (c) Direct mail marketing services;
- (d) Postal financial services;
- (e) Electronic and hybrid mail;
- (f) Distribution of publications; and
- (g) Agency services.

9.5.3 Courier Services

The need for a faster and more efficient means of goods delivery has been growing and requires same day or overnight delivery. The Government recognizes that the growth of the courier segment has traditionally been driven by private sector. Operators in this market segment are required to be licensed.

9.5.4 Parcel Services

The parcel distribution market caters for all postal material falling outside the definition of a letter. Private sector operators currently serve only the high volume, short distance, low unit cost routes. The Government will promote private investment in this segment. This market segment is therefore, open for competition.

9.5.5 Direct Mail Marketing Services

Direct mail marketing is a form of advertising that enables the same message to be sent to a large number of individuals or organizations. Mail order companies rely heavily on efficient postal services for customer communication, distribution of catalogues, receiving customers' orders, goods distribution and the mailing of statements. Growth in the mail order segment is stimulated by the increasing interest in distance learning and growing sales of consumer products and services. This market segment is liberalized.

9.5.6 Postal Financial Services

The majority of economically active heads of households works in urban areas and requires banking services in rural areas to support the rest of their families residing in such areas. To help this segment of the working population to support their dependants, the Government will support the provision of financial services in rural areas through the postal system. In this regard, the government will support use of appropriate technology in the financial transfer systems in the country.

9.5.7 Electronic and Hybrid Mail Services

The use of modern communications technology can significantly improve the speed of mail delivery and funds transfer. The Governments' ultimate aim is to have all post offices connected to the Internet to support electronic mail services.

9.5.8 Distribution of Publications

The distribution of newspapers, magazines and journals require a reliable postal service and is time sensitive. Currently, daily newspapers are distributed by private companies to cover street sales, home and office deliveries. However, there has been a significant increase in the number of publications, especially technical and niche market magazines, which lend themselves to distribution via the post to the subscriber. This market segment is fully liberalized.

9.5.9 Agency Services

The main objective of agency services is to utilize the postal system to provide profitable value added services on a competitive basis.

To ensure that the postal system is fully used for the benefit of society, it is essential that both the Government and the private sector make optimal use of the system as an agent for payment of the following among others:

- (a) Tax,
- (b) Municipal service charges,
- (c) Electricity,
- (d) Motor vehicle licenses, and
- (e) Pension.

In this regard, the Government will continue to support use of postal/courier outlets as service points that will enable citizens to enjoy e-government services at all points in the country under the *Huduma Service* initiative.

9.6 Postal Security

It's noted that Postal crime has the potential to bring not only property and financial loss to the postal service providers and the public, but also leads to the violation of privacy. These crimes also pose a threat to national security, environmental and bring along health related concerns. The need to put in place mechanisms for combating postal crime cannot therefore be overstated.

The current political, social and economic environment in the country and the region in general is witnessing security challenges and therefore adds to the need for appropriate measures to be taken to ensure a safe and secure mail and courier network. It is also recognized that the prevailing terrorist activities rife in the region exacerbates the situation. This calls for the need by government to develop security guidelines to guide operators in the sector to address these inherent risks. Consequently the will continue to improve the security management framework in postal/courier circles with a view to addressing the above stated challenges.

9.7 Philatelic Service

The provision of philatelic services, which involve designing and issuing stamps, will remain an exclusive privilege of the PCK. Such services mirror the unique and varied nature of the Kenyan society, history, culture, heritage, institutions, flora, fauna, and events of outstanding national and international interest.

The CA will regulate and monitor the issuance of stamps particularly those of a commemorative nature.

9.8 Establishment of a National Addressing System (NAS)

The Government acknowledges that good addressing and high quality address data constitute an important part of a nation's infrastructure. Quality addressing and postcode systems are essential to the socio-economic infrastructure and development of a country. They also form the cornerstone of quality postal services, facilitating business transactions and hence the country's economic growth. The lack of a complete, correct and unique national addressing system constitutes a major socio-economic challenge for Kenya.

Worldwide, it has been accepted that addresses are an essential tool for economic and social development and that the existence of complete, correct and unique address data should be seen as being of fundamental importance for all countries.

Identified weakness in the existing postal addressing system in which mail is delivered through some 400,000 private office boxes and bags to a population of 40 million. The policy will emphasise the need to establish the new addressing system which will meet diversified needs of the public and enhance contribution to the national development.

9.8.1 Benefits of NAS

- (a) More revenue will be realized by tax authorities. This is because inadequate address system makes it difficult to identify and trace all businesses which are potential taxpayers and hence loss of a lot of revenue due to lack of proper postal codes and addressing system.
- (b) Remarkably boost e-commerce by allowing more efficient delivery of products and services including home delivery of mail and other postal/courier articles-this will enhance quality of services delivered by the postal licensees and a satisfied consumer so as to:
 - (i) Facilitate the reach of social and utility services (health, telephone, electricity, water, education etc) thereby promoting universal services;
 - (ii) Give equitable access to communication and other services to all Kenyans ;
 - (iii) Enable authorities to provide and deploy emergency services(such as fire and hospital) faster and more efficiently;
 - (iv) Enable development of data bases for customer management and marketing campaigns for better regulation;
 - (v) Allow greater financial inclusion of individuals in banking and other services in a more secure atmosphere with ease of traceability. One of the reasons why small and microenterprises fail to access funds is the question of traceability;
 - (vi) Lead to economic growth by reaching all sectors of our society;
 - (vii) Enable maximization of the value of address for service planning, delivery and reporting in government service delivery which is becoming increasingly digitally based.
 - (viii) Promote identity management as an increasingly necessary tool for emergency management/counter-terrorism, and for service delivery in the nation.

9.8.2 Policy Objectives

- a) Enable the National and County governments to combat corruption, use as location identifiers for state/public/businesses, help individuals secure a legal identity e.g. Identity Cards(IDs) or passports, facilitate planning/research/mapping/routing and implementation of public policies and services, fight against national disasters like fires and diseases, reinforce national/international security, better tax levy and critical for essential functions/ emergency services;
- b) Enable Businesses acquire accurate addressing systems to provide utility services like telephone, water, electricity, develop new markets, approach clients, access products including those ordered via internet, send mail, develop marketing campaign;
- c) Enable the People to be formally recognised as members of their communities, take on rights and obligations attached to their social role, have a simpler access to national/international markets.
- d) Enable the private sector to participate in the development of a national addressing system with distinct roles of various stakeholders under a private public partnership (PPP) approach.

9.8.3 Strategies

Development of a National Addressing System in collaboration with all stakeholders (such as Ministries, Boundaries, Communications and infrastructure, Financial Regulators/Agencies and County governments, Communications Operators Pricing of wayleave applications should be conducive to buildout of networks in underserved areas.) by creating synergies between these agencies to:

9.9 Public Postal Service (by PCK)

Globally the traditional postal service sector is undergoing reform, fuelled in the main by the advent of the digital economy. The proliferation of electronic mail as well as other communication mediums, poses challenges for growth in the postal services market. The critical issue for postal service operators is how to respond to these new technological challenges.

Electronic substitution of traditional mail is accelerating as both consumers and businesses adopt electronic processes across multiple domains. Mail users are shifting from traditional hard copy distribution models to a variety of new ways to digitally communicate, advertise, or transact. The emergence of digital methods of communication has, however, not diminished the role and importance of postal services. The advent of modern networks, and broadband internet in particular, have provided new opportunities for the traditional postal services sector.

The digital revolution presents an opportunity as a disruptive innovation to the traditional business of postal services, and as such there is room for out of the box thinking to build new business models, which leverage off a thorough understanding of the evolving needs of citizens. A postal system can help to provide logistical solutions to integrate data flows, physical flows and financial flows.

Considering the services rendered today by the Postal Corporation of Kenya (PCK), the Government is supportive of PCK's continued mandate in terms of ensuring universal service.

The Corporation will be encouraged to modernise and utilise its extensive network and presence to support the delivery of government services, including e-government and Internet services to especially far flung rural communities and use them as service enablers rather than impediments.

9.9.1 Objective and Strategies

The policy focus is aimed at creating an environment that attracts increased investments in the postal and couriers services sector and allows the development of postal infrastructure and services that support national development goals. The postal market will be divided into the exclusive and non-exclusive market segments. The policy objective is for the Public Postal Service provider to focus more on logistics or provision of services through the following strategies;

- (a) Leveraging PCK infrastructure for government services such as tax filing, small business support, and Internet cafe services ;
- (b) Providing Internet services, delivering books and medicine ;
- (c) Providing basic internet services through wireless media ;
- (d) Harnessing PCK broadband infrastructure as the first touch point for government and other services, particularly in remote and rural areas.
- (e) Setting aside space and resources for training, airtime distribution, sale of end-user equipment; rolling out Wi-Fi hotspots in rural and semi-rural areas; and supporting cross-departmental rollout of further government services through PCK's extensive network.
- (f)

10 ENTREPRENEURSHIP

10.1 Introduction

The ICT sector will be supported with an enabling and robust policy framework to exploit the full potential of the sector through engagement of industry subsectors to enhance its overall contribution to the National GDP and enable the industry to be independently assessed as a key economic sector.

10.2 Policy Objectives:

Government's policy objectives for spurring entrepreneurship in the ICT sector will include:

- a) The adoption of a holistic approach encompassing all components of the ecosystem.
- b) Incorporate a trade agenda to boost exports, eliminate market-access barriers, and expand intellectual property protections
- c) Protection of information intermediaries in the digital ecosystem
- d) Promote innovation and encourage co-innovation and co-creation with government

10.3 Strategies:

In order to spur ICT entrepreneurship government will adopt the following strategies:

- a) Government will review relevant legislation to enhance protection of Intellectual Property Rights of the service providers.
- b) In recognition of the important role of internet intermediaries in the digital ecosystem, a framework shall be established for the protection of intermediaries from liability from third party content, based on well-established norms and principles.
- c) Development of guidelines for co-innovation, co-creation with government

- d) The National and County Governments will promote innovation through creation of an enabling environment for experimentation and innovation’
- e) The National and County Government will support regional efforts to strengthen local and regional innovation ecosystems that sustain economic growth and job creation.
- f) Government will support existing home-grown industries, nationally and within the East African region alongside new emerging industries, to encourage growth across all industry sectors including low, mid and high-tech firms.
- g) Government will promote ease of access to funding for Technology SMEs by business angels’ networks, venture capital funds, merchant banks, crowd-funding and peer-to-peer lending; among others.
- h) Government will seek to recognize and categorize the multiple “entrepreneurial connectors” for the sector. These include Licensing bodies, global and local ICT affiliations, self-regulating bodies and their categorization and standardization.

11 COMPETITION

11.1 Introduction

The Government will continue to review existing ICT market structure to foster a competitive operating environment. Regulatory frameworks will be strengthened further and measures introduced to promote robust competition in order to ensure realization of the national policy goals.

11.2 Policy Objectives

Develop an ICT sector that is competitive in all relevant markets in products, function and geographical reach while at the same time promoting investment and innovation

11.3 Strategies

The will promote additional investment in the ICT sector

12 RADIO FREQUENCY SPECTRUM

12.1 Introduction

Radio frequency spectrum is a public resource that must be focused on delivering public value. The optimum and effective utilisation of spectrum from social, economic and technical perspectives to enable the achievement of the developmental goals in our Vision 2030 will be the first consideration for the policy options which are expected to support the National Broadband Strategy and its positions regarding broadband for all.

Radio frequency spectrum is a limited natural virtual resource where, in certain frequency bands, the demand for spectrum far exceeds the amount of spectrum that is available. The radio spectrum is available equally in every country, and is a resource limited by technology and management capability. It is not a consumable resource.

Spectrum being a scarce public resource that can go to waste if not used optimally. The frequency spectrum will, therefore, be managed in line with public policy objectives, with a view to making it available to all users under transparent, specific and clear conditions.

This process will maintain a balance between the public and private interest. In the event of conflict, public interest shall prevail. Radio Frequency Spectrum (hereafter Spectrum) generates concerns about spectrum pricing, the fact that spectrum demand will inevitably increase as society moves through the “information age”, creating a need for ever more “Information Bandwidth”. In planning and allocating radio frequency spectrum as well as developing policies, laws and regulations relating to spectrum, Kenya needs to take into account the outcomes of the International Telecommunication Union (ITU) World Radio-communication Conferences (WRCs).

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 licences dedicated to community services.

12.2 Spectrum Policies

The Government may from time to time review plans for the use of specific frequency bands to ensure optimal utilization of the frequency spectrum. Spectrum will be allocated in an equitable and transparent manner.

12.3 Policy Objectives

The Government’s objective in the utilization and management of the radio frequency spectrum is to achieve, inter alia:-

- (a) Transition to the next generation of mobile broadband networks such as deployment of LTE, and other advanced mobile broadband Networks;
- (b) Enhanced national security and defence;
- (c) Enhanced emergency preparedness against disasters;
- (d) Efficient national and international transportation systems;
- (e) Sustainable conservation of natural resources;
- (f) Efficiency in the dissemination of educational information and entertainment; and
- (g) Nationwide availability of efficient and affordable ICT services.
- (h) Enhancement of research and development through a spectrum management policy that allows individuals, corporates of all sizes and educational institutions access to the spectrum under the regulation of the Communications Authority of Kenya for purposes of research and development

12.4 Strategies

- (a) The ICT sector regulator shall be vested with the responsibilities of originating, planning and implementing the objectives through the relevant instruments such as rules and regulations governing the allocation and assignments of radiofrequency spectrum resources.

- (b) To enhance public safety, security and emergency preparedness, spectrum fees may be waived for public institutions that provide critical life-line support services. The institutions may also include those that provide critical public services such as national security, public safety and emergency services. Such institutions shall be determined by the ICT regulator.

13 UNIVERSAL ACCESS

13.1 Introduction

The Government is committed to ensuring that ICT services are available throughout the country and will support the universal service availability and the widest access to such services. In order to increase the level of access to ICTs, the Government will provide the enabling environment for the private sector to play a complementary role towards achieving universal access targets.

13.2 Policy Objectives

The universal access policy objectives are:

- (a) Ensuring prudent management of the Universal Service Fund in accordance with its established objectives;
- (b) Ensuring that all citizens have access to ICT services (including Mobile, Internet, postal/courier and broadcasting) in accordance with agreed guidelines;
- (c) Encouraging efficient access to and use of communications systems and services throughout the Republic of Kenya, focusing on rural, remote and under-served areas in order to promote social and economic development;
- (d) Ensuring reasonable availability and affordability of basic and advanced communications systems and services to persons with disabilities, at the household and individual levels, particularly where the market is unable to deliver such services in a financially viable manner;
- (e) Supporting the development of ICTs, including related human capacity and technological innovation;
- (f) Supporting the introduction and expansion of communication services to schools, health facilities and other organizations serving public needs;
- (g) Facilitating development of infrastructure and access to local and relevant content while ensuring that basic ICT services are made available at an affordable price; and

13.3 Strategies

- (a) Create and sustain the Universal Service Fund,
- (b) Supporting the introduction and expansion of communication services to schools, health facilities and other organizations serving public needs; and
- (c) Facilitating development of infrastructure and access to local and relevant content while ensuring that basic ICT services are made available at an affordable price

14 ACCESSIBILITY

14.1 ICT Accessibility by Persons with Disabilities

Kenya is a signatory to the United Nations Convention on the Rights of Persons with Disabilities (PWDs), which was adopted by the UN General Assembly on 13 Dec 2006. The Convention stipulates that Persons with Disabilities have a right to access to information through different mediums with Article 9 covering accessibility including ICTs while Article 30 covers television programmes, films, theatre and other cultural activities. The World Health Organization estimates that about ten per cent of the world's population has some type of disability, hence the need to take into consideration accessibility aspects for persons disabilities when designing ICT public policy.

14.2 Policy Objectives

The main objective of this policy guideline is to provide a foundation for an accessible ICT environment to enable persons with disabilities to take full advantage of ICTs.

14.3 Strategies

The Government will where appropriate take measures to:

- (a) Ensure that ICT services and emergency communications made available to the public are provided in alternative accessible formats for persons with disabilities (PWD);
- (b) Review existing legislation and regulations to promote ICT accessibility for PWDs in consultation with organisations representing PWDs among others;
- (c) Promote design, production and distribution of accessible ICT at an early stage;
- (d) Ensure that persons with disabilities can exercise the right to access to information, freedom of expression and opinion;
- (e) Require both public and private entities that render services to the public to provide information and services in accessible and usable formats for persons with disabilities;
- (f) Require content producers for distribution and public consumption in Kenya to produce such content in accessible format such as audio description, audio subtitles, captions and signing for access to persons with disabilities.
- (g) Ensure that websites of government departments and agencies comply with international web accessibility standards and are accessible for persons with disabilities
- (h) Provide incentives to providers of accessible technology solutions including software, hardware and applications
- (i) Take such measures that will lessen the burden of acquisition of accessible technologies and associated gadgets by PWDs through fiscal means such as tax exemptions, subsidization, funding acquisitions, etc.
- (j) Ensure that licensed providers of telecommunications services make available services and supporting technologies for persons with disabilities including emergency services, accessible public phones and relay services to enable persons with speech, hearing and seeing disabilities communicate with the rest of society
- (k) Ensure existing works in 'normal' format in print to be adopted into transformative forms which can be used by the blind without any liability..

15 CONSUMER PROTECTION

15.1 Policy Objectives

Facilitate the protection of citizens at all levels through the development of relevant legislation and government policies

15.2 Strategies

The Government will:

- (a) .Establish a self-adaptive regulatory mechanisms to build a secure and reliable cyber space;
- (b) Develop and participate in cross sector and cross-border initiatives to further foster international cooperation and policy implementation; of consumer protection initiatives;
- (c) Recognise consumer rights and interests, which include but are not limited to: access to publically available information and services over the Internet, quality of service, consumer choice of ICT services, privacy, safety and security,; and intellectual property rights;
- (d) Support multinational cooperation and harmonization of regulations and initiatives are required in order to deal effectively with cross-border phenomena such as issues related to content and services;
- (e) Collaborate and cooperate with regional entities to deal with cross-national matters;
- (f) Encourage the development of Codes of Practice for service providers, including Over-The-Top (OTTs), to ensure that content, promotion and operation of services comply with all necessary consumer protection conditions;
- (g) Support the drawing up transparent rules on the terms and conditions for concluding contracts online, the form of such contracts as well as the related procedures;
- (h) Encourage the drawing up of complaints handling procedures that specifically encourage consumers to first seek redress with service providers and increase service providers' awareness of consumer needs, rights and responsibilities;
- (i) Take measures to ensure consumers including people with disabilities have easy and reliable access to ICT services;
- (j) Take measures to protect and educate consumers with different access needs who may be particularly vulnerable to deceptive commercial practices or have difficulties fully understanding terms and conditions of service.

16 NATIONAL SECURITY

16.1 Cyber Security

16.1.1 Introduction

Cyber security spans a wide range of technologies, systems, and users and it has become a national priority for the articulation of new integrated and comprehensive strategies for issues arising in this domain to be approached in a holistic manner.

Cyber security encompasses wide variety of threats including economic crime and sabotage from various forms of attackers which include activist groups, criminal gangs and nation states.

For secure electronic transactions to occur, an environment of trust must be created and sustained through the legal and regulatory mechanisms..

The Government will continue to review and implement the Cyber Security Strategy and develop relevant legislation to achieve the cyber security policy objectives

16.1.2 Policy Objectives

- (a) Recognize cyber security as a key pillar of national security and foster a multi-agency approach in the management of national cyber security
- (b) Support the development of a new generation of technologies that will lead to measurable, available, secure, trustworthy, and sustainable computing and communications systems, as well as associated management and policy tools that enable successful utilization of the new technologies;
- (c) Develop information security standards for the ICT sector which are to be adopted and applied by all government agencies and recommended as best practices to private sector business;
- (d) Sensitize and create awareness to enhance the adoption of information security approaches and new attitudes and culture by citizens;
- (e) Make the delicate balancing act of ensuring the efficient mitigation of cyber threats in order to promote trust and confidence with the objective of preserving the openness of the Internet as a platform for innovation and new sources of growth;
- (f) Establish an enabling legal framework, aligned with Kenya's constitutional provisions, legislative and regulatory environment, and consistent with regional and global best practices build capacity skills within police law enforcement and the judicial system on the prevailing legal and regulatory frameworks;
- (g) Put in place measures to protect vulnerable groups such as children and ensure that they are safe and derive value from the cyberspace;

16.1.3 Policy Challenges

- (a) Low level of adoption of ICT internet security standards in certain sectors
- (b) Inadequate skills in cyber security
- (c) Inadequate awareness by community of issues
- (d) .Low level of research and development in Cybersecurity

16.1.4 Strategies

- (a) The Government will promote confidence and trust in the use of ICTs. The strategy will promote confidentiality of personal information, integrity and availability of ICT services in Kenya
- (b) Enacting specific and effective legislative instruments on privacy, security, cybercrimes, ethical and moral conduct, encryption, digital signatures, copyrights, intellectual property rights and fair trade practices.
- (c) Create capacity for research in ICT-related legal and regulatory issues
- (d) Mould the present legal framework and related institutional infrastructure, as it is not yet conducive to ICT development and application.

- (e) Address the inadequate regulatory capacity, especially in the face of convergence of networks and services.

16.2 Network Security and Reliability

The communications infrastructure and networks are critical components of the national infrastructure.

16.2.1 Policy Objectives

Operators will be required to ensure that such infrastructure and networks are robust and resilient and have adequate security, redundancy and backup arrangements.

16.2.2 Strategies

- (a) Enact legislation to provide for network security and reliability and protection of critical infrastructure Information Security
- (b) Develop information security policies and guidelines to ensure protection of the confidentiality, integrity and availability of information

16.3 Child Online Protection

As the Internet permeates every aspect of the economy and society, it is also becoming an essential element of our children's lives. While it can bring considerable benefits for their education and development, it also exposes them to online risks such as access to inappropriate content, harmful interactions with other children or with adults, and exposure to aggressive marketing practices. Children online can also put their computer systems at risk and disseminate their personal data without understanding the potential long-term privacy consequences.

16.3.1 Principles of Child Online Protection

- (a) Policies to protect children online should recognise that all stakeholders share responsibility both to make a safer online environment for children by reducing online threats to children, and to support the primary role of parents in evaluating and minimising risks of harm to their children online as well as offline;
- (b) Policies to protect children online should empower children and parents to evaluate and minimise risks and engage online in a secure, safe and responsible manner;
- (c) Policies to protect children online should be proportionate to the risks, effective and balanced. They should maximise the protection against online risks faced by children without restricting the opportunities and benefits of the Internet for children as well as for other users;
- (d) Policies to protect children online should not undermine the framework conditions that enable the Internet to operate as a global open platform for communication, innovation, economic growth, and social progress. The consistency of policies designed to protect children online with other economic and social Internet policies should be carefully assessed prior to adoption and implementation;
- (e) Policies to protect children online should be consistent with fundamental values of democratic societies as they apply to all individuals including children. In particular, they should support freedom of expression, privacy protection and the free flow of information;

- (f) Policies to protect children online should be age-appropriate and accommodate developmental differences and special vulnerabilities. Where age-based restrictions are established, all stakeholders should strive to ensure that such restrictions are respected;
- (g) Policies to protect children online should be technology neutral to ensure their sustainability in a dynamic environment characterised by rapidly evolving technologies and patterns of usage.

16.3.2 Child Online Protection Strategies

- (a) Develop a legislative framework that embraces CoP comprehensively through a practical multilateral, multi-stakeholder approach (Policy, Law, Technical, Education, Awareness);
- (b) Capacity building - Develop mechanism to equip relevant stakeholders with appropriate information;
- (c) Public awareness - Develop local public awareness information and content targeted at various target audiences;
- (d) Broader cooperation - Development of framework of engagement between local and international organizations and law enforcement agencies;
- (e) Technical measures - Foster the development of technical tools and services in the market that minimize the risk of expose of children
- (f) Research – to better understand the online habits of children and youth and facilitate identification and development of mechanisms to reduce their exposure to risks and vulnerabilities online;
- (g) The Government will put in place legislation that criminalizes conduct and content that exploits the rights of children online.
- (h) The Government will prioritize the equipping of law enforcement agencies and judicial officers to handle COP-related matters.

17 HUMAN RESOURCE DEVELOPMENT AND TRAINING

17.1 Human Capital

Kenya is not the only country with insufficient numbers of skilled and experienced experts in ICT and in other professions that rely on ICT. It is therefore necessary to view Kenya’s human capital needs in the global context. Hard choices must be made between importing needed skills, and slowly nurturing them within the country. Other choices are needed on the priorities of realigning the educational and vocational training pipelines to meet the needs of our labour markets.

In addition, there are new opportunities in applying ICT to enhance education, including curriculum development, teaching methodologies, simulation laboratories, life-long learning and distance education and for teaching of not only ICT, but of all subjects and specialisations. If embraced appropriately and supported at all levels, these could transform the country’s human capital.

17.2 Policy Objectives

- (a) Increase the size and quality of ICT-skilled human resource base in Kenya;
- (b) Use ICT to improve the quality of delivery of education and training in all areas including distance learning, as well as to enhance the learning experience itself;

- (c) Give special attention to providing new learning and ICT access opportunities for women and youth, the disabled and disadvantaged, particularly disenfranchised and illiterate people, in order to address social inequities;
- (d) Develop and deploy a nationwide e-Education system that supports schools, higher education/training facilities across the country by interconnecting them with each other and with relevant knowledge centres, providing curriculum integration while also generating information to better shape policies, strategic plans and tactical decisions for developing education and vocational training in Kenya;
- (e) To foster interest in research and development activities related to ICT;
- (f) Creating an environment that is conducive to foreign skills and skilled returning diaspora to come to Kenya and add capacity.
- (g) Expand and improve adult-education, life-long learning and both general and digital literacy programmes, notably for retraining and re-skilling the existing workforce. Making the use of ICT part of everyday life without excluding those that need skills development;

17.3 Strategies

The realization of the policy objectives will depend on the availability and adequacy of skilled human resource capacity. The Government will:

- (a) Integrate ICT subjects in the curriculum at all levels of education;
- (b) Incentivize industry with ICT specialization to conduct their own training programmes and to contribute to institutional training programmes;
- (c) Establishing educational networks for sharing educational resources and promoting e-learning at all levels including distance education, virtual institutions, and integrate it with other existing resources.
- (d) Facilitate Public Private Partnerships to mobilize resources in order to support e-learning initiatives
- (a) Encourage skills transfer programs where foreign experts are involved in ICT projects implementation;
- (b) Encourage closer collaboration between academia and industry to align curriculum with advancement in technologies and market needs. For example: offering industrial attachment to students, having mentoring programs, having professionals from the industry to offer tutorials to students/lecturers ;
- (c) Encourage the establishment of ICT Centres of Excellence;
- (d) Encourage and support ICT training for decision makers, community and civil society leaders as well as private and public sector executives
- (e) Creating opportunities and providing assistance for the disadvantaged; people with special needs, women and the youth to acquire ICT skills through e-inclusion and e-accessibility activities and programmes.
- (f) Encourage universities to establish post-doctoral research fellow positions on contractual and attractive terms in order to attract world-class researchers In order to have global competitiveness of ICT products and services.

17.4 Establishment of ICT Centres of Excellence

In order to increase diffusion of ICT knowledge, the Government will establish ICT Centres of Excellence to promote capacity building and innovation as stipulated in the National ICT Master Plan.

18 KNOWLEDGE ECONOMY

18.1 Introduction

The digital economy has become one of the most powerful engine to drive Kenya's economic development. The shifting toward the digital economy expected to facilitate Kenya's goal of creating a model of economic growth that is based on productivity, innovation and consumption.

18.2 Electronic Commerce

In recognition of the important role that e-commerce plays in economic development, its use shall be promoted in trade and investments as a means of integrating Kenya into the global economy. To this end, the Government will:

- (a) Support the development of e-commerce by enhancing existing legislation to support e-business including m-commerce;
- (b) Establish the framework for the role of intermediaries within the scope of e-commerce. To this extent, there shall be developed rules on the formal recognition of intermediaries, their role as well as their limitation from liability in e-transactions.
- (c) Support promotional campaigns to raise public awareness on the potential opportunities presented by e-commerce;
- (d) Develop a transparent, stable and effective legal operating environment and legislation that protects innovation and investment in e-commerce platforms;
- (e) Promote collaboration with the international community in developing an equitable framework for e-commerce and
- (f) Promote a secure electronic fund transfer and electronic transaction payment system

18.3 ICT Trade & Export

In order to increase the contribution of the ICT industry to the national GDP, the government shall consider the following:

- (a) Adopting Open Data principles: - in order to spur digital innovations around public data held by county and national governments;
- (b) Promote local software industry:- the government will encourage giving preferential treatment to local software developers/solutions when tendering e-Government projects including requiring that a minimum percentage of the contract sum is reserved for local partnerships for skill-transfer purposes;
- (c) Support regional ICT exports:- by subsidizing Kenyan ICT companies to expand into regional markets;
- (d) Attract foreign ICT investments: - by ensuring a predictable institutional & legislative environment supported by good infrastructure (high quality broadband, clean energy, security, etc.).

19 EMERGING TECHNOLOGIES AND SERVICES

19.1 Introduction

The dynamic nature of ICT's continues to create new and emerging issues which pose new challenges in the governing, administration and regulation of ICT usage. Technological changes in ICT demand that there is corresponding changes in ICT infrastructure, applications, devices, legal and regulatory environment among others. These technological changes come with immense challenges in terms of resources, skills, infrastructure, and other amenities required in order to adapt to the new and emerging ICT technologies. Some of the emerging issues in ICT Include: -

19.2 Internet of Things (IoT) and M2M Communications

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (IP addresses). IoT will address the problem of capturing data about things in the real world by reducing or even eliminating dependency of computers on human beings for information in favour of a system of interrelated devices with the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

For Internet of Things to be deployed successfully there is need to increase IP addresses, number of smart nodes and the amount of upstream data the nodes generate which is expected to raise new concerns about data privacy, data sovereignty and security.

19.2.1 Policy objectives

- (a) To undertake capacity development (Human & Technology) for IoT specific skill-sets for domestic and international markets
- (b) To undertake Research & development for all the assisting technologies
- (c) To develop IoT products addressing national needs

19.2.2 Strategies

- (a) Identify domain specific applications/ prototypes which are of highest priority;
- (b) Promote Institutional capacity building;
- (c) Appoint relevant nodal organization for driving and formalizing globally acceptable IoT standards;
- (d) Fund R&D in IoT for Kenyan market specific applications of common good The Government
- (e) Develop a National IoT Strategy

19.3 Big Data

Big data is data that exceeds the processing capacity of conventional database systems. The data is too big, moves too fast, or doesn't fit the structures of known database architectures. To gain value from this data, alternative ways to process it must be choose. One of the ways is Machine to Machine communications whereby information is collected and processed by machines rather than human beings. The value of big data to an organization falls into two categories: analytical use, and enabling new products. Big data analytics can reveal insights hidden previously by data too costly to process, such as peer influence among customers, revealed by analysing shopper's transactions, social and

geographical data. Being able to process every item of data in reasonable time removes the troublesome need for sampling and promotes an investigative approach to data, in contrast to the somewhat static nature of running predetermined reports contained in data bases.

However Big Data and M2M communications comes with many challenges such as data of high volume, high velocity, high variety and veracity which requires new forms of processing to enable enhanced decision making, insight discovery and process optimization., privacy and data ownership, authenticity and security of different kinds of data, skills scarcity, and changing the attitudes of data professionals.

19.3.1 Policy objectives

- (a) Develop policy and legislation on information privacy and data ownership;
- (b) Follow best practice on Standards on encryption technologies for M2M communications;
- (c) Promote National addressing policy; and

19.3.2 Strategies

The Government will:

- (a) Develop a Big Data Strategy in consultation with stakeholders;
- (b) Promote and accelerate the development, utilization and sharing of big data.
- (c) Promote the construction of a national big data platform and big data centres
- (d) Boost and promote big data collection, storage, processing, analysis, visualization and other key technologies while upgrading big data technology infrastructure;
- (e) Promote big data commercialization as well as the development of hardware and software products for big data applications.

19.4 Over the Top Services (OTTs)

19.4.1 Introduction

Telecommunications and broadcast infrastructure now carry data packets for internet distribution. OTT services operate by using these networks as packet transport networks to deliver content between devices. OTT services can also bypass territorial regulations.

OTTs include both free and paid services. As a result they form a significant challenge to traditional operators by competing with traditional voice, messaging and video services that are charged to the consumer and form the core business model of the operator. . OTT services however are one of the main drivers of internet adoption by consumers.

19.4.2 Policy Objectives

Promote internet adoption and encourage locally innovated and hosted OTT services to thrive alongside similar international services

19.4.3 Strategies

- (a) Encourage eventual investment and contribution to the local economy by global OTT service providers;
- (b) Encourage local peering, and local content caching partnerships;

- (c) Encourage locally regulated telecommunications operators and broadcasters to develop their business models in order to effectively stay competitive in light of the challenges of OTTs

19.5 Net Neutrality

Net neutrality is the principle that all Internet content and applications regardless of the source are treated the same. A net neutrality policy may be developed to ensure fair competition between different content and service providers. However, a blanket open Internet policy could inadvertently undermine key policy objectives such as the promotion of innovation local content production and universal service

19.6 Financial Technology Interoperability

19.6.1 Emerging Financial Technologies

Since the launch of mobile money services in Kenya in 2007, it has been widely adopted by both the Government and Private sector as a payment platform that enables users to access financial and non-financial products via mobile phones. The Government recognizes the economic importance of financial technology services and the growing need to conveniently access them across the country. To address challenges faced by financial technology services so as to drive financial inclusion across the country, the government will:

- (a) Encourage financial technology service providers to share their infrastructure and networks in transparent, fair and non-discriminatory basis;
- (b) Provide incentives to financial technology service operators
- (c) Collaborate with the Central Bank of Kenya in developing financial technology services interoperability policy that fosters competition;
- (d) Promote innovation in financial technology services;
- (e) Ensure the financial technology services infrastructure sharing is efficient, cost-effective, protects public interest and guarantees high security and quality of service.

19.6.2 Mobile Money

Mobile money in Kenya has enabled customers convert cash to and from electronic value (i.e. e-money), as well as use mobile money to perform transfers or make payments. This was borne out of the need to serve low-income customers profitably, particularly in rural areas.

Government has supported a market led approach to enable the thriving of mobile money services particularly by mobile money providers. Further, the Government has encouraged digital financial inclusion amongst Kenyans and this has also contributed to the uptake of Mobile Money services in Kenya. Digital Financial Inclusion has in turn contributed economic growth, offered convenience and consumer protection, and has reduced the vulnerability of a country's financial system by lowering the risks caused by the informal economy and widespread use of cash.

The national payment regulations that have been launched by the National Treasury have made specific provisions for mobile money interoperability standards from an infrastructure perspective

19.6.3 Policy Objectives

- (a) Provide an open and level playing field that offers mobile money service;

- (b) Provide for protection of intermediaries offering mobile money transfer services;
- (c) Encourage Interoperability between operators offering financial services taking into account different commercial models, technical feasibility, standardisation and different models of mobile money interoperability;
- (d) Facilitate dialogue between providers, ensuring that mobile money transfer services bring value to the customer, makes commercial sense, is set up at the right time, and regulatory risks are minimised.

19.6.4 Strategies

- (a) Align relevant banking and communication regulations;
- (b) Put in place measures to address the risk of money laundering and terrorist financing in mobile money services;
- (c) Encourage relevant Government agencies to develop legislation and regulations that embrace local innovation and allow a new class of mobile service providers to sustainably provide digital payments and transfer services

20 E-SERVICES

20.1 Policy Objectives

Promote collaborations in e-services between government agencies, private sector, and international organizations

20.2 Strategies

- a) Promote local mobile applications for e-services
- b) Encourage ICT infrastructure deployment across the country by leveraging on wireless broadband technologies to facilitate e-services

21 FISCAL MEASURES

The Government will introduce policy measures to stimulate increased investment and growth in the ICT sector in order to create a favourable investment climate for the development of a globally competitive ICT enabled and knowledge economy.

21.1 Policy Objectives

The Government's overall objective will be to promote favourable fiscal policies to ensure that the country's ICT products and services are globally competitive

21.2 Strategies

- (a) Removal or reduction of excise duties on mobile money services and airtime to promote financial inclusion and adoption of broadband access.
- (b) Removal of taxes on broadband devices;
- (c) Tax incentives to encourage local manufacture of ICT devices and infrastructure components;
- (d) Removal of withholding tax on ICT training services;

- (e) Support ICT initiatives by private sector through subsidies and/or tax incentives.
- (f) Promote duty free zones and incubation centres to attract ICT investment; and
- (g) Make budgetary provision to spur the growth of ICT.

22 RESEARCH AND DEVELOPMENT

The key rationale for marketing Kenya as an ICT destination is that previous focus of the ICT policy had been on liberalization and infrastructure development, but that by 2007 there was infrastructure yet the level of innovative usage had not been created. The Government established the National Research Fund to facilitate research for the advancement of science, technology and innovation.

22.1 Policy Objectives

The Government's objective is to support initiatives aimed at positioning Kenya as a preferred ICT destination of choice in the EAC region by encouraging R&D in ICT

22.2 Strategies

- (a) Promote ICT application research to address each policy priority area in the development sector;
- (b) Revamp ICT institutions to market the country as a preferred ICT destination and to facilitate the sharing of information;
- (c) Promote and encourage Research and Development (R&D) in ICT to address needs in areas such as Innovation, Entrepreneurship and E-services;
- (d) Encourage industry to invest adequately in R&D to promote local industrial growth and hasten technology transfer;
- (e) Promote and encourage transfer of technology between Kenya and international institutions and experts and fund the transfer of technology in conjunction with voluntary stakeholders.
- (f) Encourage the development of and stimulate the growth of a market for local ICT products and services;
- (g) Encourage universities and tertiary institutions to establish post-doctoral fellow research posts on contract terms to undertake R&D activities in collaboration with industry players and Government agencies; and
- (h) Establish R&D institutions in the counties to instil the spirit of innovation.

23 E-GOVERNMENT

23.1 Introduction

The overall goal of e-Government is to make the Government more result-oriented, efficient and citizen-centred. The e-Government strategy will focus on redefining the relationship between Government and citizens with the objective of empowering them through increased and better access to government services. The e-Government initiative will be a shared vision between the National and County Governments and the private sector and the implementation process will involve all

stakeholders. The broad objectives of e-Government in all aspects of National and County governments will be to:-

- (a) Improve collaboration between Government agencies and enhance efficiency and effectiveness of resource utilization;
- (b) Improve Kenya's competitiveness by providing timely information and delivery of Government services;
- (c) Reduce transaction costs for the Government, citizens and the private sector through the provision of services electronically;
- (d) Provide for access to information held by public institutions, provide for information security and protection of personal information; and
- (e) Ensure automation of Government services and the extension of establishment of "Huduma" centres: one-stop centres for accessing all Government information and services by the citizens; to sub-counties.

23.2 E-Government Applications:

In order to improve productivity & ensure all citizens participate effectively in the information society, the government shall consider the following:

- (a) Automation of Government functions. – by undertaking Business Process re-engineering of government departments in order to identify opportunities for automation (e-Health, e-Transport, e-Agriculture, e-Lands, etc.);
- (b) ICT Integration into the economy - by promoting the use of ICTs across all public and private sectors (within SMEs) in order to increase productivity and competitiveness of the overall economy;
- (c) ICT integration in Education – by reviewing and ensuring that the basic & tertiary education curriculum and teaching methods are geared for the knowledge economy (Digital Literacy Program);
- (d) Digital Villages- by promoting the creation of information centres/digital villages (e.g. Huduma centres) across all counties;
- (e) Providing affordable public internet access points (Wi-Fi) built around digital primary and secondary schools. ”.

24 ENVIRONMENTAL PROTECTION AND ICTs

The Government will promote the use of environmentally-friendly IT products to address environmental and cost issues. This will include developing regulations for recycling and disposal of used ICT equipment. The Government will also enhance climate change adaption, mitigation and disaster management efforts through ICTs.

Development of modern broadcasting facilities will be carried out sensitively to minimize their environmental impact. As a prerequisite for grant or renewal of licenses, applicants must demonstrate their readiness to minimize the effects of their broadcasting infrastructure on the environment. This should include provision of appropriate recycling/disposal facilities for waste that may contain toxic substances.

It is important that in development of ICT facilities, due regard is taken so as to minimize their environmental impact. The Government will therefore ensure that ICT players and consumers minimize the effect of infrastructure appliances, machines devices and tools. To this end, the Government will provide incentives for the adoption of best practices to encourage reduction of carbon footprint, efficient energy management, e-waste recycling, water tower restoration, afforestation and eco-rating of ICT products.

Government will enact laws on sectors of society to enforce environmentally friendly disposal of ICT hardware products.

25 EQUITY PARTICIPATION

The Government will encourage Kenyans to participate in the sector through equity ownership. Consequently, any firm licensed to provide ICT services shall have at least 30 percent Kenyan equity ownership. Licensees shall have 3 years to meet the local equity ownership threshold and may apply to the Cabinet Secretary for an extension with appropriate justifications.

However, for all listed companies, the equity participation shall conform to the existing rules and regulations of the Capital Markets Authority (CMA).

The Government will support upcoming small-scale operators through proactive measures.

26 REGIONAL INTEGRATION OF ICT ECOSYSTEM

26.1 Introduction

As a member state of the East African Community (EAC) and a signatory to the East African Common Market Protocol, the Government is committed to implement policies and programmes to promote regional integration. In this regard the Government is at the forefront in championing the harmonization of ICT policy, legal and regulatory frameworks within the EAC region. The Government will remain proactive in exploring new areas of collaboration with EAC member states on ICT policy and regulatory issues and related matters that serve to advance the objectives of the EAC Common Market Protocol for the benefit of the citizens of the East African region.

26.2 Policy Objectives:-

- (a) To enhance regional integration

26.3 Strategies

- (a) secure cross border broadband connectivity to enhance cross border trade in goods and services;
- (b) Promote high speed broadband connectivity between the major cities of the East African Community, COMESA and Africa to facilitate electronic transactions between the African Union Member States
- (c) participate in the “One Network Area” initiative that aims at ensuring a marked reduction in roaming rates for various communications services within the region;

- (d) Promote Inclusion of ICTs as components of all ongoing and upcoming regional projects as has been the case with northern corridor infrastructure projects; and

27 POLICY, LEGAL AND REGULATORY FRAMEWORK

27.1 Introduction

The Ministry of ICT will provide strategic leadership in the implementation of this policy in consultation with other stakeholders.

27.2 Institutional Arrangements

The following will play important roles in the development of the ICT sector:

- (a) Ministry of ICT;
- (b) County Governments
- (c) National Communications Secretariat
- (d) Communications Authority of Kenya
- (e) ICT Authority
- (f) Communications and Multimedia Appeals Tribunal
- (g) Postal Corporation of Kenya
- (h) Media Council of Kenya
- (i) Development partners;
- (j) Civil Society;
- (k) Investors and Operators;
- (l) Consumers/users; and
- (m) ICT Professional Bodies.

27.2.1 Ministry of ICT

The Government's role in the sector will include, inter alia:

- (a) Strengthen existing institutions and assign appropriate ICT priority areas to them to champion and deliver on the objectives of the policy. In particular, specific targets will be agreed upon and reviews made to determine the extent to which they are being realized;;
- (b) Develop, coordinate and implement both the ICT policy and the monitoring and evaluation (M&E) framework across all sectors of the economy to ensure that the implementation of ICT programmes and projects is effective to support the social and economic sectors of the economy; and
- (c) Provision of an enabling environment for investment in the sector.
- (d)

27.2.2 County Governments

The role of county governments is to:

- Promote ICT adoption and investment within the counties

27.2.3 National Communications Secretariat (NCS)

The National Communications Secretariat which is the Communications Policy Advisory Secretariat, established through the Kenya Communications Act of 1998 will continue to be the policy advisory arm of the Government on all matters pertaining to the ICT sector. NCS will carry out research related to ICT policy and the reports and results of the research.

27.2.4 Communications Authority of Kenya (CA)

The CA as the Sector Regulator, will play its role as the converged regulatory body for the sector in accordance with the relevant provisions of the Constitution of Kenya, 2010.

27.2.5 Information and Communications Technology Authority of Kenya (ICTA)

The ICT Authority will continue to play its broad mandate of fostering the development of ICTs in Kenya (including businesses, innovation and capacity building), implement and maintain systems and technology for the Government, oversee the development of integrated information and communication technology (ICT) projects, and to develop and enforce ICT standards for the Government. The authority is also tasked with enhancing the supervision of the Government electronic communications.

27.2.6 Communications and Multimedia Appeals Tribunal

Disputes arising between parties in the ICT sector will be heard and settled by the Communications and Multimedia Appeals Tribunal (formerly the Communications Appeals Tribunal) which was reconstituted through the Kenya Communications (Amendment) Act, 2013.

27.2.7 Postal Corporation of Kenya

The Postal Corporation of Kenya is a Public Commercial Enterprise operating under the PCK Act of Parliament 1998. The Corporation's mandate includes provision of accessible, affordable and reliable Postal Services to all parts of Kenya as the Public Postal Licensee.

27.2.8 Media Council of Kenya

The Media Council of Kenya established through the Media Council Act, 2013 will play its role of promoting and protecting the freedom and independence of the media, prescribing standards of media practitioners and media enterprises, facilitating resolution of disputes between the government and the media and between the public and the media and intra media and establish media standards and regulate and monitor compliance with the media standards.

27.2.9 Development Partners

Development partners will play a complementary role towards realization of development of the goals and objectives of this policy. Within the ICT policy framework, the Government will foster linkages with various development partners to provide financial, material, technical assistance as well as build capacity for sustainability.

27.2.10 Civil Society

The role of the Civil Society will be to inform the policy making process by making relevant contributions

27.2.11 Investors and Operators

Investors, operators and service providers play an important role in the sector, and will be required to:

- (a) Participate in the provision of universal service/access;
- (b) Develop a sector with efficiency, credibility, commercial integrity and good corporate governance;
- (c) Provide quality and sustainable service with pluralism of choice to consumers; and
- (d) Keep abreast with and participate in ICTs development both regionally and internationally.

27.2.12 Consumers and Users

Consumers and users will be expected to participate in ensuring:

- (a) Universal access and affordability of ICT services;
- (b) Quality of services is maintained; and
- (c) Continued review of Government policy in accordance with technological and consumer trends.

The Government will support consumer protection efforts in accordance with Section 46 of the Constitution of Kenya, 2010.

27.2.13 ICT Professional Bodies

The Government will recognize and encourage the formation of national ICT professional bodies registered under the laws of Kenya to foster professional ethics, standards and human resource development in the sector.

28 MONITORING AND EVALUATION

Monitoring and Evaluation of this policy will be part of the national integrated monitoring and evaluation system in order to maintain clear linkages between the implementation of this policy and the 3rd Medium Term Plan (MTPIII) of Vision2030.

The realization of the outputs of this policy will require consistent monitoring and evaluation of the outcome indicators that will help policymakers to:

- (d) Quantify achievements regarding the implementation of ICT policy measures as foreseen in national ICT plan(s);
- (e) Identify critical success factors, international best practices and conditions, as well as reasons for failure to be able to adjust and reform ICT policies; and
- (f) Formulate new policy decisions to support and accelerate ICT penetration in government, businesses and the society

The Ministry of ICT together with other stakeholders that includes the Communications Authority of Kenya, National Communications Secretariat and ICTA shall carry out monitoring and evaluation at different levels of the impact of implementation of this policy. A monitoring and evaluation framework shall be developed to ascertain medium and long-term impact of the policy across Government arms. The policy shall receive a mid-term review every three (3) years and a long term review every five (5) years in order to cater for the fast rate of technology innovation and advancement.