

*Evidence for ICT Policy Action*

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# Understanding what is happening in ICT in Kenya

A supply- and demand-  
side analysis of the  
ICT sector

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## Research ICT Africa

Research ICT Africa (RIA) is an information and communication technology (ICT) policy and regulation research network based in Cape Town, South Africa, under the directorship of Dr. Alison Gillwald. As a public interest think tank, RIA fills a strategic gap in the development of a sustainable information society and knowledge economy. The network builds the ICT policy and regulatory research capacity needed to inform effective ICT governance in Africa. RIA was launched a decade ago and has extended its activities through national, regional and continental partnerships. The network emanates from the growing demand for data and analysis necessary for appropriate but visionary policy required to catapult the continent into the information age. Through development of its research network, RIA seeks to build an African knowledge base in support of sound ICT policy and regulatory design, transparent implementation processes, and monitoring and review of policy and regulatory developments on the continent. The research, arising from a public interest agenda, is made available in the public domain, and individuals and entities from the public sector, private sector and civil society are encouraged to use it for purposes of teaching and further research or to enable them to participate more effectively in national, regional and global ICT policymaking and governance.

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## Executive summary

This Research ICT Africa (RIA) Kenya information and communication technology (ICT) Sector Performance Review (SPR) report is based on scrutiny of both demand- and supply-side perspectives on the ICT sector in Kenya. The research was undertaken in 2011-12, but the findings in some cases cover the years 2009 and 2010 (in order to provide an informative picture of ICT sector elements which were not available for 2012). The purpose of this RIA ICT SPR, as with the other 11 national SPRs conducted by RIA network researchers in 2012, is to enrich the evidence base supporting ICT sector developments in selected African countries – in order to better enable comparison of policy outcomes in different countries against national strategies and sector performance.

Progressive development has taken place, in some respects, recently in the Kenyan ICT sector. However, while the national ICT policy of March 2006 has been under review from 2009, no progress has been made in relation to its updating. Before the Kenya Information and Communications Act Cap. 411A, as revised in 2011 (previously the Kenya Communications (Amendment) Act of 2009), the most influential document regarding ICT legislation and regulation in Kenya had been the Kenya Communications Act of 1998 (ROK, 1998). There are other Bills critical to the ICT sector, such as the Data Protection Bill and Access to Information Bill, which are waiting to be tabled in Parliament, while the Media Bill is under discussion by stakeholders. Further, the CCK is to be established as a commission and the process has started with the ICCK Bill under discussion, too. Also pending is the Freedom of Information Bill, which proposes a Commission be established to facilitate enforcement of data privacy and security.

The new Constitution, promulgated in August 2010, includes in the Bill of Rights provisions on fundamental rights and freedoms relevant to access to, and use of, both infrastructure and content, in addition to governance principles and structures mainly concerned with regulating access and implementing constitutional requirements on content transmitted through the infrastructure. The current Act may need to be reviewed to address these constitutional provisions and to accommodate regulation of emerging trends in the ICT industry, such as broadband. It is also important that Kenya aligns with international best practice – by, for instance, creating separate legislation for critical aspects of the ICT sector such as e-transactions and broadband. The review of the Act also needs to address issues such as legal recognition of electronic records and signatures and creation of new offences in relation to electronic records and transactions, including cybercrime offences. A pending activity under the current Act includes operationalisation of the Universal Service Fund.

Key developments in the sector include the increased convergence of broadcasting and telecommunications (and the migration, which is in progress, to digital-only terrestrial transmission of terrestrial TV); increased bandwidth via access to new undersea cables; and implementation of the National Optic Fibre Backbone Infrastructure (NOFBI) project (now in its phase 2). The landing of the undersea cables brought high consumer expectations, but retail broadband costs have not been significantly reduced, albeit with improved quality.

The process of migrating to a unified licensing regime has progressed well, with 844 service providers having migrated to the new regime before the end of 2011.

The market players in the mobile services sub-sector are Safaricom Kenya, Airtel Networks Kenya (formerly Zain), Telkom Kenya (Orange) and the Essar Telcom Kenya (Yu). In the fixed telecommunication services sub-sector, there are two main players, Telkom Kenya and Popote wireless. In internet and data services, the market players are the four mobile operators, the two fixed network operators and internet service providers (ISPs), Data Networks (KDN), Jamii Telecom, Access Kenya, and Wananchi online. The mobile operators have since the landing of the undersea cables, become the largest ISPs.

In terms of ICT access, fixed-line service has continued to perform poorly, with a rapid decline in growth. Meanwhile, the number of mobile phones subscribers has had a dramatic growth, with 29million subscribers by June 2012. The 50% reduction in the mobile termination rate (MTR) in 2010, from KES4.42 to KES2.21, sparked price competition among operators in the mobile market. Further, the acquisition of Zain by Airtel in 2010, whose business strategy targets the mass market, contributed to intensified price competition among mobile operators, leading to lower and more affordable tariffs.

The pricing of ICT services has generally decreased, since 2009, due to the entry of more operators into the industry, lower MTRs, reduction in end-user tariffs, and increased consumer uptake.

The use of mobile technology to provide money transfer services has spread widely across the country. All four of the mobile operators and two licensed content service providers (Mobikash Africa and Mobile Pay) are currently offering mobile money transfer services. Safaricom's M-Pesa, introduced in March 2007, is the largest, accounting for 82.4% of subscribers to mobile money transfer service. Other mobile money providers are Airtel Money (formerly Zain's Zap, introduced in January 2009), Telkom Kenya's Orange Money (Iko Pesa, introduced in November 2010) and finally Essar's Yu Cash (introduced in December 2009). Between March 2011 and March 2012, total mobile money deposits grew by 42.4% and there were about 19million mobile money transfer subscriptions.

This report includes the findings from the RIA 2012 Kenya Household and Individual ICT Access and Use Survey and Informal Sector ICT Access and Use Survey, with the Surveys targeting a total of 1 200 households and 500 businesses. The report also includes findings from the RIA 2012 Telecom Regulatory Environment (TRE) assessment for the ICT sector Kenya, which is based on perceptions of key stakeholders. The TRE assessment methodology, while somewhat informal and providing merely a snapshot of sentiment within the industry at a particular moment in time, provides indications of stakeholder perceptions which are potentially powerful signs, and/or determinants, of regulatory risk within the sector which, in turn, can affect investor confidence. The TRE assessment respondents gave their views on six areas of ICT regulation: interconnection, tariff regulation, quality of service (QoS), market entry, access to scarce resources, and universal service obligations (USO).

Based on supply- and demand-side findings, this report draws some conclusions and makes recommendations. The recommendations include a call for creation of a detailed plan for ICT policy implementation aligned to Kenya's Vision 2030 development blueprint and the new Constitution of 2010. The study also notes overlaps in the roles of some of the key ICT policy and regulatory institutions, and the resulting need to review the framework for ICT policy formulation and implementation. Another recommendation is that there is a need to address certain urgent challenges affecting the sector, including the challenges of lengthy procurement processes, cable theft, shortfalls in cyber security, a lack of data protection policy, and the prevalence of piracy of software, counterfeit electronics and computer hardware. Necessary measures to address these challenges are discussed in the report.

# Table of contents

<b>Introduction</b>	<b>1</b>	Television and radio access and use	21
Economic, social and political development	2	Computer access and use	22
Economic overview	2	Public payphone access and use	26
Social overview	3	Internet and mobile telephony use for social networking	27
Political overview	3	ICT use for social and economic development	30
<b>Kenya's ICT policy, legal and regulatory setting</b>	<b>4</b>	Access to Kenya National Examinations through mobile phones and internet	30
Policy framework	4	Kenya Open Data Initiative	31
Regulatory framework	5	<b>Informal sector small and medium enterprises (SMEs)</b>	<b>32</b>
Institutional arrangements	8	<b>Telecom Regulatory Environment (TRE) assessment</b>	<b>35</b>
<b>Kenya's ICT market</b>	<b>10</b>	Introduction	35
Market structure and players	10	Data collection methodology	35
Operator market shares	11	TRE assessment findings	37
Financial Performance	13	Observations from the TRE assessment findings	43
<b>Penetration and pricing</b>	<b>14</b>	<b>Conclusions and recommendations</b>	<b>44</b>
Fixed-network voice services	14	<b>References</b>	<b>45</b>
Mobile GSM and CDMA services	15		
Mobile Termination Rates (MTRs)	16		
Internet and broadband	18		
Mobile money	19		
<b>Access and use</b>	<b>20</b>		
Methodology	20		
Emerging developments in access and use	20		
Mobile number portability (MNP)	20		
Counterfeit mobile phones	20		
Migration from analogue to digital transmission of terrestrial broadcasting	21		
Monitoring of internet content, and intermediate liabilities	21		

## Acronyms and abbreviations

<b>ASP</b>	applications service provider	<b>NFP</b>	network facilities provider
<b>BPO</b>	business process outsourcing	<b>NOFBI</b>	National Optic Fibre Backbone Infrastructure
<b>CCK</b>	Communications Commission of Kenya	<b>QoS</b>	quality of service
<b>CDMA</b>	code division multiple access	<b>RFP</b>	request for proposal
<b>CEP</b>	Consumer Education Outreach Programme	<b>RTO</b>	rural telecommunications operator
<b>CSP</b>	content service provider	<b>SCP</b>	structural conduct-performance
<b>CTRO</b>	commercial trunked radio operator	<b>SME</b>	small and medium enterprise
<b>DEG</b>	Directorate of e-Government	<b>SMP</b>	significant market power
<b>DMP</b>	dominant market power	<b>SNO</b>	Second National Operator
<b>GDP</b>	gross domestic product	<b>STI</b>	science, technology and innovation
<b>GITS</b>	Government Information Technology Services	<b>TEAMS</b>	The East African Marine System
<b>GSM</b>	Global System for Mobile Communications	<b>TRE</b>	Telecom Regulatory Environment
<b>ICCK</b>	Independent Communication Commission of Kenya	<b>ULF</b>	unified licensing framework
<b>ICT</b>	information and communication technology	<b>USO</b>	universal service obligations
<b>ISP</b>	internet service provider	<b>UTU</b>	Universal Telecommunication Union
<b>ITES</b>	information technology enabled services	<b>VAS</b>	value added services
<b>KBC</b>	Kenya Broadcasting Corporation	<b>VoIP</b>	voice over Internet Protocol
<b>KCA</b>	Kenya Communications Act		
<b>KENET</b>	Kenya Education Network		
<b>KICTB</b>	Kenya ICT Board		
<b>LLO</b>	local loop operator		
<b>LRIC</b>	long-run incremental cost		
<b>LTE</b>	long-term evolution		
<b>MoIC</b>	Ministry of Information and Communication		
<b>MNP</b>	mobile number portability		
<b>MTP</b>	Medium-Term Plan		
<b>MTR</b>	mobile termination rate		
<b>NCS</b>	National Communications Secretariat		

## Definition of terms

### **Adult literacy rate**

The percentage of people aged 15 and above who can read and write, with understanding, a short, simple statement about their everyday life.

### **Digital dividend**

The radio frequency spectrum that will become available when the switch-off of analogue television signals is completed.

### **Household**

A person or group of persons, irrespective of relation, who normally live together in the same housing unit or group of housing units and have common cooking arrangements.

### **Head of household**

A person who economically supports or manages the household or, for reasons of age or respect, is considered as the head by members of the household or declares himself as head of a household. The head of a household could be male or female.

### **Members of a household**

(1) all persons who lived and ate with the household for at least six months, including those who were not within the household at the time of the Survey and were expected to be absent from the household for less than six months; and (2) all guests and visitors who have eaten and stayed with the household for six months or more; and (3) housemaids, guards, baby-sitters, etc. who have lived and eaten with the household, even if it was for less than six months.

### **Business**

Any business with a physical presence in the EA with the intent to make profit.

### **Institution**

Any institution located within an EA, including schools, clinics, police stations or any other government office.

### **Re-farming spectrum**

Using existing 2G and 3G spectrum for long-term evolution (LTE) mobile technologies.



## Introduction

This 2012 RIA Kenya information and communication technology (ICT) Sector Performance Review (SPR), which is an update of similar reviews carried out in 2007 and 2009 under the auspices of the RIA network, makes use of both primary and secondary data sources. The secondary sources include economic survey reports, Communications Commission of Kenya (CCK) annual reports, quarterly statistical reports by CCK, Vision 2030 reports, and the Constitution of Kenya, among others. The primary sources of data are three pieces of RIA Kenya research: the RIA 2012 Kenya Household and Individual ICT Access and Use Survey; the RIA 2012 Kenya Informal Sector ICT Access and Use Survey, and the RIA 2011 Kenya TRE assessment.

This SPR reviews the ICT sector in Kenya from both supply- and demand-side perspectives, providing a review of the realities of the Kenyan ICT sector in 2012 and, where data were available and relevant, the realities of the preceding years between 2009 and 2011. The study's approach is similar to that adopted for the SPR of 2010, but with two new indicators added, namely (1) informal sector small and medium enterprise (SME) and (2) household and individual access indicators. The indicators are as follows:

- socio-economic indicators;
- fixed-line service indicators;
- mobile telephone service indicators;
- broadband service indicators;
- public payphone service indicators;
- e-government access indicators;
- SME access indicators;
- household access indicators; and
- other indicators that do not fall into the above categories.

Analysis of the survey data forms the basis of this report, which is structured around eight sections. This first section reviews social, economic and political developments in Kenya. Section two explores the policy, legal and regulatory framework in the ICT sector, and further reviews the various institutions mandated to spearhead the ICT sector. Section three analyses the market structure, and the sector players, including their market share and financial status. Section four focuses on the supply side, analysing penetration and pricing in relation to mobile services, fixed services, internet and broadband services. Section five focuses on demand, analysing access and use. Section six addresses SME sector use of ICT services. Section seven focuses on the TRE assessment, and section eight provides the conclusions and recommendations.

## Economic, social and political development

### Economic overview

According to the Economic Survey Report 2012, Kenya's population is 39.5 million. The report further states that the real growth in gross domestic product (GDP) was 4.4% in 2011, a reduction from the 5.8% rate recorded in 2010 after slower growth rates of 1.5% and 2.7% in 2008 and 2009 respectively (RoK, 2012a). The expansion in 2010 was due largely to growth in the tourism, telecommunications, transport, and construction sectors as well as a recovery in the agriculture sector. Some of the gains made in 2010 were reversed in 2011, mainly due to poor performance in sectors such as transport and communications and particularly agriculture. Unfavourable weather conditions in some regions, the high cost of agricultural inputs, the weakening of the Kenya shilling and the high inflation rate contributed to this reduction (see Table 1).

**Table 1: Economic indicators**

	Sector	2010	2011
GDP growth		5.8%	4.4%*
Percentage contribution to GDP	Agriculture and forestry	21.4%	24%*
	Mining and quarrying	0.7%	0.7%*
	Manufacturing	9.9%	9.4%*
	Transport and communications	10%	9.7%*
	Building and construction	4.3%	4.1%*
	Real estate, renting and business services	4.8%	4.5%*
	Education	6.2%	5.8%*
Total population (in millions)		38.5	39.5*
Urbanisation	4.2% annual rate of change (2010-15 est.)	22%	
Annual average inflation rate	4.1%	4.5%	18.9% (Dec 2011) 5.32% (Sept. 2012)
Interest rate	Central Bank rate at	6% (Dec 2010)	18% (Dec 2011) 13% (Sept 2012)
Life expectancy (years) (World Bank figures)		56	57
Literacy rate	Adult females (% of females aged 15 and above)	79.7% (2010)	
	Adult males (% of males aged 15 and above)	90.7% (2010)	

Source: Central Bank of Kenya, Economic Survey (2012), Index mundi (2012a; 2012b), World Bank data (2012), (\*provisional)

Kenya's economic recovery in 2010, after a series of shocks – including, in 2008-09, post-election violence, drought, and global food and financial crises – was broad-based, with the agricultural sector expanding at 5%, industry at 7.6%, and services at a moderate 4%. The economy also benefited from the government's fiscal stimulus measures mainly targeted at infrastructure and agriculture. Favourable weather conditions contributed to good agricultural output (with lower food prices) and more reliable hydro energy, which in turn stimulated manufacturing. Good weather contributed to high volumes of tea production, which also benefited from high global prices. However, coffee output recovered more slowly (despite an increase in global coffee prices) and the horticultural sector contracted due to Europe's slow recovery and the transport impact of the Icelandic volcanic ash, which disrupted access to European markets. The services sector recorded moderate growth of 4% in 2010. This sector has been driving growth in the past decade, due chiefly to strong growth of the ICT and financial services sectors, as well as growth in wholesale and retail trade.

According to the Economic Survey Report of 2012 (RoK, 2012a), Kenya's economy experienced a series of domestic and external shocks in 2011, dampening growth prospects and reducing the gains from the recovery and higher economic growth of 2010. Drought, higher food and fuel prices, and electricity shortages contributed to the GDP growth rate falling by 1.4%. However, while the 2011 growth rate was 1.4% lower than the 5.8% recorded in 2010, it was still higher than the average recorded in the last five years. High food and fuel prices also threatened some macroeconomic fundamentals in 2011, resulting in high inflation of 6% in August 2011 and a declining exchange rate for the Kenyan Shilling. In 2012, the exchange rate became relatively stable, and the interest and inflation rates stood at 13% and 5.32% respectively in September 2012.

### Social overview

While the prevailing macroeconomic conditions between 2003 and 2008 helped improve the welfare of Kenyans, the poor remained vulnerable to drought and other crises induced by, *inter alia*, climate change. Rural and urban poverty remain a challenge. Analysis of data from the 2005-06 Kenya Integrated Household Budget Survey (KIHBS) indicated that national absolute poverty declined from 52.3% in 1997 to 46.1% by 2006. While this decline in the poverty percentage to 46.1% compares well with other Sub-Saharan African countries, it can still be considered high in comparison to neighbouring countries such as Tanzania (about 36%) and Uganda (about 31%) (KNBS, 2007). In Kenya's rural areas, overall poverty declined from 52.9% to 49.1% between 1997 and 2006, while in urban areas, poverty declined from 49.2% to 38.8% over the same period. The Kenyan poverty profile reveals strong regional disparities. According to the 2005-06 KIHBS, while the national percentage of the rural population below the absolute poverty line was 49.1% – the lowest figure was in Central province (30.4%), followed by Nyanza (47.6%), Rift Valley (49%), Eastern (50.9%), Western (52.2%), Coast (69.7%), and North Eastern (73.9%) Provinces.

Inequality in Kenya remains high, particularly in urban areas. The distribution of income, measured by the Gini coefficient (a measure of inequality of income distribution – the higher the percentage the higher the level of inequality) was estimated, after the post-election crisis of 2008, at 39% in rural areas and 49% for urban areas. Income disparities in the rural areas have gone down since 1997, while the disparities in the urban areas have increased slightly (*ibid*).

### Political overview

A new Constitution was approved on 4 August 2010 by Kenyans – by a 67% vote in favour in a national referendum – and promulgated on 27 August by then-President Mwai Kibaki. In terms of the new Constitution, the government, with Parliament's endorsement, appointed a new Chief Justice, Attorney-General and Director of Public Prosecutions, Parliament has passed a number of laws required by the Constitution, and the government has set up several new offices and institutions (and appointed the necessary persons to those institutions and offices). Emerging opportunities, provided by the Constitution, in, *inter alia*, policing and the devolved county-based governance system (which includes county governors) are generating considerable interest as the government deepens implementation of the Constitution. The March 2013 national elections will take place under the new Constitution, bringing into power 47 new county governors.

*In 2011, the Kenyan economy was hit by several shocks, both domestic and external*

*The new Constitution of 2010 is remaking the political landscape through revised institutional arrangements, including devolved county-based governance*

## Kenya's ICT policy, legal and regulatory setting

### Policy framework

*The national ICT policy of 2006 is under review by the Ministry of Information and Communication (MoIC)*

The current national ICT policy of 2006 is the first for the country and was published through a special issue of the Kenya Government Gazette (MoIC, 2006). The vision in this Policy is of "a prosperous ICT-driven Kenyan society", and its stated mission is "to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services". This Policy is currently under review in light of changes that have taken place in recent years and changes that are anticipated. For example, there is a converged legal and regulatory environment; there is new submarine fibre bandwidth; there is an economic blueprint, Vision 2030 (RoK, 2007), that the policy needs to align with; and the new Constitution provides a Bill of Rights outlining fundamental freedoms to citizens (some of which require delivery through responsive ICT policymaking). In addition, there have been, and will be, many other regional and global changes. There has been an effort to initiate a review of this Policy since 2009, and a draft ICT policy has been on the website of the Ministry of Information and Communications (MoIC) since February 2011, for comment. There are also indications that an ICT master plan is being finalised by the MoIC.

The Kenya Vision 2030 document, finalised by the government in 2007, represents the blueprint for the country's development up to year 2030 (RoK, 2007). Vision 2030 states that its aim is to make Kenya "a globally competitive and prosperous nation with a high quality of life by 2030" (*ibid*). The Vision has three pillars, namely an economic pillar, a social pillar and a political pillar, and the overall objective is to realise higher and more sustainable economic growth in a more equitable environment, accompanied by increased employment opportunities. The Vision is to be implemented in five successive Medium-Term Plans (MTPs), the first of which ran from 2008 to 2012 (RoK, 2008). The overall sectoral goal of the ICT sector MTP is "to facilitate provision of equitable and affordable quality information and communication services countrywide" (*ibid*).

*Between 2010 and 2012, 4 100 business process outsourcing (BPO) jobs were created*

The government is in the process of developing the next MTPs for the period spanning from 2013 to 2017. An internal review by the government of the first ICT sector MTP found that it has been able to make considerable progress in some ICT areas, including the landing of The East African Marine System (TEAMS) undersea fibre cable, and finalisation of the first phase of the National Optic Fibre Backbone Infrastructure (NOFBI) (RoK, 2012b). In the period 2010-12, the ICT sector created 4 100 direct business process outsourcing (BPO) jobs against an MTP target of 2 200 direct BPO jobs. Cumulatively, 7 000 BPO jobs (direct and indirect) were realised against a target of 7 500 by 2012 (*ibid*). This can be attributed to increased marketing of the country, reduction in telecommunication costs, and subsidised broadband for local BPO operators. There were 37 digital villages created against a target of 210 (*ibid*).

An ICT project that will spill into the next ICT sector MTP, and which is expected to bring major changes in the sector, is construction of a state-of-the-art BPO and information technology enabled services (ITES) park. It is not yet clear how this park will link up with Konza City which is ongoing, with feasibility and demand assessment studies having been completed. Further, the Konza City strategic environmental impact assessment study and master plan have been approved.

### Legal framework

ICT matters in Kenya fall under several pieces of legislation, including the following:

- Kenya Communications Act (KCA) of 1998;
- Science and Technology Act (Cap. 250) of 1977; and
- Kenya Broadcasting Corporation (KBC) Act of 1988.

Before the Kenya Information and Communications Act Cap. 411A, as revised in 2011 (previously the Kenya Communications (Amendment) Act of 2009), the most influential document regarding ICT legislation and regulation in Kenya was the aforementioned KCA of 1998 (ROK, 1998). The KCA, which repealed the Kenya Posts and Telecommunications Act, provides the current framework for regulating the communications sector in Kenya. The Act unbundled the former Kenya Post and Telecommunication into five separate entities:

- Telkom, the fixed-line operator;
- the Postal Corporation of Kenya (Posta);
- the Communications Commission of Kenya (CCK), the sector regulator;
- the National Communications Secretariat (NCS) to advise the government on the adoption of a communication policy; and
- an Appeals Tribunal for the purposes of arbitration in cases where disputes arise between parties.

The Information and Communications Act 411A seeks to address some of the challenges cited in the national ICT policy document. One of the key sections of the Information Communication Act is Part VII, on electronic transactions (e-transactions). In this part, the new Act, *inter alia*, gives legal recognition to electronic records; recognises electronic messages as valid for the formation of contracts; and supports the use of electronic records and electronic signatures in government and its agencies. The new Act also deals with various aspects of cyber-crime.

Inclusion of e-transactions in the Information Communication Act is an important step in the right direction, demonstrating the MoC's commitment to e-transactions. By including e-transactions in the converged Act, the Ministry has correctly recognised the technological convergence that has occurred in the digital world. However, most of the countries Kenya may be competing with, in the BPO industry for example, still have stand-alone laws that regulate e-transactions. The advantage of a stand-alone law is that it can provide sufficient detail to address all the areas of e-transactions. Examples include South Africa's Electronic Communication and Transactions (ECT) Act of 2002; India's Information Technology Act of 2002, amended in 2006; Egypt's e-Signature Law 15 of 2004; The Philippines' Electronic Commerce Act 8792 of 2000; and the Singapore Electronic Transactions Act of 2001. For now, Kenya should use the relevant provisions in the Information and Communications Act to spur the growth of the BPO sector. However, in future, this Act's inclusion of e-transactions provisions may need to be reviewed in order to align Kenya with the international best practice of creating separate legislation for critical aspects (e.g. in this case, e-transactions) of the ICT and BPO sectors. It would additionally harmonise Kenya's legal provisions with those of its East African neighbours' (and East African Community's (EAC's)) laws, and address certain limitations in the e-transactions provisions in the existing Information Communication Act. These limitations include the absence of provisions to ensure cross-border recognition and enforcement of e-transactions, the limited range of cyber-crimes covered in the Act, and the absence of limitation of liability for service providers (intermediaries) for third-party content involved in e-transactions. In addition, the new Constitution of 2010 has generated some demands on the ICT sector that will need to be enforced and legislated. To this end, various Bills that have been forwarded to Cabinet for action including the Freedom of Information Bill of 2010, the Data Protection Bill of 2010, the Cable Vandalism Bill of 2010, the Independent Communication Bill of 2010, and the Media Bill of 2010.

## Regulatory framework

In 2004, the communications regulator, the CCK, announced its intention to implement a technology-neutral unified licensing framework (ULF). Implementation of this licensing framework was considered a mechanism necessary to harness the opportunities presented by technological advancements in ICT and to address the regulatory challenges associated with convergence. Based on the principle of technology neutrality, the ULF allows any form of communications infrastructure to be used to provide any type of communications service.

*The Information and Communications Act 411A seeks to respond to some of Kenya's ICT challenges*

*E-transactions may in the future require a stand-alone law in order to bring Kenya in line with international best practice*

Under the ULF, operators and service providers are licensed according to three broad types of provision to the ICT market:

- network facilities provider (NFP) – provides infrastructure systems for long-distance transmission and for local access;
- applications service provider (ASP) – provides all forms of services to end-users, using the network services of an NFP provider; and
- content service provider (CSP) – provides services such as broadcast (TV and radio) content, and other information and data processing content services.

*The technology-neutral unified licensing framework (ULF) became effective in 2008*

The ULF became effective in late 2008, after the MoC issued new policy guidelines through a Government Gazette notice. The guidelines did away with the previous multiple-licensing regime, where services were grouped on the basis of both services and technology and, for example, internet service providers (ISPs), were also required to obtain a separate licence to offer voice over Internet Protocol (VoIP). Benefits of the ULF are that licensing procedures have been simplified, new applications have been developed, and there has been increased penetration and availability of mobile internet as well as increased infrastructure investment. The unified licence has, among other things, allowed the mobile telephony operators to also become Kenya's biggest providers of internet services.

In 2010, the government issued the following regulations specific to information and communications:

- Kenya Information and Communications (dispute resolution) Regulations, 2010, which stipulate the dispute-resolution powers of the CCK and the processes of resolving disputes between consumers and service providers.
- Kenya Information and Communications (tariff) Regulations, 2010, which provide a framework for the determination of tariffs and tariff structures, and seek: to ensure licensees maintain financial integrity and attract capital; to protect the interests of investors, consumers, and other stakeholders; to provide market incentives for licensees to operate efficiently; and to promote fair competition.
- Kenya Information and Communications (compliance monitoring, inspections, and enforcement) Regulations, 2010, which stipulate the CCK's power in monitoring and enforcement of installations and maintenance of communication infrastructure.
- Kenya Information and Communications (fair competition and equality of treatment) Regulations, 2010, whose purposes are: to provide a regulatory framework for the promotion of fair competition and equal treatment in the communications sector; and protect against the abuse of market power or other anticompetitive practices within the communications sector.
- Kenya Information and Communications (interconnection and provision of fixed links, access and facilities) Regulations, 2010, which provide guidelines on interconnection.
- Kenya Information and Communications (Universal Access and Service) Regulations, 2010.
- Kenya Information and Communications (Consumer Protection) Regulations, 2010.
- Kenya Information and Communications (Radio Communications and Frequency) Regulations, 2010.
- Kenya Information and Communications (Numbering) Regulations, 2010
- Kenya Information and Communications (Licensing and Quality of Service) Regulations, 2010.
- Kenya Information and Communications (Importation, Type approval, and Distribution of Communications Equipment) Regulations, 2010.
- Kenya Information and Communications (Electronic Certification and Domain Name Administration) Regulations, 2010.

The regulations have had an impact in the sector, affecting the various players differently. Specifically, two of the sets of regulations – on tariffs, and on fair competition and equality of treatment – were welcomed by Telkom Kenya, Zain, and Essar Telekom (Yu), who argued that the regulations would promote fair competition in the industry, level the playing field, and benefit consumers. However, mobile voice market leader Safaricom protested against the regulations, claiming they were aimed at the company because it had been successful and that the idea was to curtail its market dominance. Specifically, Safaricom's protests concerned the regulations' lack of definition of market sub-segments in the communications sector, lack of definition of what constitutes abuse of dominance, lack of clarity on the criteria for defining market dominance, and lack of definition of the situation that would lead to tariff regulation to be applied. This Safaricom protest was sustained in the media for quite some time, with Safaricom threatening to go to court if the regulations were not reviewed or withdrawn. The Minister eventually decided, in May 2010, to review the regulations, and in 2011, the CCK addressed the issues raised by Safaricom through development of Competition Guidelines. The CCK also prepared reports on regulated services and on dominant market power (DMP), following the completion of a Competition Assessment Study of the Telecommunications Market in Kenya. The CCK determined that the approach to assessing the levels of competition in the telecommunications market would follow four stages, namely:

- identifying the product(s)/service(s) in the market;
- defining boundaries and identification of relevant market segments in which competition would be accessed;
- subjecting the identified relevant market segments to the structural conduct-performance (SCP) model for evaluation of the competitive landscape in these segments and identification of licensees with significant market power (SMP) (the argument being that existence of SMP implies that services in the market segments exhibit monopolistic tendencies that necessitate regulation); and
- identifying, designating, and gazetting a basket of regulated services for application of appropriate and proportionate regulatory remedies to correct market failures and competitive weaknesses are likely to be caused by a licensee offering products/services in market segments where there are competition concerns.

Among the notable aspects of the new licensing framework is that the CCK has abandoned “beauty contest” network operation licensing in favour of open market-based licensing. The CCK argues that licensing through the beauty contest process, especially in a liberalised market, was “not only unnecessary but undesirable and inconsistent with market dynamics” (Waema, Adeya & Ndung'u, 2010). The problems associated with using the beauty contest bidding process were evident in the licensing of rural telecommunications operators (RTOs), commercial trunked radio operators (CTROs), and the third cellular GSM operator, processes which were all generally a failure. In effect, the CCK abolished the beauty contest model in preference for simple issuance of a licence if a potential operator meets the requirements, on a first-come, first-served basis.

The CCK's efforts to repossess some of the frequencies that were allocated but not being utilised (or the licence fee not being paid) have been met with interference from the country's executive branch, frustrating the regulator's efforts in this area. Further, management of the “digital dividend” (freeing up of frequencies through migration of terrestrial television from analogue to digital transmission) is uncertain. Migration to digital-only terrestrial television transmission is expected to free some frequencies for use of services such as wireless broadband but, so far, there is no policy, legal or regulatory framework for sharing, auctioning, and re-farming the freed-up spectrum (and, in turn, using existing 2G and 3G spectrum for deployment of long-term evolution (LTE) mobile technologies).

*Mobile voice market leader Safaricom protested against certain regulatory provisions on competition matters, leading the CCK to issue Competition Guidelines*

*The CCK has done away with “beauty contest” licensing for network provision*

*The CCK is a converged regulator, regulating both telecommunications and broadcasting matters*

*ICT mandates spread across multiple state entities lack coordination, and there is overlap between the roles of the KICTB and the NCS*

## Institutional arrangements

With the promulgation of the KCA of 1998, the country created a more centralised process of policy formulation. The key institutions which can influence Kenyan ICT policy formulation and implementation are as follows:

- **The Ministry (MoIC)**, which is in charge of national ICT policy formulation;
- **National Communications Secretariat (NCS)**, which advises the MoIC on ICT policy;
- the regulator (**CCK**), which licenses and regulates telecommunications, radio communications, postal services and, as per the most recent Act, broadcasting (the Kenya Communications Act of 1998 transformed the CCK into the converged regulator, meaning that the CCK's regulatory menu now includes broadcasting services);
- **Appeals Tribunal**, which arbitrates cases where disputes arise between parties subject to the Information and Communications Act;
- **Directorate of e-Government (DEG)**, which was founded in March 2004 in the Office of the President (OP) to oversee the implementation of e-Government strategy and to assist the Government of Kenya ore effectively delivery of services to citizens;
- **Government Information Technology Services (GITS)**, which is under Treasury, and is a technical entity that provides computer services to government ministries and departments and some parastatal organisations (in 2005, GITS was transferred to the Directorate of e-Government, but still reports to Treasury and has resisted efforts to be merged into the e-Government Directorate);
- **Kenya ICT Board (KICTB)**, which was created by a Presidential Order in 2007 to promote the development of ICT in the country, especially BPO and IT-enabled services (in practice, its role sometimes overlaps with those of the NCS (see above), especially with respect to advising the government on ICT issues, as well with the Directorate of e-Government (see above) with respect to implementation of e-governance systems. These overlaps need to be addressed);
- **Parliamentary Committee on Energy, Communications and Public Works**, which provides Parliamentary oversight on communications matters; and
- **Monopolies and Prices Commission**, the Commissioner of which, in terms of the Monopolies and Prices Commission Act, can make determinations on matters that may affect competition in the economy, including matters that involve companies in the telecommunications business. (The Commission has indeed dealt with some matters in the ICT arena, especially with respect to mergers and acquisitions.)

The ICT responsibilities are distributed across different arms of the government, as per the outline just provided, with little, if any, coordination, with negative consequences including lack of clarity on, *inter alia*:

- who, between the KICTB and the NCS, should develop the BPO/ITES policy;
- coordination between the KICTB, DEG and judiciary on KICTB implementation of key e-Government applications; and
- how the KICTB, which has been implementing some universal access projects (e.g. digital village projects), coordinates with the CCK, which has the universal service obligations (USO) mandate.



The Ministry's introduction of regulations (outlined earlier) is one way of beginning to deal with regulation of competition in the industry. It is expected that the operationalisation of Chapter 504 of the Competition Act of 2009, which addresses issues of trade practices, abuse of dominant position, conditions for mergers and consumer issues among others, via a Government Legal Notice on 1 August 2011, helps in putting in place mechanisms to regulate competition in the industry. For instance, Chapter 504, Part III, the Competition Act discusses restrictive trade practices, including restrictive agreements, practices, and decisions; and abuse of dominant position, including the criteria for determining dominant position. Part IV of Chapter 504, the Act addresses issues of merging and the process of either approval or revocation of a merger. Part VI focuses on consumer welfare, covering areas such as misleading representation, unconscionable conduct in business transactions, and warning notices to the public and consumers. In addition, a review of the Monopolies and Price Control Act of 1989 is underway, with a view to strengthening the institutional framework for competition regulation and creating a framework for interaction between the Competition Authority and sector regulators (i.e. the CCK for the ICT sector).

*Chapter 504 of the Competition Act, operationalised by a Legal Notice in 2011, is expected to improve regulation of competition in the ICT sector*

## Kenya's ICT market

### Market structure and players

The market players in the mobile services sector are Safaricom Kenya, Airtel Networks Kenya, Telkom Kenya (Orange) and Essar Telkom Kenya (Yu). In the fixed services, there are two main players: Telkom Kenya and Popote wireless. In internet and data services, the market players are the four mobile operators, the two fixed network operators and ISPs such as Kenya Data Networks (KDN), Jamii Telecom, Access Kenya and Wananchi Online.

*By the end of 2011, most operators had switched over to the unified licensing framework (ULF)*

Most of the operators have switched over to the aforementioned ULF, under which licensing is technology- and service-neutral. At the end of 2011, the number of operators who had switched to ULF licences stood at 844. Table 2 shows the switching trend between 2008-09 and 2010-11 in the various licence categories.

**Table 2: Cumulative number of ULF licences**

Type of operator (licence category)	Number of operators that switched		
	2008-09	2009-10	2010-11
Telecommunications contractors (TEC)	54	187	244
Technical personnel (TP)	38	160	210
Submarine cable landing rights (SCR)	2	3	3
International gateway systems and services (IGS)	7	11	11
Application service providers (ASPs)	17	58	80
Content service providers (CSPs)	25	82	123
Network facility providers (NFPs) Tier 1 (NFP T1)	3	4	4
Network facility providers (NFPs) Tier 2 (NFP T2)	7	10	13
Network facility providers (NFPs) Tier 3 (NFP T3)	3	4	6
Business Process Outsourcing (BPO)	20	25	32
Telecommunications vendors (TEV)	43	63	115
Global mobile personal communications by satellite service (GMPCS) providers	3	3	3
<b>Total</b>	<b>222</b>	<b>610</b>	<b>844</b>

Source: CCK (2011a)

## Operator market shares

The operators, particularly the mobile operators, had an extended price war between 2010 and 2012 aimed at attracting more customers so as to expand their market shares. This has led to a fall in Safaricom's market share, although Safaricom still has the largest share. According to a CCK March-June 2012 quarterly report, Safaricom had maintained a dominant position, with a market share of 65.3% of the mobile phone subscriber base. Airtel had 15.3% of the market, Telkom Kenya (Orange) 10.6% and Essar (Yu) 8.7% (see Table 3).

*Safaricom remains the dominant mobile operator, holding a 65% share of mobile voice subscriptions in March 2012*

**Table 3: Mobile operator shares of voice subscribers**

Operator	March 2011	March 2012	Annual variation (%)	Market share (%)
Safaricom	17 205 123	19 074 700	10.9	65.3
Airtel	3 817 589	4 483 334	17.4	15.3
Telkom Kenya (Orange)	2 613 489	3 099 357	18.6	10.6
Essar (Yu)	1 584 501	2 554 258	61.2	8.7
<b>Total</b>	<b>25 220 702</b>	<b>29 211 649</b>		

Source: CCK (2012b)

The CCK report showed that the four mobile operators were also dominating the internet and data services market segments (see Tables 4 and 5). By 2012, 74% of the Kenyan population was covered by the mobile network (and 34.45% of the land area was reached by a mobile signal).

**Table 4: Mobile operator shares of subscribers to mobile internet and data services**

Operator	Subscribers, March 2012	Mobile internet/ data market share (%)
Safaricom	4 552 519	71.02
Essar (Yu)	641 482	10.01
Telkom Kenya (Orange)	610 142	9.52
Airtel	606 079	9.45

*Mobile operators dominate internet and data service provision*

Source: CCK (2012b)

**Table 5: Fixed and fixed-wireless internet/data subscriptions**

Operator	Subscribers, March 2012	Fixed internet / data market share (%)
Kenya Data Networks	24 094	30.2
Wananchi Telecom	18 971	23.8
Access Kenya	11 600	14.5
Telkom Kenya	10 908	13.7
Safaricom	6 015	7.5
One Communications	2 113	2.6
Swift Global	1 200	1.5
Iway Africa	935	1.2
Internet Solutions	847	1.1
Other fixed terrestrial or fixed-wireless operators	3 175	4

Source: CCK (2012b)

*The strongest fixed internet/data provider, Kenya Data Networks, had only 24 094 subscribers in March 2012, compared to 606 079 subscribers for the weakest mobile internet/data provider*

Subscriber numbers for fixed or fixed-wireless terrestrial internet/data subscriptions (as shown in Figure 5) were far below the numbers of the mobile internet-data providers. The most-subscribed-to fixed provider, Kenya Data Networks, had only 24 094 subscribers (see Figure 5) compared to the 606 079 subscribers (see Figure 4) of the weakest of the four mobile internet/data providers, Airtel. There are two operators in the fixed network service provision sub-sector, namely Telkom Kenya with 99% of the market share and Flashcom Kenya ("Other" category), a local loop operator (LLO) with 1% market share.

Of all the internet/data users in Kenya, about 98% access internet/data via mobile broadband (see Table 6), with Safaricom the internet market leader and enjoying a 69% subscriber increase between 2011 and 2012.

**Table 6: Internet/data subscriptions by type**

	2011	2012	Change (%)
<b>Total internet subscriptions</b>	<b>3 840 335</b>	<b>6 490 080</b>	<b>69</b>
Mobile	3 785 531	6 410 224	69.3
Fixed terrestrial wireless	22 420	28 392	26.6
Satellite	901	787	-12.7
Fixed DSL	13 633	11 686	-14.3
Fixed fibre optic	17 850	38 966	118.3
Fixed cable modem	N/A	25	N/A
<b>Total internet users<sup>1</sup></b>	<b>7 248 131</b>	<b>11 840 544</b>	<b>63.4</b>

Source: CCK (2012b)

## Financial performance

Table 7 shows the mobile operator voice revenues (total and average revenue per user (ARPU) per month), as well as the investments by mobile operators in the sector from 2007 to 2010. The 2011 investment data were not available at the time of compiling this report. The highest investment year among the four years for which data were available was 2009. In 2010, there was a 32.6% reduction in investments, from approximately KES40million to approximately KES27million.

*In 2010, there was a 32.6% reduction in mobile operators' investment levels*

**Table 7: Mobile voice revenue and investment**

	2007	2008	2009	2010
Mobile voice revenue (KESmillions)	57 998	72 625	90 394*	104 552*
Mobile voice ARPU per month (KES)	425.85	376.56	389.00	348.94
Mobile voice investment (KESmillions)	21 221	29 436	40 260*	27 126*

Source: CCK (2012b), \* provisional

**Table 8: Mobile internet/data revenue and investment**

	2007	2008	2009	2010
Mobile internet/data revenue (KESmillions)	7 370	7 595	145 800	148 033
Mobile internet/data investment (KESmillions)	833	1 171	53 870	29 361

Source: CCK (2012b)

<sup>1</sup> Internet users are estimated by multiplying by 1 the number of mobile internet/data subscriptions, by 10 the number of terrestrial fixed-wireless subscribers and by 100 the number of fixed DSL, fibre optic, and satellite subscriptions.

## Penetration and pricing

This section looks at penetration for fixed voice, mobile voice and internet services. The methodology used to get the data was a review of operators' annual reports; operator returns to the regulator the CCK; quarterly reports from the CCK; press releases; and other documentations from the CCK and the operators.

### Fixed-network voice services

The fixed network has not expanded in recent years. On the contrary, the total number of connections has been dropping, with the total dropping from 696 501 in 2008-09 to 379 301 in 2010-11 (see Table 9). The fixed wireline capacity has also been decreasing in the same period, reaching a capacity of 400 764 connections in 2010-11. The fixed wireline connections in both urban and rural areas declined by 20% to stand at 182 084 and 5 632 respectively in 2010-11, compared to 227 486 and 7 036, respectively recorded during the previous year (see Table 9).

*Fixed-network voice connections continue to drop in number, sitting at only 379 301 connections in 2010-11, down from 696 501 connections in 2008-09*

**Table 9: Fixed-network growth indicators**

Financial Year	2006/07	2007/08	2008/09	2009/10	2010/11
Wireline capacity	505 103	512 281	485 581	421 528	400 764
Wireline connections	263 122	252 615	247 972	234 522	187 716
Wireless connections (including LLO subscribers)	84 104	274 449	419 047	225 592	191 585
Total fixed connections (wireline and wireless)	347 226	527 064	696 501	460 114	379 301
Urban wireline connections	251 924	246 927	240 533	227 486	182 084
Rural wireline connections	11 198	5 688	7 439	7 036	5 632
International outgoing traffic (minutes)	27 363 876	15 582 304	14 471 643	14 761 211	11 455 952
International incoming traffic (minutes)	85 672 270	83 148 332	88 538 230	38 550 399	31 866 685
Traffic to mobile networks (minutes)	124 378 826	98 238 064	34 103 924	31 024 688	59 301 227

Source: CCK (2011a)

As demonstrated in Table 9, the year 2009 was the peak time for the fixed network, both wireless and wireline, before the subscriber numbers started dropping. The reduction in fixed-line services can be attributed to increased competition from mobile service providers and the high cost of maintaining fixed lines (as a result of cable vandalism and destruction during the rainy seasons). Meanwhile, there has been a steady increase in mobile phone subscriptions, an indication that people are opting for mobile phones over fixed-network phones. The average cost (short and long distance combined) of making a local call using a fixed line is KES6 per minute on-net and KES12 per minute off-net, while the cost of making international calls is divided into zones which are still much higher compared to the use of mobile phones.

## Mobile GSM and CDMA services

The four mobile phone operators offering mobile GSM/CDMA services in Kenya are Safaricom, Airtel, Essar (Yu), and Telkom Kenya (Orange). Competition amongst the four operators has been strong in recent years, with mobile phone subscriber numbers experiencing fast growth. Between 2006-07 and 2011-12, the mobile industry witnessed a significant growth in the number of promotions and special offers, as the operators sought to attract and retain subscribers. Mobile operators also intensified efforts to generate new revenue streams from non-traditional services such as SMS-based applications, internet offerings and mobile money transfer services. Mobile subscription numbers and penetration levels improved significantly during the same period.

The mobile operators have continued to expand their networks to meet the demand. As at June 2012, there were 29.2million mobile subscribers and a total mobile penetration of 74% of the population, according to the CCK (2012a). The increase in mobile penetration from 51.2% of the population in 2010, to 63.6% in 2011 and then 74% in 2012 can be attributed to reduced tariffs, government zero-rating of ICT equipment and accessories (including mobile phones), and an increase in coverage by the four competing operators. The combined growth indicators for the four operators are shown in Table 10.

**Table 10: Mobile growth indicators**

Type	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12
Capacity (no. of possible subscribers)	18 200 000	25 964 700	29 400 000	46 628 948	47 677 000	
No. of subscribers	9 304 818	12 933 653	17 362 257	20 119 304	25 279 768	29 200 000
No. of transceivers	15 007	21 662	43 913	56 679	70 848	
No. of SMSs sent and received	315 557 601	287 145 378	2 728 869 614	2 662 653 719	2 622 821 774	

Source: CCK (2011a)

Of the subscribers, 99% are prepaid, likely because of the high deposit required by operators for customers to qualify for postpaid services and the prevalence of low-denomination prepaid calling cards (which are as low as KES5 in value) and, therefore, affordable to a majority of Kenyans. Subscribers on prepaid can also get a KES50 credit advance to make a call and pay later.

In the 2010-11 financial year, mobile voice call tariffs dropped by half, with the cheapest operator dropping from KES6 per minute to KES3 per minute, in a move that reversed market leader Safaricom's profit growth for the first time since it was founded in 2000. Safaricom maintained high tariffs of KES5 per minute for off-net calls as opposed to Airtel and Yu (which charged KES3 per minute off-net) and Orange (which charged KES4 per minute off-net). In July 2012, Safaricom lowered its off-net tariffs to KES4 per minute. These price decreases are attributable to both fierce competition among the operators and, in addition, reduced interconnection costs – MTR reductions – with the last phase of the three-year MTR glide path implemented in 2010 and a new rate negotiated (see MTR section below).

The number of SMSs (sent and received) started dropping from 2010, despite the rise in the number of subscribers. This can largely be attributed to the reduced cost of voice calling and to the increasing availability of free instant-messaging services.

*The total number of mobile subscriptions was estimated at 29.2million in June 2012, representing 74% population penetration*

*99% of Kenyan mobile subscribers are prepaid users*

## Mobile Termination Rates (MTRs)

Mobile call prices have been going down from 2007 when the CCK's first MTR glide path (gradual decrease) was determined. To level the playing field, the CCK also developed Competition Guidelines and prepared reports on regulated services and dominant market power (DMP) (CCK, 2011c). This followed the completion of a Competition Assessment Study of the Telecommunications Market in Kenya in 2007, which showed that the mobile termination rates were too high, initiating a three-year glide path (CCK, 2007).

Another Determination was issued in 2010 reducing the MTR from KES4.42 per minute to KES2.21 per minute, representing a 50% drop in 2010. The CCK's Determination on the 16th of August 2010, which mandated a further three-year glide path in MTRs based on the pure long run incremental cost (LRIC) model, has improved the competitive landscape in both mobile and fixed market segments (CCK, 2010a).

Following intense lobbying by Safaricom and Telkom Kenya, the President stalled the reduction in 2011. In May 2012, the mobile operators struck a deal that was to see the termination rate fall to KES1.60 on the 1st of July 2012 in what was to end the one-year freeze and reduce the cost burden on smaller operators (Business Daily, 2012). However, this was not implemented and the operators remained divided with Airtel leading the drive for a lower rate of KES1.44 as per the determination issued in 2007 while Safaricom and Telkom Kenya led those in favour of the *status quo* or a reduction to KES1.60 (renegotiated later among the operators) on condition that the regulator capped minimum calling rates at KES4 per minute.

A study carried out for the CCK by M/S Analysys Mason, on the review of the prevailing interconnection framework developed in 2007, recommended a progressive decline of 35%, 20% and 15% in 2011, 2012 and 2013 respectively, to bring the MTR to KES0.87 by 2014 (CCK, 2010b). The Analysys Mason study also developed pricing models for infrastructure-sharing and co-location, and a broadband interconnection framework. Despite the study's recommendation of an immediate reduction of the MTR to KES0.87, the CCK considered such a reduction potentially disruptive to the business plans of the operators and opted for a three-year glide path. The interconnection rate remained at KES2.21, leading to a complaint from Airtel to the coalition government (Daily Nation, 2012a).

The apparent interference by the Executive in the matter of the MTR is indicative of the powerful interests of the ICT stakeholders, particularly operators with strong market positions. Such interference compromises the independence of the CCK as a regulator. The CCK Board met to discuss the matter, after which it issued a statement on 10 October 2012 (CCK Board, 2012). In the statement, the CCK Board sought to address the concerns raised in relation to interference from the Executive in implementing the MTR cuts. The CCK Board indicated that there had been rapid development in the industry, via introduction of the ULF; the landing of three undersea cables; the rollout of terrestrial fibre optic cables; and the tremendous growth in subscriber numbers and call and data volumes. To deal with these developments, the CCK Board stated that it had undertaken a detailed and consultative review of the Network Cost Study in 2010 with the objective of developing a new interconnection framework that would promote competition, the operational efficiency of firms, and further growth of the sector through continued investments and innovations.

Following the review, the CCK had issued the aforementioned Determination No. 2 of August 2010, with the Determination to operate from the 1st of July 2010 to the 30th of June 2013 (see Table 12). Following the issuance of the Determination, retail price competition in the mobile voice market segment intensified, with actual retail off-net call prices falling from a high of KES12 per minute in August 2010 to between KES5 and KES3 per minute in October 2012. In addition, on-net call retail tariffs dropped significantly from a high of KES8 per minute to KES3 per minute over the same period.

*Engagement by the government Executive in mobile termination rate (MTR) matters appears to compromise the independence of the regulator*



In the press statement of October 2012, the CCK noted that despite the positive signals in the market, some sections of the mobile industry and some government agencies raised concerns that the ensuing retail price competition arising from the reduction in MTR (wholesale) prices was detrimental to the continued growth of the sector and the economy:

*In particular, concern was raised that the retail price competition in the mobile voice market would adversely affect Government Tax Revenues, stability of the stock market, the Government's macro economic agenda on employment and investments; and the profitability and viability of telecommunication enterprises (CCK Board, 2012).*

The CCK Board thus decided in its meeting of 20 May 2011 to freeze the MTR and the fixed termination rate of 2011 for a further one year (while it evaluated the veracity of the issues raised by stakeholders) and consequently, on the 8th of June 2011, the CCK issued Addendum No. 2 to the Determination No. 2 of 2010 revising the mobile and fixed termination rates and the attendant glide path (CCK, 2011a).

The October 2012 press statement further indicated that the CCK had contracted the services of a consultant to undertake a study on the impact of the ensuing competition in the retail mobile voice market on government tax revenues; stability of the stock market; the government macroeconomic agenda on employment and investments; and the profitability and viability of telecommunication enterprises. In addition, the statement indicated that the CCK was in the process of aligning the legal framework – the Kenya Information and Communications Act, 411A – with the requirements of the Constitution of 2010, with the aim of insulating the CCK from commercial and political interests.

In November 2012, following the outcome of the study, the CCK issued another press statement in which it indicated that the implementation of the glide path was not going to have negative effects on the industry. Consequently, the mobile termination prices were reduced to KES1.44 and backdated to July 2012. In total, three revisions have been made (see Table 11).

*A study conducted for the CCK determined that the regulator's planned MTR glide path would not hurt the sector*

**Table 11: Mobile termination glide paths, 2007 to 2014**

	1 March 2007	1 Jan. 2008	1 Jan. 2009	1 July 2010	1 July 2011	1 July 2012	1 July 2013	1 July 2014
MTRs as per Interconnection Determination No. 1 of 2007	KES6.28	KE5.27	KES4.42					
Interconnection Determination No. 2 of 2010 (MTRs in KES)				KES2.21	KES1.44	KES1.15	KES0.99	
Addendum No. 3 to Interconnection Determination No. 2 of 2010 (MTRs in KES)				KES2.21	KES2.21	KES1.44	KES1.15	KES0.99

Source: CCK (2012a)

## Internet and broadband

As at 31 March 2012, there were 6.49million internet subscriptions and a total of 11.8million internet users, up from 7.248million users in 2011 (see Table 6). Of the subscriptions, 98.8% (6.41million) were through mobile internet/data subscriptions on GPRS/EDGE and 3G networks. (Three of the four mobile operators have rolled out 3G services.)

The construction of the TEAMS 5 500 km undersea cable was completed in 2009-10. Two more cables, SEACOM and EASSy, were completed in 2011 and 2012. The availability of the three submarine fibre optic cables in Kenya has resulted in increased internet speeds and increased amounts of broadband available for users at a slightly reduced cost. As at 31 March 2012, the total amount of bandwidth available in the country was 5 361 918.5 mbps, of which only 3.1% was being utilised (see Table 12).

**Table 12: Available international internet bandwidth (mbps)**

	March 2011	March 2012	Annual variation (%)
SEACOM	79 626.2	310 000	289.3
TEAMS	122 880	101 990	-17.0
EASSy	-	4 949 278.8	-
Satellite	213.8	649.8	203.9
<b>Total</b>	<b>202 720.0</b>	<b>5 361 918.6</b>	<b>2 545.0</b>

Source: CCK (2012b)

The connection to the fibre submarine systems provides Kenya with numerous investment opportunities and presents great prospects for spurring economic growth through reliable and affordable high-capacity bandwidth. In addition to the completion and operationalisation of the undersea fibre cables, which have facilitated global interconnection for the country, the completion of National Optic Fibre Backbone Infrastructure (NOFBI) Phase 1 has provided connection *within* the country. A total of 4 300kms of NOFBI was completed in the year 2009-10. The level of utilisation of the NOFBI cable is, however, low. Increased demand, once Phase 2 of NOFBI is completed, is expected to change the situation. Phase 2 had not started at the end of 2012 when this report was compiled. As at October 2012, the NOFBI was being used by Telkom Kenya, Safaricom, Jamii Telkom, Bandwidth and Cloud Services (BCS), Kenya Education Network (KENET), and the DEG in different locations in 37 counties. Phase 2 will cover the rest of the counties, while creating redundancy (see Figure 1).

*Due to the arrival of new undersea cables, Kenya's available international internet bandwidth increased more than 2000% between March 2011 and March 2012*



**Figure 1: NOFBI coverage**

Source: CCK (2012a)

## Mobile money

Use of mobile money in Kenya is convenient, easily accessible, and widely accepted. It has become an instrument of financial inclusion for the unbanked population segment in the country (a segment estimated at 52% in the RIA Kenya ICT Survey of 2007. The use of mobile technology to provide money transfer services has spread widely across the country and is offered by all four mobile networks and two licensed content service providers, Mobikash Africa and Mobile Pay. Safaricom's M-Pesa, introduced in March 2007, is the largest, accounting for 82.4% of mobile money transfer service subscriptions in 2011, according to Safaricom's 2010-11 Annual Report (Safaricom, 2011). Other mobile money providers are Airtel Money (formerly Zain's Zap) introduced in January 2009, Telkom Kenya's Orange Money (Iko Pesa) introduced in November 2010 and finally Essar's Yu Cash introduced in December 2009. The four operators have also introduced other innovative products to allow users to get airtime credit from the operator and share credit among themselves (see Table 13).

**Table 13: Mobile money solutions**

Operator	Airtime-sharing	Airtime credit	Mobile money
Safaricom	Sambaza	Okoa Jahazi	M-Pesa
Airtel	Me2U	Kopa credo advance	Airtel money
Telkom Kenya (Orange)	Credit transfer	pewa	Orange cash
Essar (Yu)	Share airtime	yuCredo	Yu cash

Source: Operator websites, 2012

Between March 2011 and March 2012, the total deposits grew by 42.4% and there were about 18.98million mobile money transfer subscriptions (see Table 14).

**Table 14: Mobile money transfer (KSH)**

	March 2011	March 2012	Variation (%)
Subscriptions	17 411 758	18 987 531	9.1
Number of agents	40 405*	45 861	13.5
Total deposits (KES)**	130 190 469 267	185 361 277 029	42.4

Source: CCK (2012b), (\*) Provisional, (\*\*) Quarterly deposits

Safaricom had close to 40 000 M-Pesa outlets nationwide by 2012, according to its 2011-12 annual report, a financial year that saw Safaricom revenue from M-Pesa grow to KES16.9billion, a growth of 43% on the previous financial year.

A worrying move that may have a negative impact on the ICT sector is the waiver, in the 2012-13 budget, of import duty on imported software – a step designed to attract foreign investors in the ICT industry. While the move is likely to reduce software piracy in the country (which adversely affects local and international software companies), the impact on local software development will be negative. This comes at a time when Kenya has become recognised as an up-and-coming global source of innovative software, especially mobile applications software. Given that the software development industry has been identified as one of the priority areas for developing globally competitive technology-based products in the Science, Technology and Innovation Policy of 2012 (RoK, 2012c), the government needs to create a range of incentives for local software development and facilitate the growth of that aspect of the industry.

*Kenyan mobile money subscriptions reached a total of 18.98million in March 2012*

## Access and use

### Methodology

This section five and the section six which follows are largely derived from the findings of the RIA 2012 Kenya Household, Individual and Informal Sector ICT Access and Use Surveys. The RIA Kenya ICT Survey sample consisted of 1,200 households and 500 informal sector SMEs. This section five provides the findings on ICT use at *household and individual* levels, while section six focuses on ICT use by the *informal sector SMEs*. (See RIA (2012) for more on the Survey methodology.)

### Emerging developments in access and use

Access and use are discussed in reference to fixed network, mobile phone network, broadband internet, PC, TV and radio at the household and individual level. Competition has generated innovation in the mobile sector, creating convenience and ease of access to services by users. Business operations have been transformed through the introduction of services, such as mobile money transfer and banking services amongst other services improving on people's livelihoods. The demand has been high given the high user subscription rate, as discussed above in section 4. The number of fixed lines continued to drop while the number of mobile phone subscriptions rose due to various possible reasons discussed. There are also regulatory changes that have influenced the use in varied ways, and of mobile phones in particular. Some of the changes are discussed below.

*The introduction of mobile number portability (MNP) has not had a significant effect on the market*

### Mobile number portability (MNP)

MNP went live on the 1st of April 2011, according mobile service consumers the flexibility and convenience of retaining subscriber numbers upon switching service providers. The customer response to the service has been unpredictable. In the first three months, there were 36 224 ports of numbers from one operator to another. However, there was a drastic drop, of 94.7%, in the second three months, after which there has been steady but very slow growth in porting. In the period from January to March 2012, there were 6 646 numbers of in-ports. The low porting numbers (see Table 15) between April 2011 and March 2012 suggest that MNP has had very little affect on the Kenyan market.

**Table 15: Number of in-ports, April 2011 to March 2012**

Period	April-June 2011	July-September 2011	October-December 2011	Jan-March 2012
Number of in-ports	36 224	1 929	2 407	6 646
Variation (%)	-	-94.7	24.8	176.1

Source: CCK (2012b)

### Counterfeit mobile phones

There have been many counterfeit mobile phones in the market. In 2012, CCK launched a consumer awareness campaign on counterfeit mobile phones, through TV, radio, print, digital, and outdoor platforms. The campaign was aimed at curbing the penetration of counterfeit mobile phones in the Kenyan market. The campaign, with the slogan "*pata ukweli wa mtambo*" educated Kenyans on the risks associated with using counterfeit mobile phones

and highlighted the steps consumers should take to establish if their mobile phones are genuine. The campaign recognised that with the first growth in mobile banking, use of counterfeit devices, which are manufactured without due consideration to the recognised security standards, would expose mobile money systems and the wider banking and financial system to high risks. To facilitate the switch-off of the over 1 million counterfeit mobile phones (on 30 September 2012), the four mobile operators, device manufacturers such as Nokia and Samsung, and the CCK worked together in identifying counterfeit mobile phones in their various databases. CCK ordered their switch-off and the operators effected the order.

*Mobile operators have cooperated with the CCK in combatting the use of counterfeit handsets*

### Migration from analogue to digital transmission of terrestrial broadcasting

The Kenyan Broadcasting Commission (KBC) had by 2012 rolled out free-to-air digital terrestrial TV transmission in Nairobi and its environs. The expansion of the migration to cover Mombasa and Kisumu was ongoing and once complete, 60% of the entire population will be able to receive terrestrial digital TV signals provided they have a digital set-top-box (STB) or TV capable of receiving signals using the DVBT-2 digital terrestrial television (DTT) transmission standard. The country is expected to complete the switchover by June 2015, in line with Kenya's commitments to the International Telecommunication Union (ITU).

### Monitoring of internet content, and intermediate liabilities

At the beginning of 2012, the CCK in a press conference announced its intention to start monitoring both inbound and outbound internet traffic in the country, so as to "detect and facilitate response to possible cyber threats" (Business Daily, 2012a). The monitoring will be facilitated by installing "the Internet traffic monitoring equipment known as the Network Early Warning System (NEWS)" in the intermediaries' equipment. Under the current regulatory framework, the internet (voice and data) intermediaries are licensees in the network facilities providers (NFP), applications service providers (ASP) and the contents services provider (CSP) licence categories

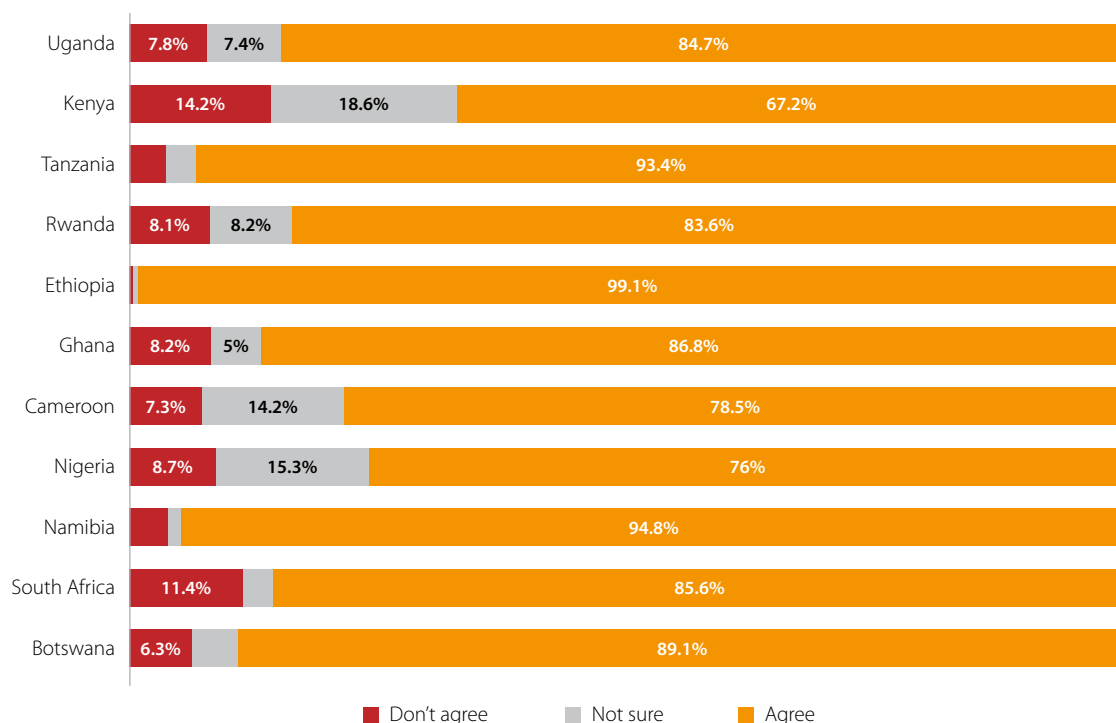
The CCK's argument is that monitoring is only valid if it is aimed at preventing fraud, crime, and protecting national security, as opposed to sniffing around citizens and business emails and content. Among other rights established in the Bill of Rights, Article 31 protects the right that every person has to privacy, which includes the right not to have "(c) information relating to their family or private affairs unnecessarily required or revealed; or (d) the privacy of their communications infringed" (ROK, 2010). Article 31 thus provides constitutional limitations on the use of information and communications data, particularly in relation to monitoring online communications.

### Television and radio access and use

Currently there are roughly 80 domestic radio stations and close to 20 domestic television stations in Kenya, with Kenyan TV channels available on a free-to-air basis and, in many cases, packaged together with foreign channels in subscription services. Of the respondents to the RIA ICT Survey, 66% watch TV and 81% listen to radio. Fifty-four percent own a TV and 80.6% own a radio, a demonstration that there is shared use of these devices at the household level. These RIA findings are in line with the national ICT survey conducted by the CCK in 2010, which showed that 79.5% of the Kenyan population has access to a radio (80.6% of males and 78.3% of females) (CCK, 2010c).

*81% of Kenyans listen to radio, and 66% watch TV*

Receiving radio content in the respondent's mother-tongue language is considered important by 67.2% of respondents. Mother-tongue radio content is also considered important in other RIA ICT Survey countries, and, in fact, in nine other RIA study countries (see Figure 2), the importance is given an even higher ranking than in Kenya.



**Figure 2: Importance of mother-tongue radio content**

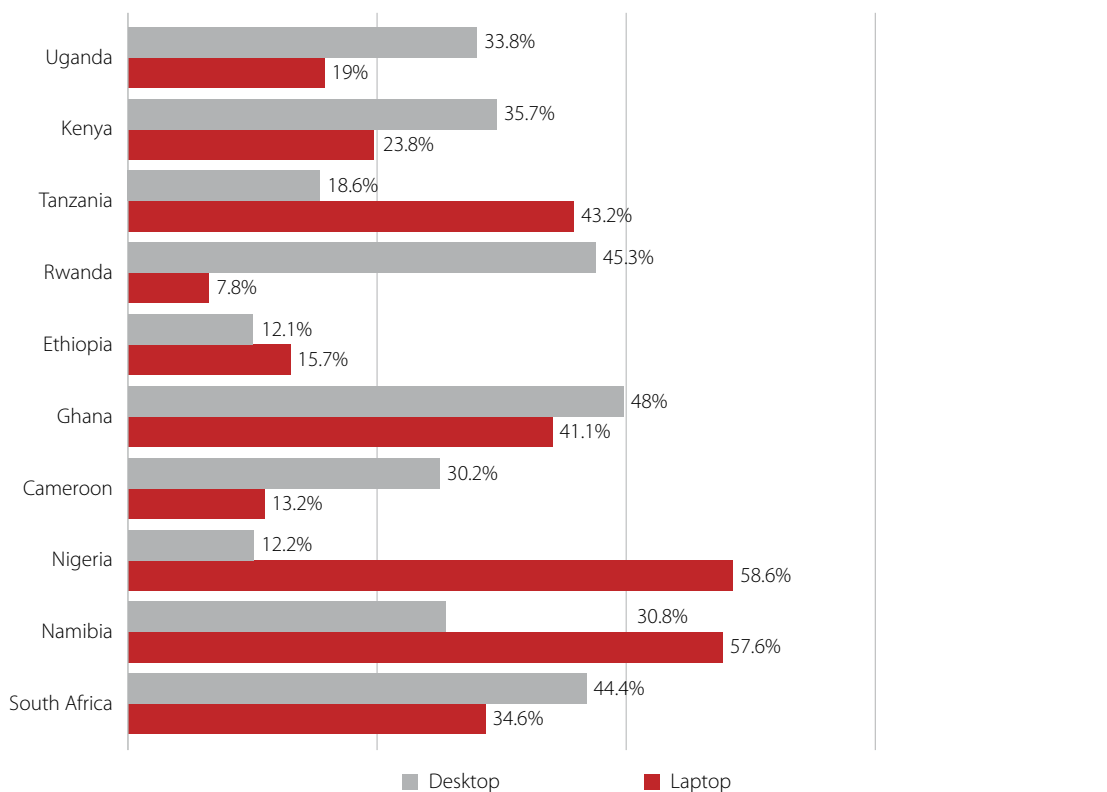
Source: RIA ICT Survey data 2011-12

## Computer access and use

*21.2% of Kenyans use computers, which is the second highest percentage among RIA study countries, behind only South Africa's 29.1%*

This section looks at both desktop and laptop computers. Of the Kenya respondents to the Household Survey, 21.2% indicate that they use a computer (desktop or laptop), which is the second highest percentage in RIA study countries after South Africa's 29.1%.

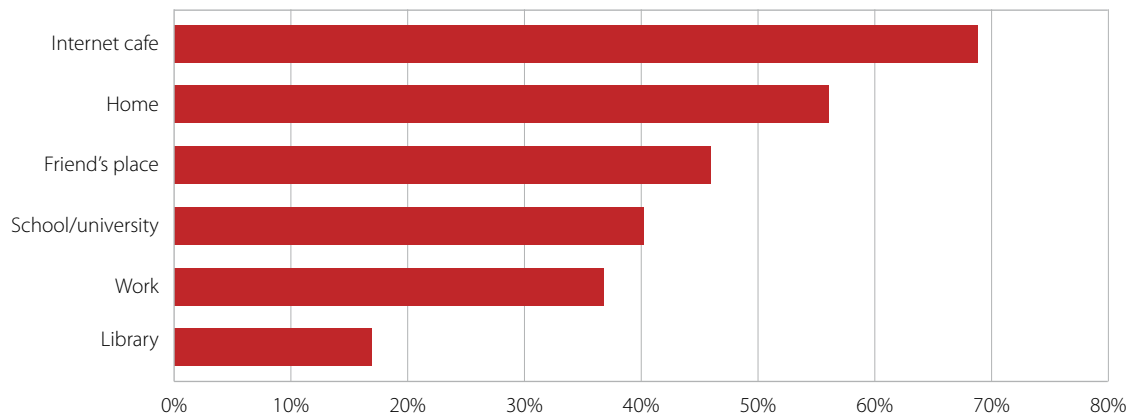
Across RIA study countries, ownership of PCs and laptops is generally low (see Figure 3). Apart from Nigeria and Namibia, where 58.6% and 57.6% respectively own a laptop, in the rest of the RIA study countries, laptop ownership is below 50%, and is at 23.8% in Kenya. For desktops, ownership is below 50% in all the RIA countries, with Ghana leading at 48% followed by Rwanda (45.3%) and South Africa (44.4%). Desktop ownership in Kenya sits at 35.7%



**Figure 3: Desktop and laptop ownership in RIA study countries**

Source: RIA ICT Survey data 2011-12

In terms of place of computer use, close to 70% of the Kenyan respondents use computers at an internet cafe, 56% use at home, and 46% use at a friend's place (Figure 4).

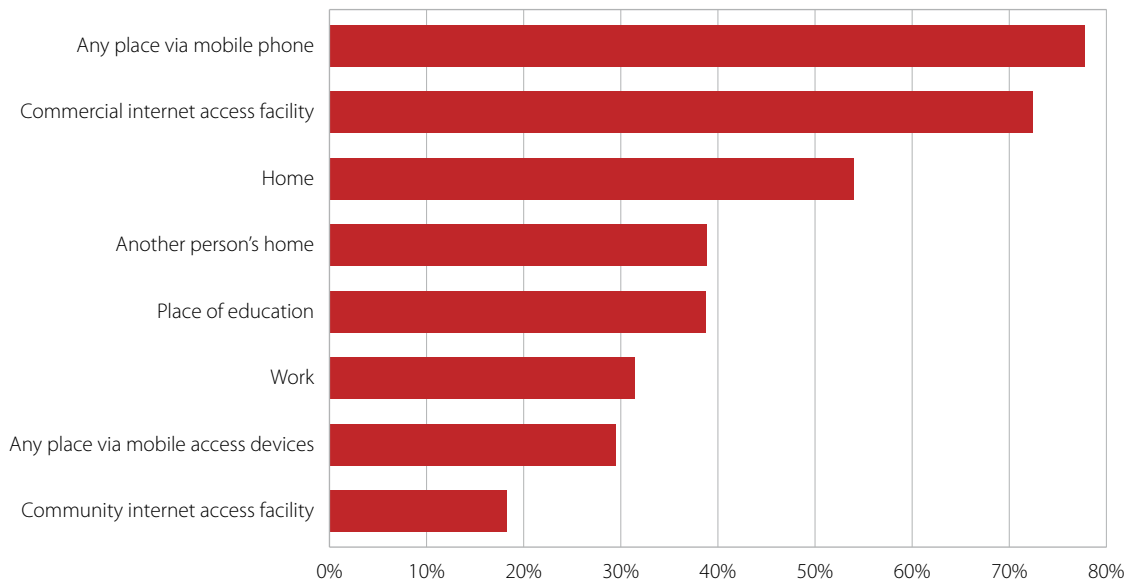


**Figure 4: Places of computer use**

Source: RIA ICT Survey data 2011-12

*Mobile phone handsets are the most commonly used means of internet access, followed by internet cafes*

Consequently, Kenyans' use of internet access is also at a variety of different places (see Figure 5). In the 12 months preceding the RIA ICT Survey, respondents' internet access was most common via a mobile phone (77.8%), followed by access at an internet cafe (72.4%) and at home (54%). Other places of internet access are at a friend's place, places of education, at the workplace and in a library

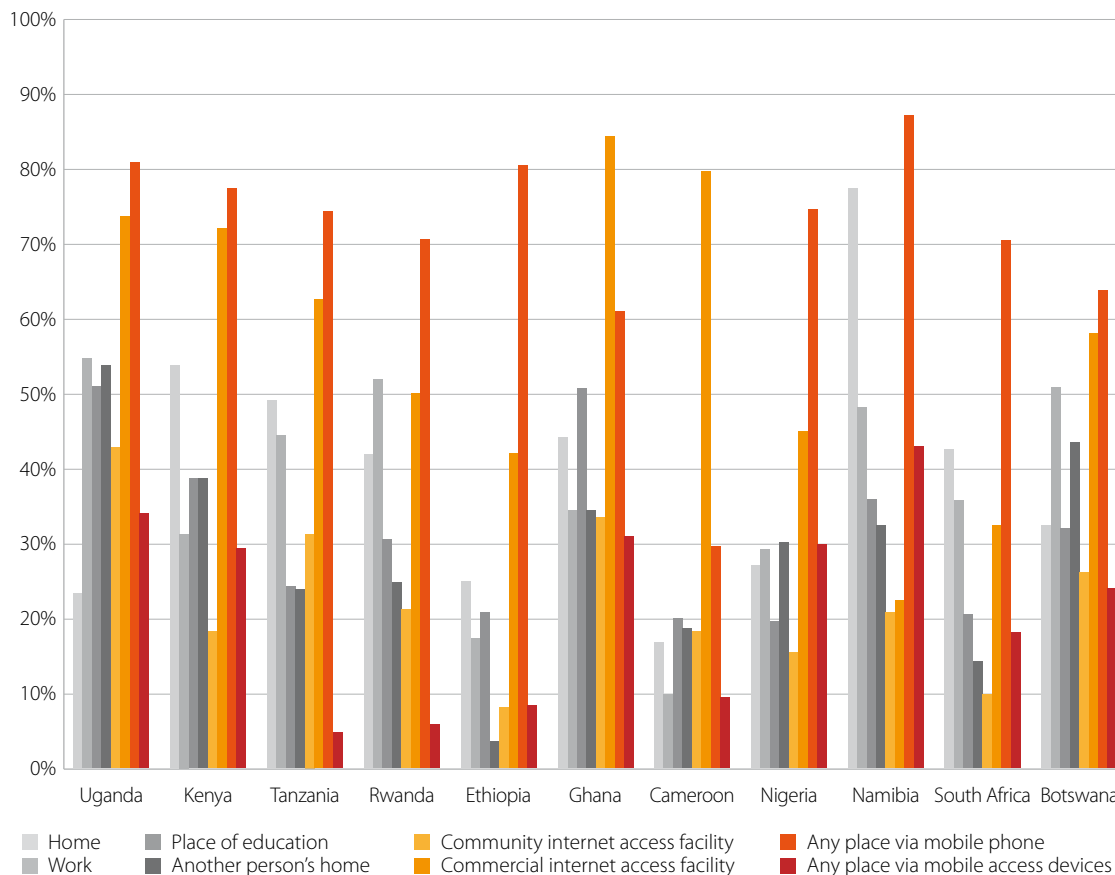


**Figure 5: Places of internet access (multiple responses)**

Source: RIA ICT Survey data 2011-12



These Kenyan findings on places of internet access are similar to the findings in many other RIA study countries (see Figure 6), with mobile phones and internet cafes typically being the most-frequented places



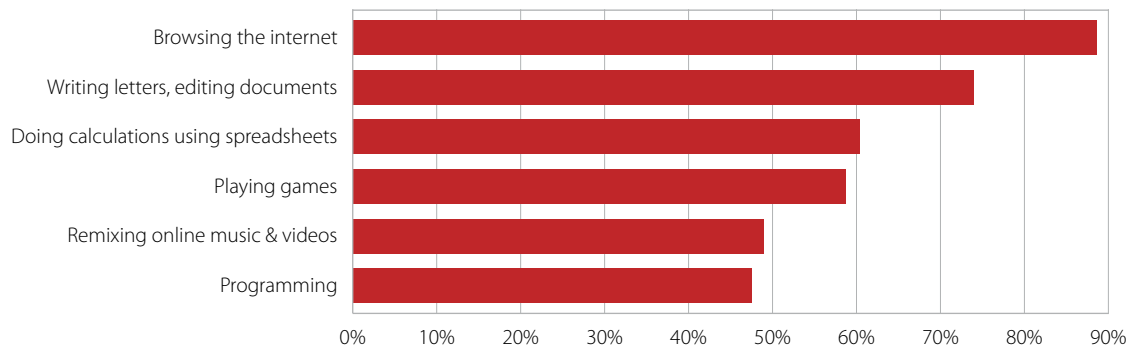
**Figure 6: Places of internet access across RIA study countries (multiple responses)**

Source: RIA ICT Survey data 2011-12

Among the countries surveyed, South Africa has the highest percentage of internet users (33.7%), followed by Botswana (27%) and, in third place, Kenya (26.6%). Ethiopia and Tanzania have the lowest user percentages, at 2.7% and 3.5% respectively.

In terms of reasons for use of a computer, for Kenyans internet is the most common use (88.6% of respondents), followed by writing letters and editing documents at 74% (see Figure 7).

*The most common motivation for computer use is browsing the internet*



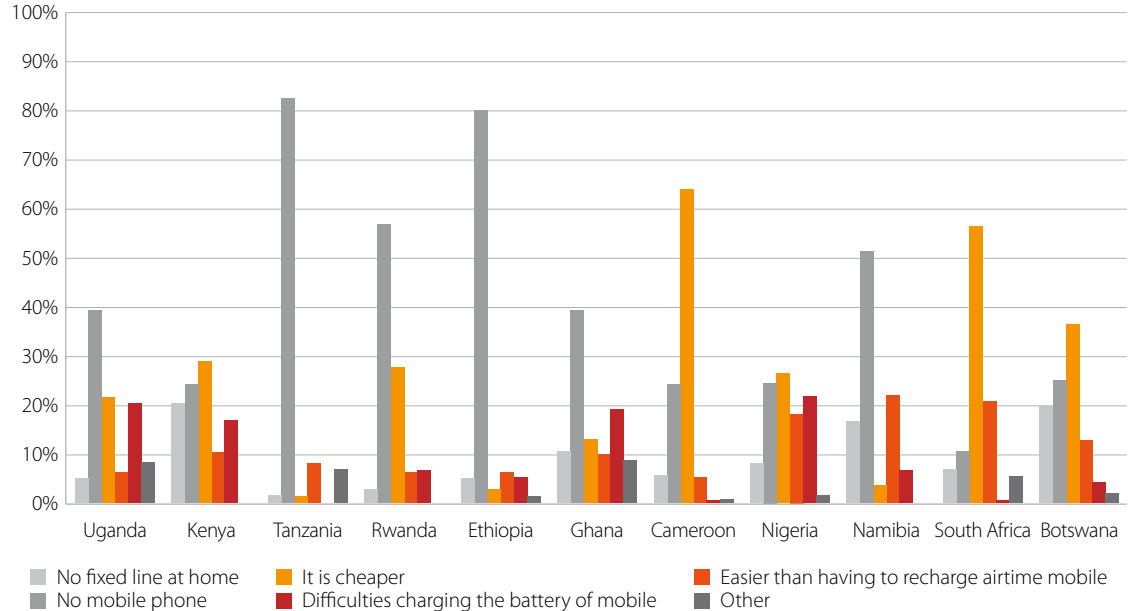
**Figure 7: Reasons for computer use (multiple responses)**

Source: RIA ICT Survey data 2011-12

## Public payphone access and use

Only 5.4% of Kenyans use public payphones

Only 5.4% of the respondents in Kenya had used a public payphone in the three months preceding the Survey, and 72% indicated that they prefer to use a mobile phone even when a public phone is available. Across the countries surveyed, the most common reason given for use of a public phone is the lack of a mobile phone, with the second-most common reason being public payphones' cheapness compared to other options (Figure 8).



**Figure 8: Reasons for public payphone use across RIA study countries (multiple responses)**

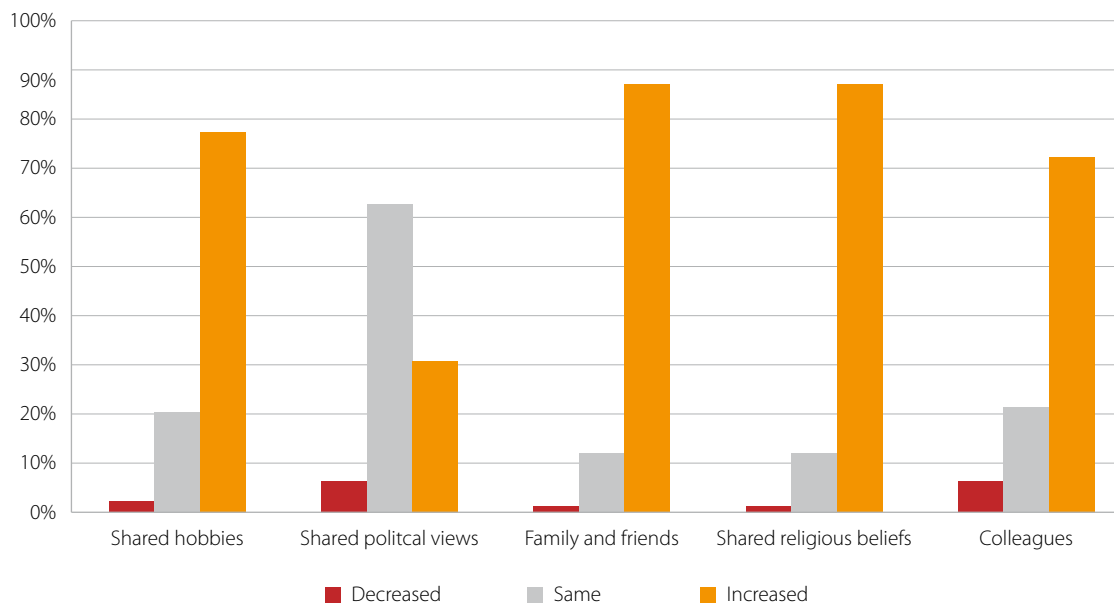
Source: RIA ICT Survey data 2011-12

## Internet and mobile telephony use for social networking

Use of social media such as blogs, Twitter and Facebook is widespread in Kenya. The RIA 2012 ICT Survey shows that 81.4% of the respondents from Kenya are signed up to at least one social media platform. There are concerns in Kenya that if measures are not taken on the use of social media, they may be used to spread hate campaigns, especially before and during the next general election scheduled for March 2013. Accordingly, in August 2012 the CCK issued guidelines to be followed before releasing an SMS aimed for mass distribution for a political purpose (CCK, 2012d). The guidelines mandate the mobile network operators to scrutinise any political messages before release, obligating operators to not disseminate the information if the message does not conform to the regulations. Among other things, the message must be received by the mobile operator 48 hours before the expected time of dissemination in order to be transmitted.

*81.4% of Kenyans are signed up to at least one social media platform*

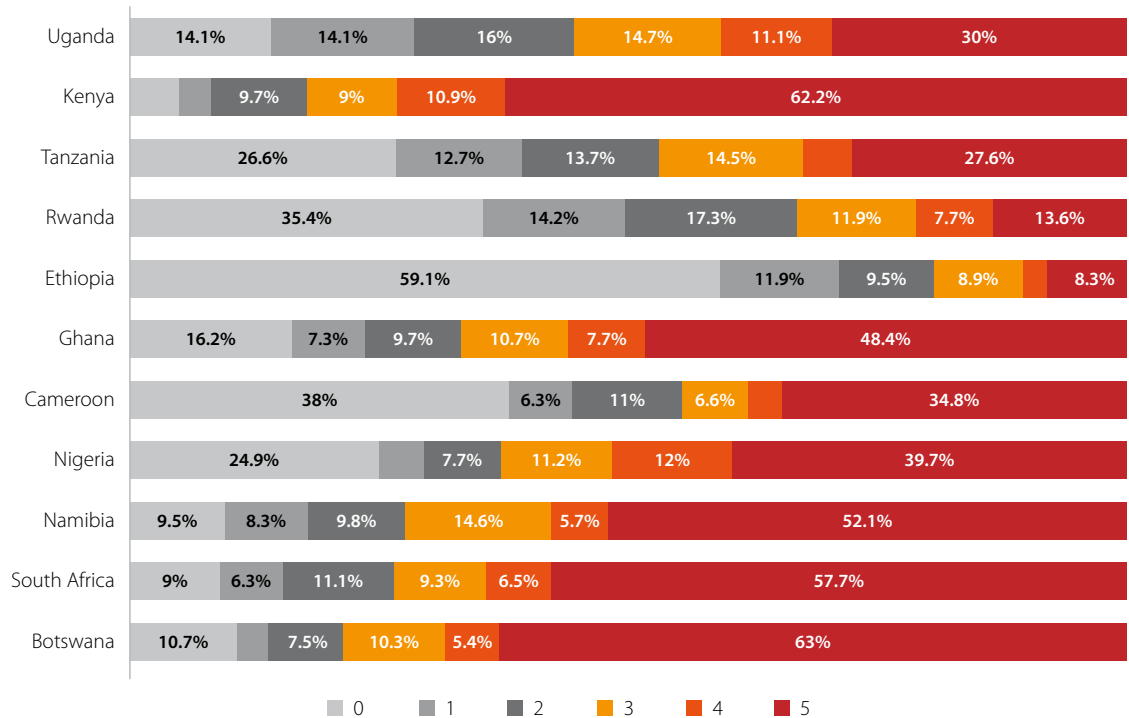
When asked about the effect of internet use on their interpersonal relationships, a large majority of Kenyan respondents indicated that the use of social media has increased their contact with those with whom they share hobbies and religious beliefs; family; friends; and colleagues (see Figure 9).



**Figure 9: Internet use and contact with others (multiple responses)**

Source: RIA ICT Survey data 2011-12

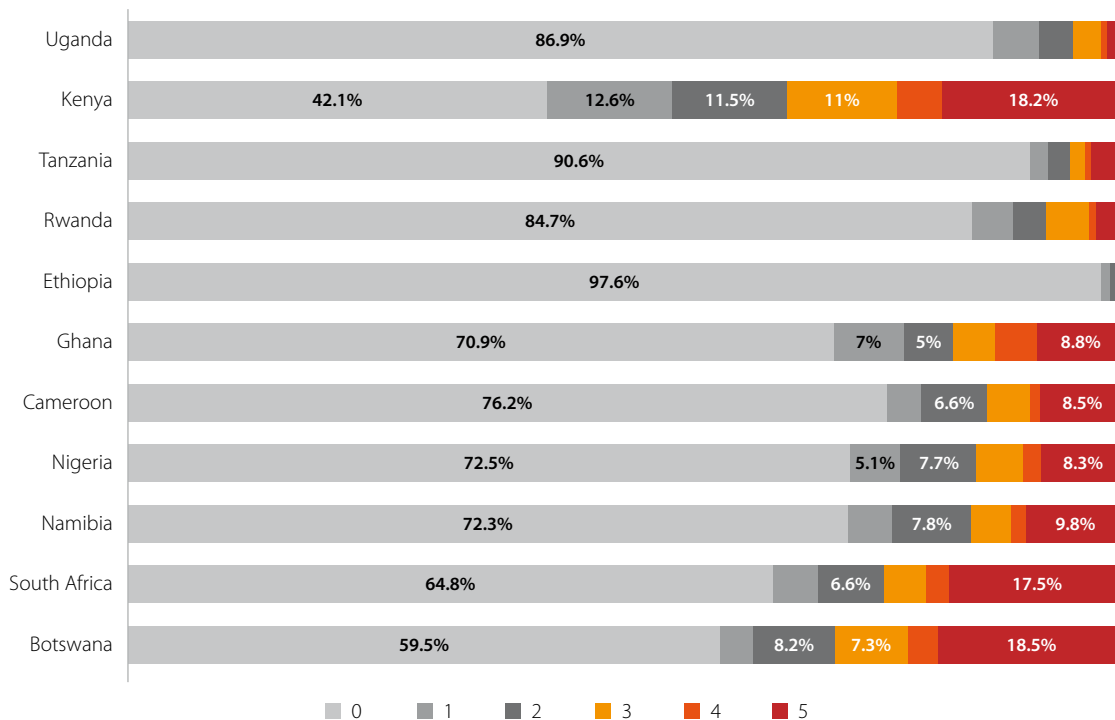
When asked to think about their five closest friends and indicate how many have a mobile phone, Kenya was the leading country (at 73%) in terms of respondents who said four or five of their five closest friend had a mobile phone, followed by Botswana at 68.4% (see Figure 10).



**Figure 10: Number of friends, among five closest, with a mobile phone**

Source: RIA ICT Survey data 2011-12

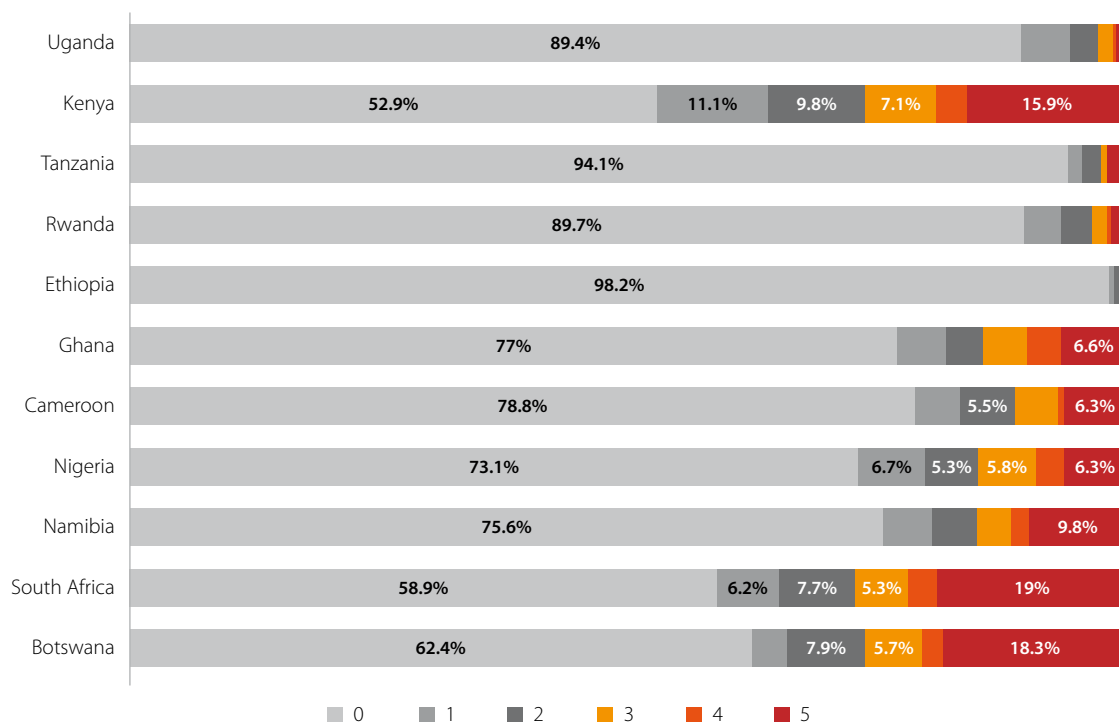
When asked how many among their five closest friends have an email address, again the rankings of four or five were highest (22.8%) in Kenya, closely followed by Botswana (21.6%) and South Africa (19.9%) (see Figure 11).



**Figure 11: Number of friends, among five closest, with an email account**

Source: RIA ICT Survey data 2011-12

When asked how many among their five closest friends use online social networks such as MXit, Facebook or Twitter, Kenya was in third place for scores of four or five on this question, at 19.1%, after South Africa (21.9%) and Botswana (20.4%) (see Figure 12). This is an indication that social media use is widespread in the RIA study countries and that Kenya's level of use is relatively high among those countries.



**Figure 12: Number of friends, among five closest with a mobile phone, using social networking tools**

Source: RIA ICT Survey data 2011-12

*ICT platforms are being harnessed by the state to improve service delivery, including the work of the Kenya National Examination Council (KNEC)*

## ICT use for social and economic development

### Access to Kenya National Examinations through mobile phones and internet

The Kenyan Government has come up with various initiatives aimed at serving the citizens better through the use of ICTs. Since 2010, national examination results have been released online for access via mobile phone and the internet. The results are accessible through the Kenya National Examination Council (KNEC) website or via mobile phone after the user sends a prescribed SMS to the number 7070. This online service is operational as soon as the exam results are made public.

Prior to this online service, students had to go through a long process to access results. The tradition had been that provincial Directors of Education attended a news conference, in Nairobi, where the national Education Minister would

release the examination results. The Directors of Education were then expected to physically transport the results to their respective offices, where their juniors from the districts, and school head teachers, would collect them. With this arrangement, some students (e.g. those attending schools in Nairobi and its environs) would receive their results the same day as the Education Minister's news conference, while those in other parts of the country would have to wait for a day or more, based on how far the school was from Nairobi.

### Kenya Open Data Initiative

Former President Kibaki launched the Kenya Open Data Initiative in July 2011, making government data freely available to the public through a single online portal. The goal of the Initiative is to make core government development, demographic, statistical, and expenditure data available in digital format for use by researchers, policymakers, ICT developers and the general public.

It is believed that Kenya is the first low-income developing country to have an open government data portal, the first in sub-Saharan Africa and second on the continent after Morocco (which is a middle-income country). Some of the datasets, which have been released to the portal, include the 2009 Census, data on national and regional expenditure, and information on key public services. The website<sup>2</sup> is user-friendly and allows for visualisations and downloads of the data, using a variety of platforms.

This Open Data Initiative has received wide acclaim globally as one of the most significant steps Kenya has taken to improve its governance, and it acts as a platform to implement the provisions on access to information in the new Constitution. Demand is high for more data to be availed, with several requests from the public for new datasets.

*Kenya's Open Data Initiative, launched in July 2011, is believed to be the first of its kind in sub-Saharan Africa*

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<sup>2</sup> See: <https://opendata.go.ke/browse>

## Informal sector small and medium enterprises (SMEs)

The SME sector constitutes the largest proportion of businesses in Kenya. But until the end of 2012, there was no Bill legislating the sector. The Micro and Small Enterprises Act of 2012, passed in December 2012, provides for establishment of a Micro and Small Enterprises Authority. The Authority will be responsible for formulating and reviewing policies and programmes for micro and small enterprises, as well as monitoring and evaluating the implementation of existing policies and programmes related to, or affecting, the enterprises. The Act caters for all types of small businesses in the service and manufacturing sectors and targets two classes of businesses. One class is those businesses whose annual turnover does not exceed KES500 000 and which employ fewer than 10 people. The other category is those businesses that make between KES500 000 and KES5million annually, with 10 to 50 employees (ROK, 2012c). The RIA Kenya Informal Sector Survey interviewed 500 SMEs, all of which fell within the first class, i.e. turnover is less than KES500 000 and fewer than 10 employees. Of the businesses surveyed, 76.4% were informal, 20.8% semi-informal and 2.8% were formal.

No particular gender pattern was found in relation to business ownership in the RIA countries where the SME Survey was carried out (see Table 17). However, one noteworthy observation is that in Ethiopia, SME ownership is generally family-based, with 73.4% of Ethiopian SMEs having combined male-female ownership. In Kenya, 48.1% of the businesses surveyed are owned by women, 37.1% by men and 14.9% are jointly owned.

**Table 17: Informal sector SME ownership by gender**

	Male	Female	Both
Uganda	60.4%	28.7%	10.9%
Kenya	37.1%	48.1%	14.9%
Tanzania	57.6%	37.6%	4.8%
Rwanda	68.5%	16.5%	15.0%
Ethiopia	15.6%	10.9%	73.4%
Ghana	34.5%	56.5%	9.0%
Cameroon	42.7%	41.3%	16.1%
Nigeria	32.0%	50.1%	18.0%
Namibia	42.1%	44.7%	13.3%
South Africa	51.1%	32.1%	16.8%
Botswana	24.1%	54.4%	21.6%

Source: RIA Informal Sector Survey data 2011-12

The most widely used ICT by the Kenyan businesses surveyed is the mobile phone, with 71% of the businesses owned by men, and 62.3% of those owned by women, using a mobile phone for business purpose. For the businesses that are a partnership between a male and a female, 80.7% use a mobile phone. The trend is replicated in the other countries, with only South African businesses surveyed having a relatively high use of the fixed-line telephony, computers, and the internet (see Table 18).

*The mobile phone is the most-used ICT by Kenyan small businesses, most of which are informal entities*



In Kenya, both genders use the internet to only a small extent to conduct their business, with 6.1% of male-owned businesses, 1.8% of female-owned businesses and 1.9% of combined-ownership businesses using the internet.

**Table 18: SMEs' use of ICTs (multiple responses)**

	Fixed line	Mobile phone	Computer	Internet
Uganda	7.2%	68.1%	3.8%	2.4%
Kenya	0.3%	68.2%	4.3%	3.4%
Tanzania	1%	46.9%	3%	0.4%
Rwanda	1.4%	53.5%	2.3%	0.9%
Ethiopia	0.4%	12.4%	0.2%	0.1%
Ghana	1.3%	46.3%	2.8%	1.2%
Cameroon	1.8%	57.1%	5%	2.7%
Nigeria	0.2%	44.5%	2.9%	0.3%
Namibia	8.1%	54.6%	6%	5.2%
South Africa	25.6%	54.0%	22.5%	20.7%
Botswana	9.6%	45.6%	10.4%	6.7%

Source: RIA Informal Sector Survey data 2011-12

Bowen *et al.* (2009), in a study of management of small and medium enterprises in Nairobi, observed that small and micro businesses are dominated by people with relatively low levels of education and thus, formal education may not be a critical factor in the success of informal business. In the RIA study, the business owners across the study countries had varied proportions of education levels (see Table 19). The study did not, however, seek to find possible relationships between the owner's education level and the success of the business.

**Table 19: Highest education level of business owner**

	Primary	Secondary	Tertiary	Vocational
Uganda	32.6%	44.5%	16.8%	4.3%
Kenya	19.6%	54.4%	23.5%	2.1%
Tanzania	63.8%	30.6%	5.4%	0.1%
Rwanda	70%	15.2%	4.5%	1.4%
Ethiopia	44.3%	4.9%	0.5%	0.4%
Ghana	44.9%	33.9%	4.2%	4.7%
Cameroon	66.6%	24.9%	5.6%	1.9%
Nigeria	30.4%	28.1%	9.3%	4.8%
Namibia	43.1%	27.8%	8.5%	2.1%
South Africa	16.7%	49.3%	26.9%	4.5%
Botswana	20%	53.7%	18%	3.5%

Source: RIA Informal Sector Survey data 2011-12

It was found that face-to-face communication is the most widely used form of communication between the surveyed SMEs and their suppliers, followed by use of mobile phones. Among the countries that participated in the RIA SME Survey, Kenyan SMEs exhibit the highest (76.7%) use of mobile phones, while Ethiopian SMEs have the least (6.4%) use (Table 20).

**Table 20: Informal sector SMEs' means of communicating with suppliers (multiple responses)**

	Mobile phone	Land line	Email	SMS	Fax	In person
Uganda	59.1%	11.1%	2.0%	10.3%	6.3%	89.2%
Kenya	76.7%	0.2%	0.7%	34.2%	4.7%	94.6%
Tanzania	39.4%	0.2%	0.5%	13.9%	0.5%	97.8%
Rwanda	45.3%	0.2%	1.0%	14.5%	1.3%	89.7%
Ethiopia	6.4%	0.3%	0.0%	0.0%	0.0%	99.5%
Ghana	47.0%	1.5%	0.9%	3.2%	1.9%	90.6%
Cameroon	42.3%	2.5%	1.5%	6.9%	4.9%	91.7%
Nigeria	40.1%	1.5%	0.2%	8.1%	3.0%	89.4%
Namibia	26.0%	8.7%	4.3%	10.8%	5.9%	93.0%
South Africa	42.3%	21.9%	14.9%	11.1%	12.2%	92.1%
Botswana	24.0%	7.5%	5.2%	4.4%	5.9%	90.7%

Source: RIA Informal Sector Survey data 2011-12

The RIA Kenyan Informal Sector Survey was done before the enactment of the aforementioned SME Act of 2012, and thus, positive changes are expected within the sector in Kenya, including expansion of SMEs' use of ICTs.

## Telecom Regulatory Environment (TRE) assessment

### Introduction

The RIA Kenya TRE assessment of 2012 aims to evaluate the perceptions of key Kenyan ICT stakeholders using the TRE method developed by LIRNEasia (see LIRNEasia, 2008) – a method that was also used in the previous RIA review of the Kenyan ICT sector.

### Data collection methodology

The TRE data were collected from 6 December 2011 to 16 March 2012. A list of potential respondents had been prepared before the research started, in order to ensure that there was a balance of respondents from the various sectors. The RIA TRE questionnaire was sent to 115 potential respondents, including all the respondents who participated in the RIA Kenya 2009 TRE Survey. The respondents' were initially classified into the following sectors:

- telecommunications operators;
- associations, NGOs, public-private partnership organisations;
- banks and travel organisations;
- universities and research institutions; and
- donor organisations and the media.

These categories were later collapsed into the three broad categories (see Table 21). The questionnaire was answered by 83 participants, but 13 of the respondents did not complete most of the questions. An email was sent to these 13, requesting them to complete the assessment, which resulted in two of the 13 providing some additional responses but still not completing the questionnaire. By the close of the Survey, 70 respondents had completed the questionnaire in its entirety and two additional respondents (while not completing the questionnaire) had answered the question on the fixed telecommunications sector. Thus, the responses received to the TRE questions on the mobile sector and the VANS-ISP sector were analysed based on data from the 70 respondents who answered all the questions, while the data on the fixed telecommunications sector were analysed based on 72 responses.

*70 of 115 potential respondents completed the RIA Kenya TRE Survey questionnaire in its entirety*

**Table 21: Classification of RIA Kenya TRE Survey respondents**

	Categories	Responses	Used
1	Stakeholders directly affected by telecom sector regulation, e.g. operators, industry associations, equipment suppliers, investors.	28	24
2	Stakeholders who analyse the sector with a broader interest, e.g. financial institutions, equity research analysts, credit rating agencies, telecom consultants, law firms.	27	24
3	Stakeholders with an interest in improving the sector to help the public, e.g. academics, research organisations, journalists, telecom user groups, civil society, former members of regulatory and other government agencies, donors, current government employees from organisations related to the telecom sector EXCLUDING the MoIC and the CCK	28	24

Source: RIA TRE assessment data 2011-12

As per the TRE method, respondents were asked to rate the regulatory environment (the TRE) for each telecommunications sector in terms of seven dimensions:

- market entry;
- access to scarce resources;
- interconnection;
- tariff regulation;
- competitive practices;
- universal service obligations (USO); and
- quality of service (QoS).

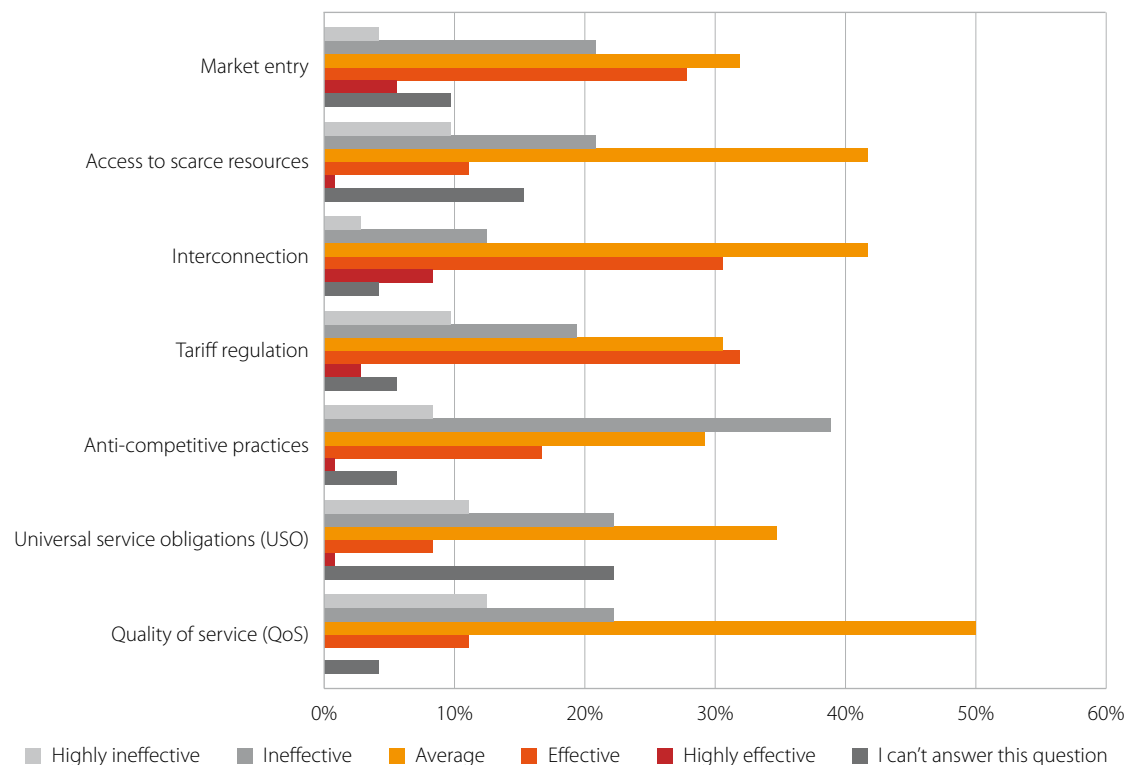
*The TRE assessment methodology seeks stakeholder views on seven dimensions of telecommunications regulation*

From the time of the previous report, the authors noted that the CCK has made attempts to improve the QoS offered by the various operators. It has a fully fledged consumer affairs department which seeks to empower consumers by making them aware of their rights and responsibilities when purchasing and using ICT services. The CCK has also staged a Consumer Education Outreach Programme (CEP) to equip consumers with skills, information, and knowledge necessary to enable them to make informed decisions on choices of products and services in the ICT market.

The CCK has also introduced QoS regulations, and communications providers are now assessed against certain benchmarks. The outcome of the assessment suggests, however, that the CCK efforts have not led to a considerable improvement to the quality of service by the operators as noted from the below assessment by the consumers.

## TRE assessment findings

The question that asked respondents to rate the quality of the regulatory environment (the TRE) over the preceding three years, across seven dimensions of the fixed-line sector, produced the responses outlined in Figure 13.



**Figure 13: Kenya TRE assessment results for the fixed sector**

Source: RIA TRE assessment data 2011-12

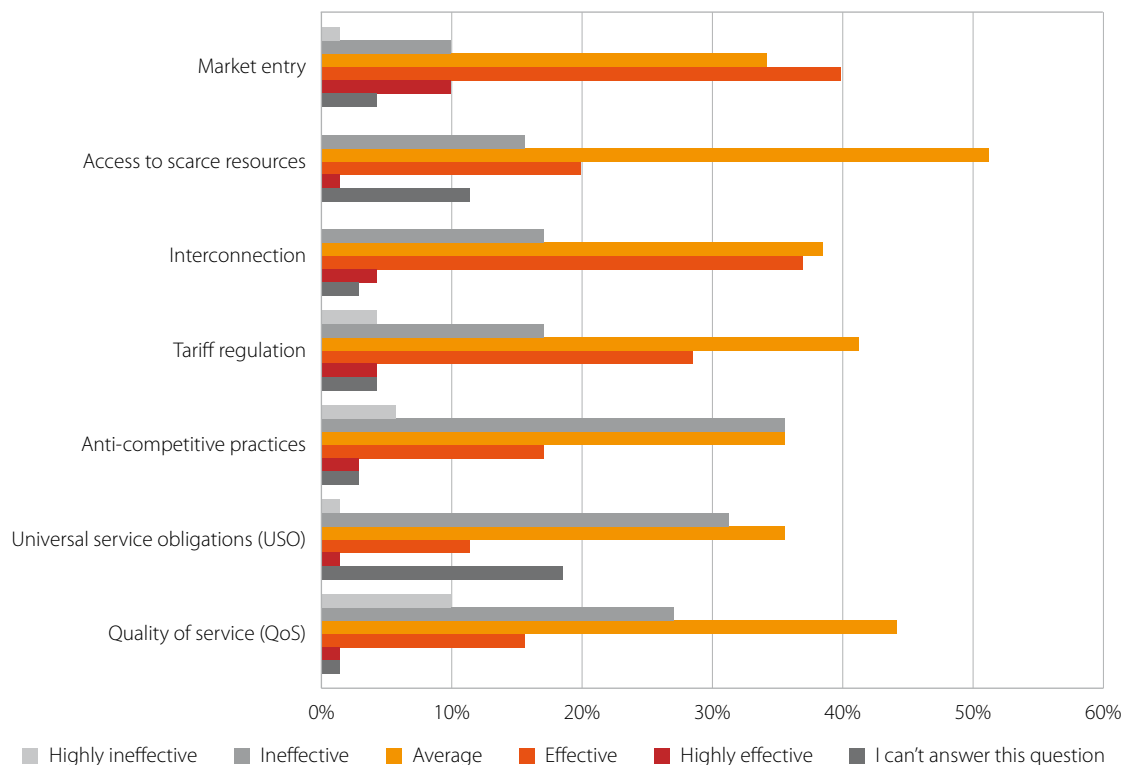
In terms of the overall scores across the seven dimensions of the TRE in relation to the fixed-line sector, 29.1% of the respondents gave a TRE assessment of “average”, and 27.7% of the respondents gave an “effective” rating for regulation of market entry, interconnection and tariff regulation. The following are paraphrases of responses to the fixed-line TRE question:

- Generally, the quality of the regulatory environment is effective but there is need for improvement.
- Tariff regulation, especially regarding some telecommunications operators which government has a share in, have held some sway over the debate, with government occasionally being accused of showing bias (but generally, other aspects seem to be on a good course).

*According to the RIA TRE findings, the fixed sector is seen by some stakeholders as a dying market segment*

- The fixed telecommunication sector is actually dying, partly because of the vigorous penetration of mobile phone operators. The regulatory environment also appears lax and no attempts to maintain the infrastructure associated with them are evident.
- The market is dynamic but has been left open to under-handing competitive practices by a few service providers who to some extent play tricks on each other for survival reasons. The regulatory framework is, however, very good, and has at times used its authority over mischievous players in the market. Tariff regulation and interconnectivity remain a mystery to most users of services.
- Telecommunication operations seem to have no control in Kenya.
- The fixed sector has become a dead sector.
- The Second National Operator (SNO) and LLO processes were rip-offs by the CCK, whereby the ones that paid for licences based on anticipated revenues failed to launch and CCK did not assist them to launch or ensure the areas chosen were served, hence the failure of many of these licensees.
- The legislative framework remains very weak and can be manipulated by stakeholders.
- The Competition Authority is yet to assert itself in regulating the telecommunications sector. The CCK's attempts have been challenged and have appeared to favour Safaricom. Customers continue to face challenges with QoS and little is being done to enforce existing legislation, such as the Constitution's requirements for consumer protection.
- The CCK has not been able to compel the three largest telecommunications market players to interconnect with the licensed applications service providers (ASPs) and content service providers (CSPs), especially for SMS-based services. An example is the ASP/CSP which owns an SMS gateway and its own numbering scheme but has not been able to get SMS-interconnect for more than three years. Similarly, there exist in the market players with small networks of CDMA2000 who have to date not been able to get SMS-interconnect with the big players. The regulator needs to put up – or tender for a party to put up – a neutral SMS-interconnect exchange similar to the Kenya Internet Exchange point, in order to level the ground for SMS service provision by small operator networks, and to enable SMS commoditisation.
- Dominant players often have undue influence over the regulator.
- Although the regulator says that community-based operators can get licences under less stringent conditions than the conditions for other operators, this is not a widely publicised policy being made publicly available to any interested community-owned telecommunication operator. Overall, the regulator does well in addressing *ad hoc* consumer concerns as they emerge, although we are yet to get a balance between catering to business concerns and regulating anti-competitive practices.
- There is still a monopoly in the fixed-line area. What happened to the SNO?
- On QoS, it seems the CCK does not care. The consumers in Kenya have been forced to contend with whatever service the providers offer. Questions of quality are of no concern to the operators, and to the regulator as well. On USO, the regulator has been promising to establish a universal services and access fund for three years now, and nothing has happened. The CCK should either implement the idea or stop talking about it.

The question that asked respondents to rate the seven dimensions of TRE for the mobile sector produced the results provided in Figure 14.



**Figure 14: TRE assessment results for perceptions of the mobile sector**

Source: RIA TRE assessment data 2011-12

When asked to give an overall TRE assessment for the mobile sector, 34.3% of respondents gave a score of “average”. And as shown in Figure 14, 27.7% of the respondents found regulation of market entry, interconnection, and tariff regulation to be “effective”, while 27.1% found regulation of anti-competitive practices, USO, and QoS to be “ineffective”. The following are paraphrases of the written responses given on regulation of the mobile sector:

- Interconnection regulation seems to be a lost game, with complaints on interconnection rate variances aimed at disadvantaging consumers.
- The mobile sector in Kenya is really a vibrant one, and a lot of developments have happened in a very short time. As far as tariff regulation is concerned, there have been attempts by the CCK to bring about a level playing ground for all operators. However, it is disheartening that the government would like to keep the communication costs high (claiming that low tariffs will hurt the economy), even when some operators (e.g. Airtel) want to lower the costs.
- There is a need for civic education in mobile sector regulation matters.

Some stakeholders worry that the CCK is vulnerable to capture by strong market players

- The CCK is captured by the political environment, e.g. the CCK is not able to implement mobile termination rates reductions. The regulator is also captured by the dominant mobile operator Safaricom, and is thus not able to regulate the market.
- More needs to be done to achieve regulatory effectiveness.
- Unfortunately, the political environment overrides the regulatory environment in respect of market entry. Most operators have had very poor QoS (based on estimates derived via TEMS optimisation kits) except for Airtel (which has a slight advantage because of a better 2G network). The 3G networks for some of the operators are at best zonal 3G, with poor services and speed beyond the zones targeted.
- The regulatory framework is weak.
- Dominant players often have undue influence over regulation.
- USO regulations need to be implemented.

When asked to rate regulatory effectiveness in the VANS-ISP sector over the preceding three years, the responses generated the findings as presented in Figure 15.

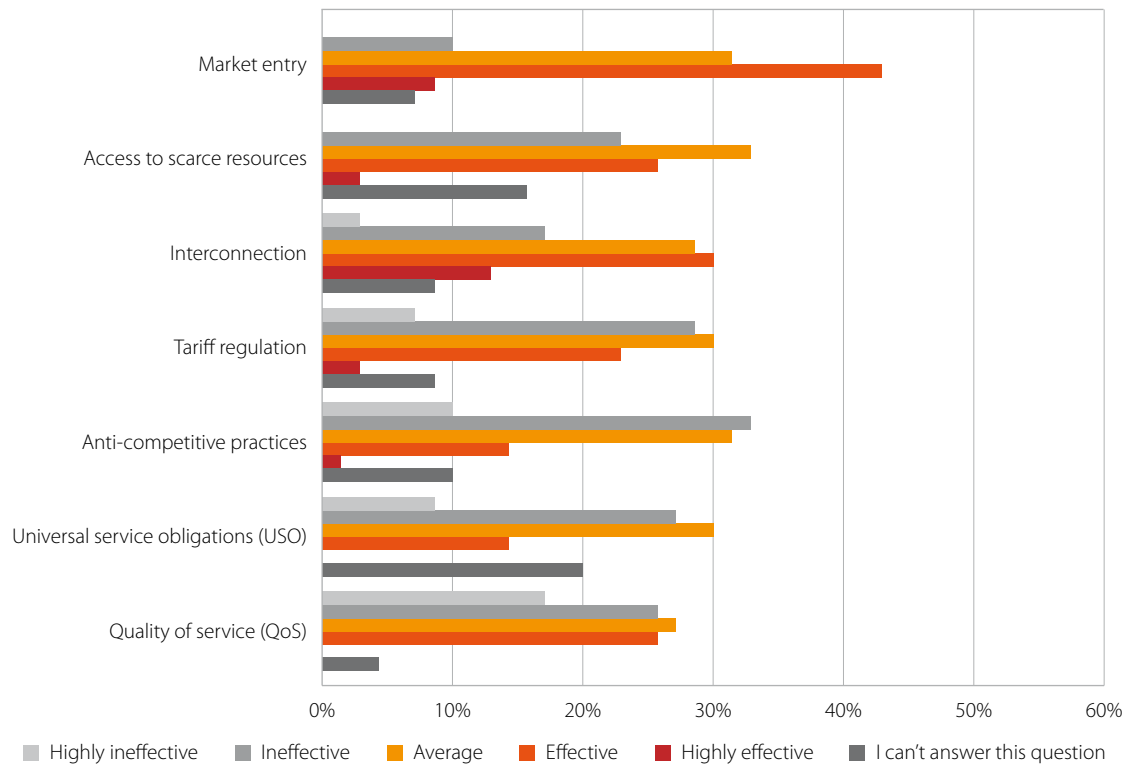


Figure 15: Kenya TRE assessment results for the VANS-ISP sector

Source: RIA TRE assessment data 2011-12



VANS-ISP sector market entry regulation ranked highest, with 42.9% of respondents finding it “effective” and 8.6% finding it “very effective”. When asked to give an overall ranking for regulation of the VANS-ISP sector (across all seven dimensions), 27.1% of respondents gave a score of “average”. The following are paraphrases of written responses given on regulation of the VANS-ISP sector:

- The quality of the regulatory environment for each of the VANS and ISPs is generally effective.
- There has not been the much-anticipated significant cost reduction due to fibre landing on Kenya’s coast. However, the service providers had hinted that the cost of investment must be recovered first before the end users can experience any reductions. Three years down the road we still do not experience quality in terms of the reliability and dependability of the fibre resources. USO is still a pipe dream, with the CCK not clear on how it will be managed. For schools and other social facilities meant for general good in society, what will be the framework for access to a Universal Service Fund, for example? Some ISPs have not changed in terms of their QoS, despite their promises three years ago.
- There is still room for improvement. There is still no level playing ground.
- There have been a number of value-added services, e.g. money transfer, which are doing well. However, QoS for internet broadband, using mobile dongle modems, for example, has been intermittent (from poor to good) and lacks stability. QoS needs to be regulated so that citizens get value for money.
- This is a sector that has shown tremendous growth and a minimum of game-playing among actors in the market, and it is quite dynamic.
- Internet services are constrained, in spite of the fibre-laying. No improved access has resulted nor is it due.
- Most ISPs have not honoured their service level agreements (SLAs), and the CCK does not attend to complaints of SLAs not being observed. Government initiatives to have ISPs provide services beyond city densities have been ineffective. The licensing of mobile operators to act as ISPs has rendered previous ISPs irrelevant, despite those ISPs having paid their fees to the regulator.
- Rural and residential areas are not benefiting from the laying of fibre optic cables.
- Internet services are being offered by mobile operators, and thus the so-called ISPs are doing nothing other than reselling capacity.
- VANS pays a high toll charge to the CCK to provide their services. There is insufficient unbundling of services and therefore, a lack of transparency in the market. Meanwhile, business demand for VANS is very high.

Table 22: Table of Kenya TRE assessment (7 dimensions, 3 sectors)

Dimension	Fixed sector	Mobile sector	VANS-ISP sector
Market entry	25% of respondents found regulation of market entry in the fixed sector to be highly ineffective or ineffective; 31.9% found it to be average; 33.3% found it to be effective or highly effective; and 9.7% did not have sufficient information to answer the question.	11.4% of respondents found regulation of market entry in the mobile sector to be highly ineffective or ineffective; 34.3% found it to be average; 50% found it to be effective or highly effective; and 4.3% did not have sufficient information to answer the question.	10% of respondents found regulation of market entry in the VANS-ISP sector to be highly ineffective or ineffective; 31.4% found it to be average; 51.4% found it to be effective or highly effective; and 7.1% did not have sufficient information to answer the question.
Access to scarce resources	25% of respondents found regulation of access to scarce resources in the fixed sector to be highly ineffective or ineffective; 41.7% found it to be average; 12.5% found it to be effective or highly effective; and 15.3% did not have sufficient information to answer the question.	15.7% of respondents found regulation of access to scarce resources in the mobile sector to be highly ineffective or ineffective; 51.4% found it to be average; 21.4% found it to be effective or highly effective; and 11.4% did not have sufficient information to answer the question.	22.9% of respondents found regulation of access to scarce resources in the VANS/ISP sector to be highly ineffective or ineffective; 32% found it to be average; 28.6% found it to be effective or highly effective; and 15.7% did not have sufficient information to answer the question.
Interconnection	15.3% of respondents found regulation of interconnection in the fixed sector to be highly ineffective or ineffective; 41.7% found it to be average; 38.9% found it to be effective or highly effective; and 4.2% did not have sufficient information to answer the question.	17.1% of respondents found regulation of interconnection in the mobile sector to be highly ineffective or ineffective; 38.6% found it to be average; 41.4% found it to be effective or highly effective; and 2.9% did not have sufficient information to answer the question.	20% of respondents found regulation of interconnection in the VANS-ISP sector to be highly ineffective or ineffective; 28.6% found it to be average; 42.9% found it to be effective or highly effective; and 8.6% did not have sufficient information to answer the question.
Tariff regulation	29.1% of respondents found tariff regulation in the fixed sector to be highly ineffective or ineffective; 30.6% found it to be average; 34.7% found it to be effective or highly effective; and 5.6% did not have sufficient information to answer the question.	21.4% of respondents found tariff regulation in the mobile sector to be highly ineffective or ineffective; 41.4% found it to be average; 32.9% found it to be effective or highly effective; and 4.3% did not have sufficient information to answer the question.	35.7% of respondents found tariff regulation in the VANS-ISP sector to be highly ineffective or ineffective; 30% found it to be average; 25.7% found it to be effective or highly effective; and 8.6% did not have sufficient information to answer the question.

Regulation of anti-competitive practices	47.2% of respondents found regulation of anti-competitive practices in the fixed sector to be highly ineffective or ineffective; 29.2% found it to be average; 18.1% found it to be effective or highly effective; and 5.6% did not have sufficient information to answer the question.	41.4% of respondents found regulation of anti-competitive practices in the mobile sector to be highly ineffective or ineffective; 35.7% found it to be average; 20% found it to be effective or highly effective; and 2.9% did not have sufficient information to answer the question.	42.9% of respondents found regulation of anti-competitive practices in the VANS-ISP sector to be highly ineffective or ineffective; 31.4% found it to be average; 15.7% found it to be effective or highly effective; and 10% did not have sufficient information to answer the question.
Universal service obligations (USO)	33.3% of respondents found regulation of USO in the fixed sector to be highly ineffective or ineffective; 34.7% found it to be average; 9.7% found it to be effective or highly effective; and 22.2% did not have sufficient information to answer the question.	32.8% of respondents found regulation of USO in the mobile sector to be highly ineffective or ineffective; 35.7% found it to be average; 12.8% found it to be effective or highly effective; and 18.6% did not have sufficient information to answer the question.	35.7% of respondents found regulation of USO in the VANS-ISP sector to be highly ineffective or ineffective; 30% found it to be average; 14.3% found it to be effective or highly effective; and 20% did not have sufficient information to answer the question.
Quality of service (QoS)	34.7% of respondents found regulation of QoS in the fixed sector to be highly ineffective or ineffective; 50% found it to be average; 11.1% found it to be effective or highly effective; and 4.2% did not have sufficient information to answer the question.	37.1% of respondents found regulation of QoS in the mobile sector to be highly ineffective or ineffective; 44.3% found it to be average; 17.1% found it to be effective or highly effective; and 1.4% did not have sufficient information to answer the question.	42.9% of respondents found regulation of QoS in the VANS-ISP sector to be highly ineffective or ineffective; 27.1% found it to be average; 25.7% found it to be effective or highly effective; and 4.3% did not have sufficient information to answer the question.

Source: RIA TRE assessment data 2011-12

## Observations from the TRE assessment findings

**USO:** A high percentage of the respondents – ranging between 18.6% and 22.2% for the three sectors – said they did not have sufficient information to answer the USO question, which reveals that public and industry awareness-raising is needed in this area.

**Regulation of anti-competitive practices:** Between 41.2% and 47.4% of respondents found the regulation of the anti-competitive practises to be highly ineffective or ineffective, thus revealing that this is an area that needs to be addressed by the CCK.

## Conclusions and recommendations

This study has identified major developments in Kenya's ICT sector in the last three years (from 2010 to 2012). For maximum benefits to be derived from these developments, there is a need to review and align the existing legislation, the Kenya Information and Communication Act (Cap. 411A), with the emerging changes and to address some of the requirements mandated by the new Constitution.

Several gaps need to be filled, as is hereafter discussed:

There is a need for a policy, legal, or regulatory framework for sharing, auctioning, and re-farming spectrum (using existing 2G and 3G spectrum for mobile LTE services). Mobile broadband is critical infrastructure and lower-frequency spectrum lowers operational costs and increases bandwidth throughput. Such spectrum has a particularly important potential impact for rural areas, since lower frequency spectrum can reach longer distances, requiring fewer base stations for mobile broadband.

In addition, there is a need for an institutional framework to manage publicly funded infrastructure such as the NOFBI and TEAMS infrastructures.

Further, the broadcast regulator KBC is being restructured to separate infrastructure from content, putting more emphasis on the need for a clear institutional framework.

Consideration of ICT infrastructure as a critical national infrastructure should address issues of way leaves, vandalism, and cable cuts, which are a hindrance to full utilisation of ICT services as well as the growth of the sector. This will also ensure harmonisation with other relevant Acts such as, *inter alia*, the Roads Act 2 of 2007 and The National Construction Authority Act, 41 of 2011.

Priority should also be given to harmonisation of all government institutions dealing with ICT issues. As noted in this report, ICT responsibilities are distributed across different institutions of the government with little, if any, coordination. This has resulted in confusion in the industry, with stakeholders not knowing which government institution is responsible for what.

Further, where policy and regulatory developments are not translating into positive stakeholder sentiment (as gauged by the RIA TRE assessment outlined in this report), the regulatory agency, the CCK should review its public communication strategies to ensure that regulatory exercises, and gains, are being adequately communicated to stakeholders and the public. Negative sentiment should also be addressed through communication with stakeholders towards agreement on how current problems are to be addressed in the future.

The issue of the MTR was finalised at the end of 2012, after the findings of a CCK study found that the implementation of the agreed glide path would not affect the market negatively. It was appropriate for the CCK to be cautious on the MTR matter, in order to ensure that while taking the interests of citizens and the public into account, regulation did not result in the mobile sector collapsing due to unsustainable tariffs. Public and business interests had to be balanced, for mutual benefit and for the growth of the sector.

The waiver of import duty on imported software to attract foreign investors in the ICT industry should be implemented with caution, since the impact on local software development may be negative. Considering that Kenya has become recognised as an up-and-coming global source of innovative software, especially mobile applications software, the growth should be facilitated through enabling policies. Furthermore, the software development industry has been identified as one of the priority areas for developing globally competitive technology-based products in the Science, Technology and Innovation Policy, and its growth should be encouraged and promoted.

Finally, with the rapid growth of social media and networking, its use should be geared towards facilitating socio-economic development of individuals and households using the media. Negative outcomes from its use should be mitigated while efforts are made to maximise the potential positive outcomes. Creation of awareness and government use of the same media platforms to disseminate important governance and development information could be the first step, in addition to creation of an enabling policy framework that protects the rights and freedoms of all involved including institutions.

*In order to limit industry confusion, state bodies engaging with ICT matters require better harmonisation and coordination*

*The emergent local software innovation sector needs to be encouraged, particularly in the area of mobile applications*

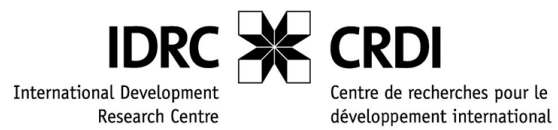
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