



THE QUEST FOR AN INFORMATION SOCIETY:

*benchmarking the
regulatory framework to usher Kenya in to the
information era*

INSTITUTE OF ECONOMIC AFFAIRS-KENYA



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Acronyms

3G	3rd Generation
CCK:	Communications Commission of Kenya
CMA	Capital Markets Authority
DOI:	Digital Opportunity Index
EAC	East African Community
EASSy:	East African Submarine Cable System
EDGE	Enhanced Data rates for GSM Evolution
FONN	Fibre Optic National Network
GPRS	General Packet Radio Service
ICT:	Information and Communication technologies
ISP	Internet Service Provider
MoIC	Ministry of Information and Communications
NGOs	Non-Governmental Organisations
TEAMS:	The East Africa Marine System
WSIS	World Summit on Information Society

Background and Context

Kenya like other African countries has come a long way in the development of Information and Communications Technologies (ICT) and its applications over the last decade. A decade ago, a phone was a privilege and belonged to a few; internet belonged to even fewer and mostly to international NGOs and international organisations. In 2007, this has changed radically with both the cellular phone and internet being readily available. It took a combination of lobbying by domestic forces, international pressure, technological forces, local and international domestic investors and of course the government deregulation to bring about this change.

Institute of Economic Affairs (IEA) was there contributing in the process through high level and focused debate to document the journey and highlight the success and weaknesses that needed to be addressed.

IEA commissioned this study to document the progress so far and explore what needs to be done to propel further growth by exploiting ICTs. This report builds on an earlier reports - *Telecommunications Policy in Transition: mainstreaming Kenya into the global information economy* published by IEA in 2002 as IEA research paper series no 2 and *A quest for national recovery: Repositioning ICT as a pillar for rapid economic growth* published in 2003 . The focus of the present focus is for the period from 2003-2007.

This paper examines the ICT sector from the policy, regulatory, and operational levels and examines the interplay of the regulator and its role to catalyse the business environment, the consumer demands and the resulting successes and challenges. The main thrust is to answer one question - *Where is Kenya in its quest for development and exploitation of ICTs and what are the policy and regulatory gaps to exploit ICTs for growth towards a Kenya Information Society and how is the regulator positioned to chaperone Kenya to the information society ?*

State of Affairs of ICT Sector

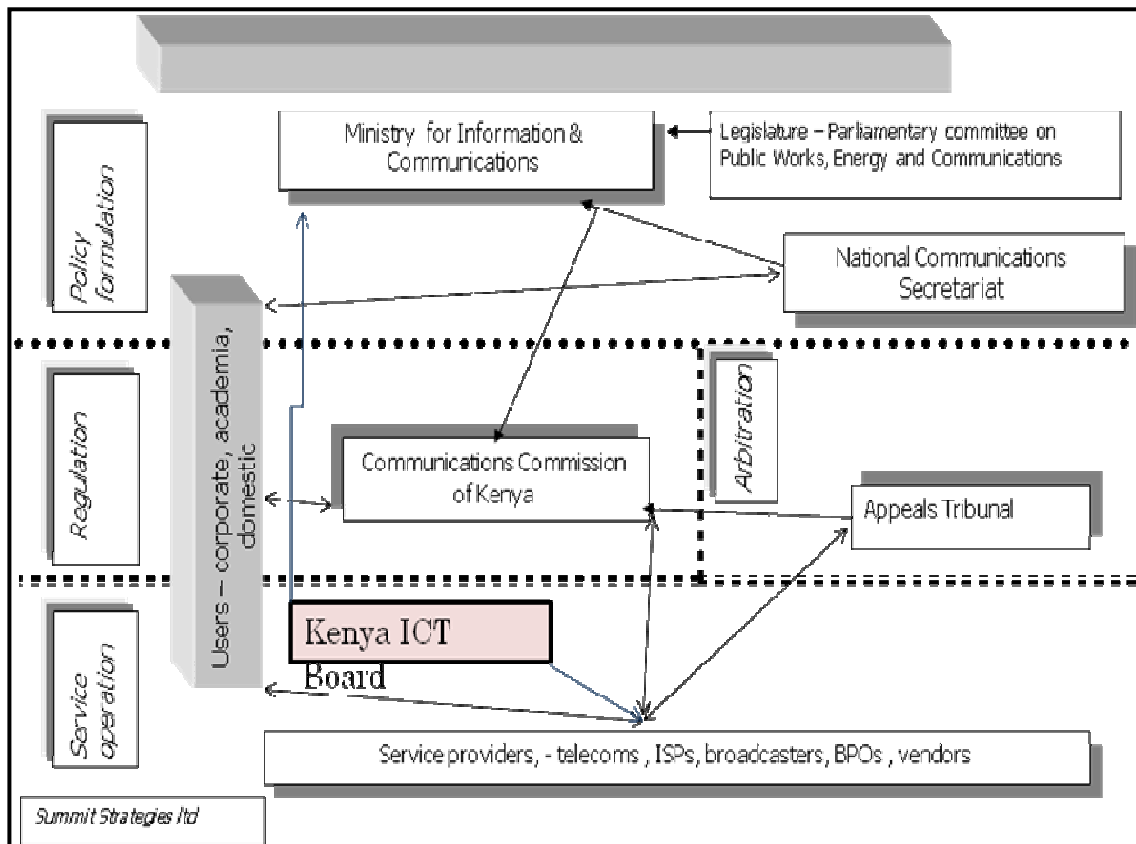
The state of affairs of the ICT sector is a function of the policy and regulatory evolution to nurture service providers to produce services. The government implemented ICT policy reforms, which resulted in a number of structural changes in the ICT sector resulting in fast evolution of the sector.

2.1 Evolution of the ICT sector

The implementation of telecommunications policy guidelines in January 1997, April 1999, December 2001, and national ICT policy of March 2006 resulted in the following key structural changes;

- Elucidation of a long term vision for the ICT sector to contribute to socio-economic development
- Promulgation of a new market structure driven by the private sector in a competitive environment. Government was to withdraw as an investor through privatisation in the telecommunications sector and create an enabling environment to foster enhanced role of the private sector as the engine of development.
- Redefinition and clarification of roles in telecommunication sector development. The policy statements identified distinct roles for policymaking, market regulation in a competitive environment, dispute resolution and operation of services among multiple players. Private sector would henceforth be the key investor in the sector with profit being a key incentive as illustrated in figure 1.

Figure 1: Institutional Arrangements in the ICT Sector



Kenya government has noted the opportunities in the ICT sector and in particular outsourcing services among others and taken a decision to market Kenya’s ICT capacity. To achieve this, Ministry of Information and Communications (MoIC) established the Kenya ICT Board to realise this objective. The Board operates closer to the operator’s space to seize market opportunities.

The national ICT policy promulgated in March 2006 specifically is a response to the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007). The National ICT policy “seeks to facilitate sustained economic growth and poverty reduction; promote social justice and equity; mainstream gender in national development; empower the youth and disadvantaged groups; stimulate investment and innovation in ICT and achieve universal access.” (RoK 2006)

The policy is based on four guiding components namely infrastructure development, human resource development, stakeholder participation and the creation of an appropriate policy and regulatory framework. This policy is a culmination of the difficult stages that Kenya had to go through to realise an acceptable policy framework. Table 1 illustrates some of the recent milestones in policy formulation.

Table 1: Addressing the Changing Dynamic

Timeline	Aug 2003	June 2005	March 2006	May 2007
Policy evolution				
Tool	'Draft' National ICT infrastructure	Draft ' National ICT Policy ' - not finalised by government National stakeholder consultation	National ICT Policy guidelines approved by Cabinet and Gazetted	
Objective	Exploit ICTs to improve the livelihoods of the Citizens and become a centre of excellence in the Region and Internationally			
Key features		Convergence of services Exploitation of ICT for national development No monopoly		
Stakeholder involvement	Controlled stakeholder involvement	Open to all stakeholders to contribute. Government proactively facilitated contribution by all stakeholders		
Regulatory evolution				
Regulation		New licensing framework published by CCK - technology neutral approach	Information & Communications Bill 2006 (Draft) published to repeal Kenya Communications Act 1998	Kenya Communication s (Amendment) Bill 2007 published - withdrawn at 2 nd reading stage

Source: Adapted from policy documents by Summit Strategies

Within this institutional infrastructure, the market is managed by Communications Commission of Kenya (CCK) as Kenya's regulatory agency in the ICT sectors to ensure availability of high quality services that are affordable and distributed to all parts of the country. The tools to achieve this objective include the mandate to:

- License operators
- Regulate Tariff
- Develop and enforce interconnection guidelines
- Design and Implementation of Universal Access strategy
- Spectrum & Numbers management
- Type Approval
- Consumer Protection

Kenya Communications Act 1998 and Kenya Communications Regulations 2001 provide the legislative framework for its operation.

One of the key objectives to the sector reform was to improve quality of services to the consumers. This was imperative given the high failure rate of the telecommunications services before the advent of the reform. The regulator has imposed quality of service obligation to ensure that consumers get improved services and in June 2007, the CCK purchased equipment worth Ksh.50 million to monitor the quality of service from the operators. The Q-voice assists CCK to measure call drop rates, speech quality, call block rate, service coverage and SMS delivery time, among other quality of service parameters. This is in the quest to ensure high quality services for the consumers to exploit the benefits of ICTs. This calls for all round indicators of ICT development.

2.2 Measuring the State of Affairs – Choosing the Indicators

Appropriate indicators applied in the Kenyan context, would help Kenya compare with other countries, and determine where we are in this respect. Such indicators should be able to measure the right thing, keep the data simple and make it practical. Where undertaken, the following are the key features provided by the measurement tools;

- Provides a measure of the degree to which a country, or economy may be ready, willing or prepared to obtain benefits arising from ICTs (Dada 2006)
- Gauges readiness to partake in e-services e.g. e-commerce and e-government
- Expressed in indices that capture technology infrastructure (teledensity) and/or spend (percentage of GDP).
- Indices facilitates comparisons between countries and rankings
- The first generation tools were largely quantitative.

Many indicators have been developed since 1999 when the first generation measuring tools were developed. According to Bridges .org (2005) the tools broadly measure the ability of an economy to apply ICTs in economic development on one hand or the society to exploit ICTs in the day to day socio-economic activities including health, education, governance and socialisation etc. Based on this framework Bridges.org classified a number of tools as set out in Table 2.

Table 2: Tools to Measure Status of Affairs towards Information Society

E-economy	E-society
<ul style="list-style-type: none"> • World IT Society Alliance e-commerce • McConnell International ‘E-Readiness Report • Mosaic ‘ Global Diffusion of the internet framework • EIU’s e-business readiness rankings • Pyramid Research/Infodev Information Infrastructure Indicators • Kenny’s prioritising Countries for Assistance to overcome the Digital Divide 	<ul style="list-style-type: none"> • CIDs E-readiness Assessment guide – Harvard • CIDCM Negotiating the Net Model – University of Maryland • World Bank’s Knowledge Assessment Methodology (KAM) • World Economic Forum’s (WEF) Networked Readiness Index • Infodev’s Country development gateway country studies • SCAN ICT by UNECA • Orbicoms infostates - UNESCO • International Telecommunications Union – Digital Access Index/Digital opportunity index

Source: bridges.org (2005)

All the measurement tools were developed independent of each other and indeed measured different aspects of ICTs. This resulted in duplication with countries having measured their e-readiness more than once. Kenya for example had been measured nine times in the recent past. World Summit on the Information Society (WSIS) meeting in Tunis in 2005 took a decision to create a standard for measuring the state of the affairs at the national level. Based on this principle, WSIS Geneva Action Plan called for a realistic international performance evaluation and benchmarking through comparable statistical indicators and requested countries to give data to ITU to develop a periodical report of the progress of the information society. This data is important for three purposes namely:

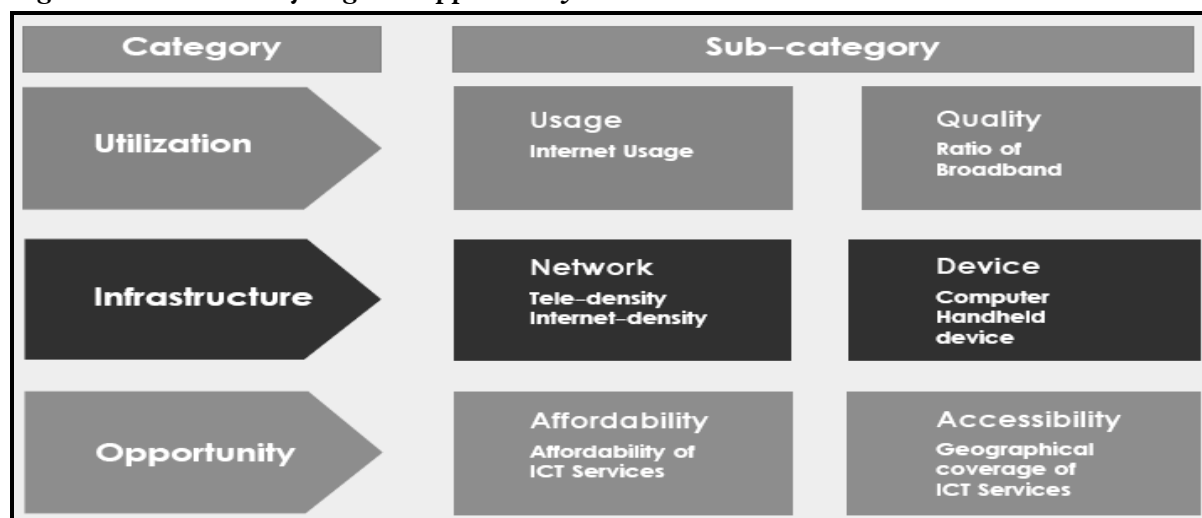
- To support policy making and guide decision makers ,
- To compare countries over time and against each other and,
- To set and evaluate targets and objectives.

WSIS approved the Digital Opportunity Index (DOI) as an internationally agreed indicator to measure progress to the information society and to bridge the digital divide¹. In an ideal world, the digital opportunity means that;

- The whole population has easy access to ICTs at affordable prices;
- All homes are equipped with ICT devices;
- All citizens have mobile ICT devices;
- Everyone is using broadband.

The DOI is comprised of eleven indicators grouped around three clusters namely - opportunity, infrastructure and utilisation as illustrated in Table 2.

Figure 2: Structure of Digital Opportunity Index



Source: ITU

With the mandate from WSIS, ITU has prepared annual reports on the state of affairs of all world economies. The annual report therefore enables a country to assess itself over time and against other countries and understand which areas need attention.

The clusters are progressive with each cluster building on the preceding cluster. Thus, the opportunity provides the foundation while utilisation measures the consumption of services. In between, a potential consumer needs the appropriate devices to use ICTs.

Opportunity cluster defines the accessibility and the affordability of ICTs. Once a potential consumer has a signal in the neighbourhood, it is only then that the consumer can consider using the ICT services. After making a determination to use the signal the next concern is capacity to pay which is a function of affordability. Affordability and accessibility determine if the consumer has an opportunity to exploit the ICT services.

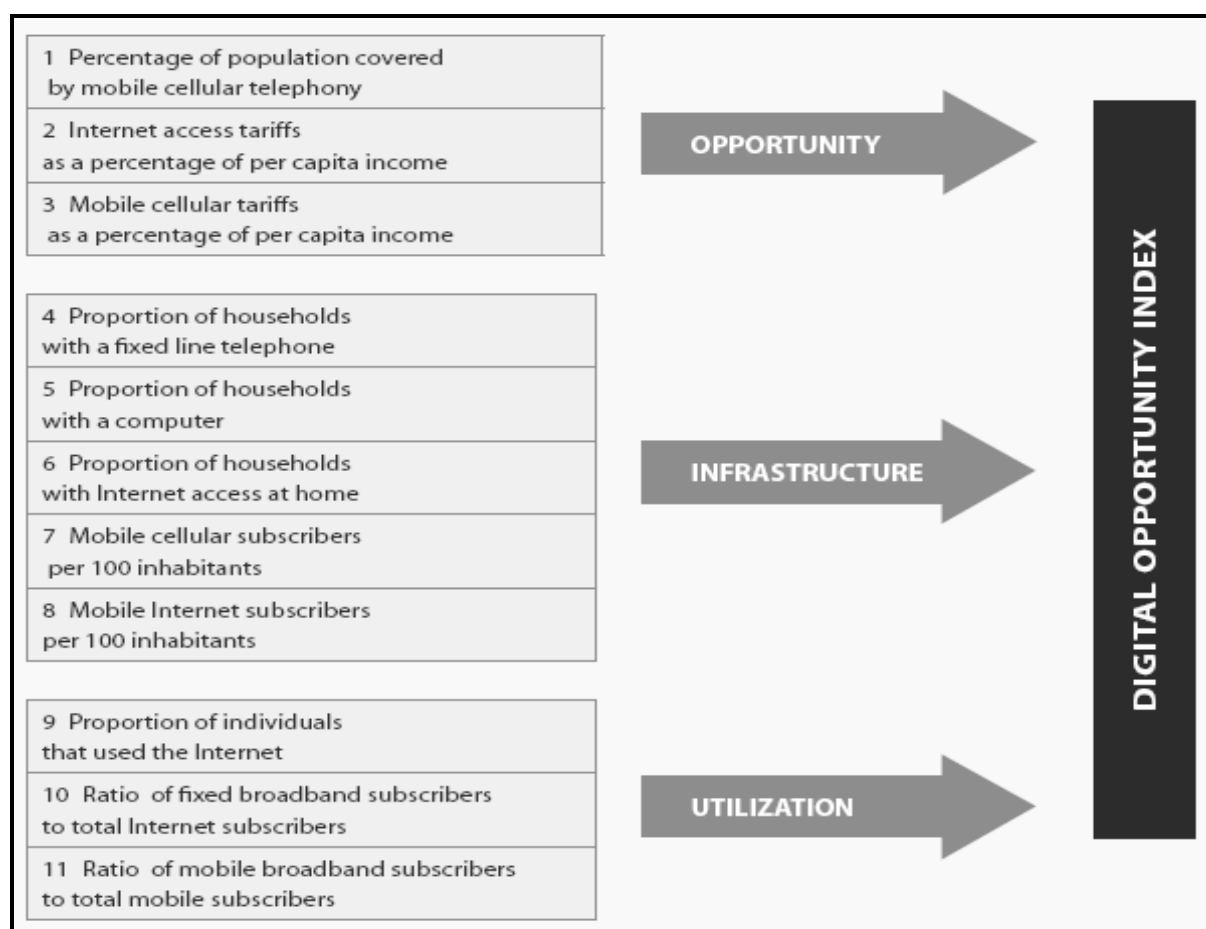
¹ Another index approved by WSIS is the ICT opportunity index. Critics believe that this index measures the older technologies.

Infrastructure cluster defines the presentation of services by reviewing the network capacity to deliver to the consumer as well as the devices to use the services. DOI especially focuses on the home and ability of the home to access high quality services. Presumably, this is because government development efforts target the home and therefore a key indicator is access by fixed line to the home with high capacity links. The cluster also focuses on the devices to access the ICT services. Thus, the number of computers to the home is a key component. Developing countries with poor fixed line infrastructure score poorly on fixed line access to home as well as computers in the household.

It is only after a potential consumer has the opportunity and the infrastructure that the consumer uses the services. This indicator measures actual usage of ICTs.

The detailed sets of indicators are illustrated in Table 3.

Figure 3: DOI indicators



Source: ITU

While ITU uses DOI to track progress of countries towards the information society, it is not the only tool available. The advantage however is that DOI is widely used and makes it possible to compare among nations and based on the results map the disparities at regional or international level to information policy for development.

It is also feasible for a country to adopt DOI and map the distribution of opportunity in the country as a tool to support development. In Kenya, it is a choice that CCK can take to adopt DOI to track and compare among regions and with other countries.

2.3 Ranking Kenya among Nations

In the most recent report published in 2007, Kenya ranks poorly at number 153 globally and 27 in Africa as indicated Table 3.

Table 3: Benchmarking Kenya with Significant Countries

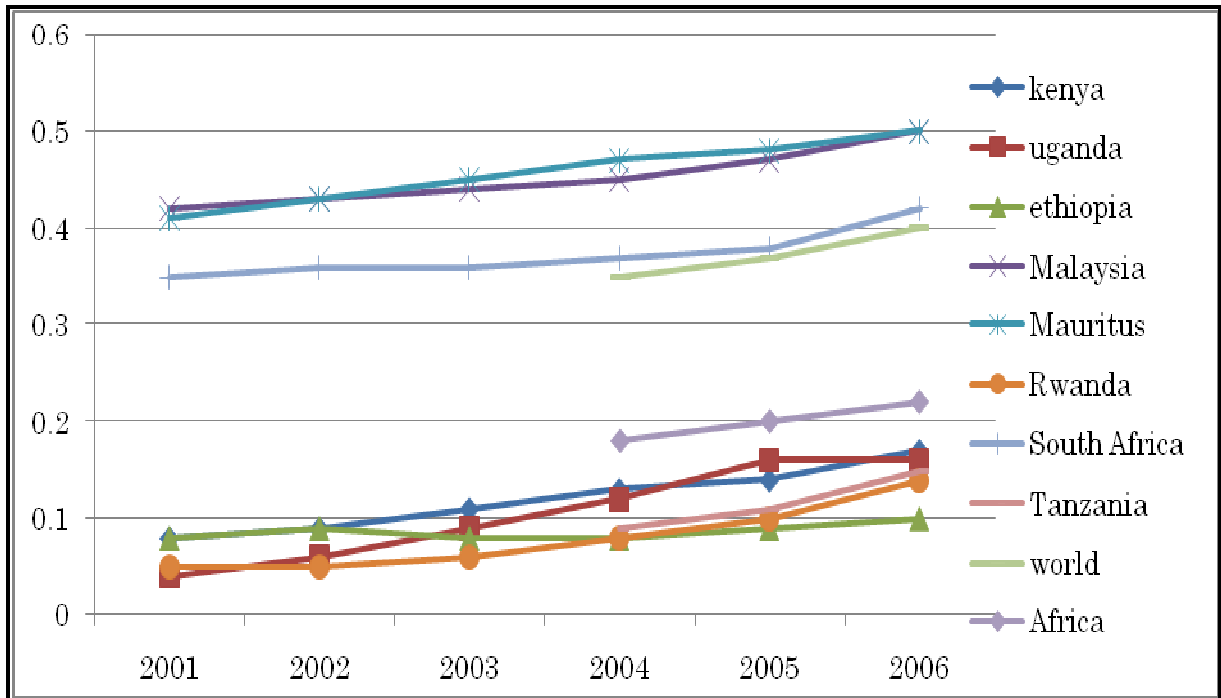
	Economy	Opportunity 2005/2006	Infrastructure 2005/2006	Utilisation 2005/2006	Digital opportunity index	World ranking /181	Africa rankin g/51
EAC	Burundi	0.27	0.01	0.00	0.09	173	44
	Uganda	.46	0.02	0.01	.16	158	32
	Kenya	.46	.05	.01	.17	153	27
	Tanzania	.41	0.03	.00	.15	162	35
	Rwanda	.40	.01	0.01	0.14	164	37
COMESA	Mauritius	0.98	.43	0.09	.50	58	1
	Egypt	0.96	.22	0.04	.41	91	7
	Ethiopia	.30	0.01	.00	.10	172	43
Other Africa	South Africa	.94	.24	.08	.42	86	5
	Africa	.55	0.08	.04	.22	140	
Asia	Malaysia	.98	.34	.18	.50	57	
	Korea (Rep)	.99	.74	.67	.80	1	
	World	.79	.26	.15	.40	91	

Source: ITU

Compared with the East African Community (EAC) partners states however, Kenya is slightly ahead of the partners in all indicators. Kenya ranked against major trading partners of Egypt and South Africa fairs poorly and Kenya was below th benchmark for Africa and almost twice as bad against the world average. Certainly, Malaysia and Korea nations with which Kenya is frequently compared way far ahead.

Kenya has a long way to go especially on the utilisation and infrastructure as indicated in Figure 4. The areas of poor performance are infrastructure and utilisation clusters where as can be noted in Figure 5, African countries fair very poorly in general.

Figure 4: Catching up on DOI



Source: ITU

Table 3 demonstrates the gap Kenya has to bridge to close the gap with Africa and world average as well as high performing countries like Malaysia and Republic of Korea.

3

Exploring the Progress towards the Information Society

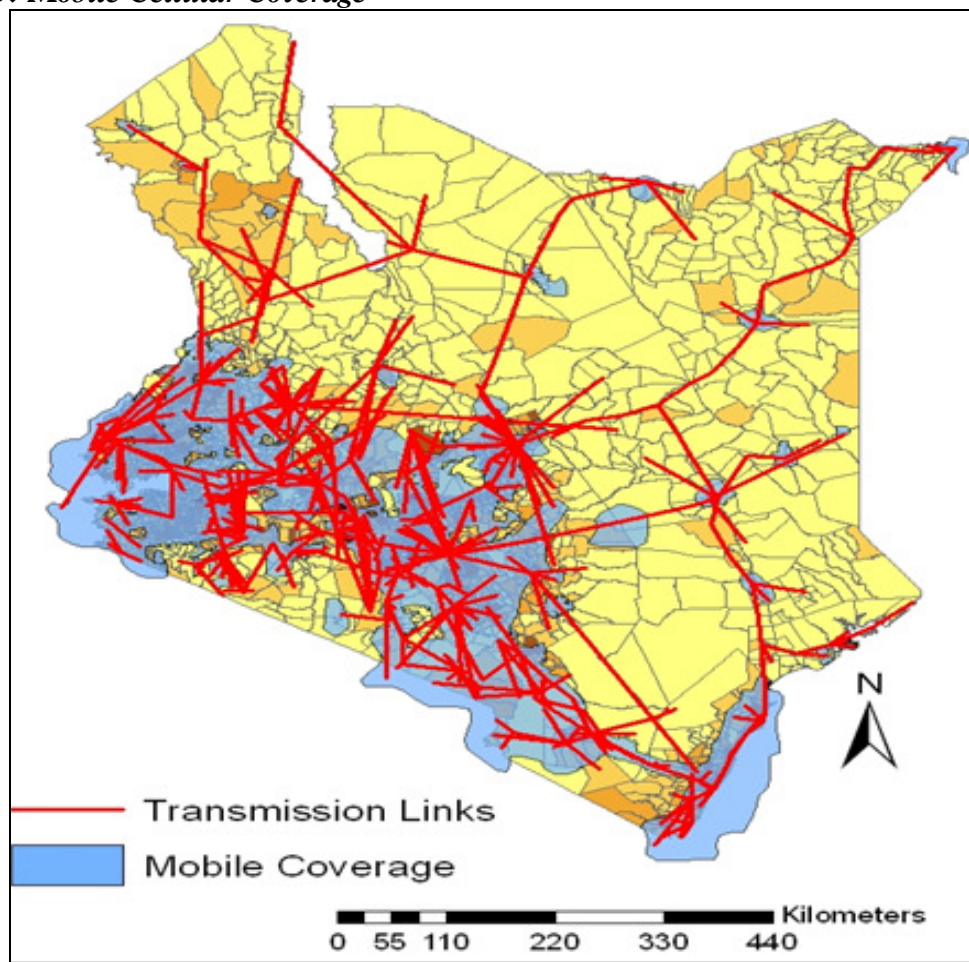
3.1 Enhancing the ICT Opportunity – Signal Coverage and Affordability

To use ICTs for whatever application, the starting point is an opportunity to access ICTs. DOI recognises opportunity in two ways namely, signal coverage in the area and affordable tariffs. Consequently, with the fast rollout of cellular services, a Kenyan in an area with coverage has an opportunity to access the signal. However, the tariffs of the cellular and internet service provision must have to be affordable for Kenyans to exploit the services. The following section discusses signal coverage and affordability in more detail exploring why Kenya performs poorly in DOI and what policy and regulatory strategies are needed to change the situation.

3.1.1. Cellular coverage

Since the introduction of competitive provision of cellular services in 2000, signal coverage has rapidly expanded firstly in the urban areas and then along the main highways. To date, coverage extends to the smaller towns and densely populated rural areas. According to CCK, this expansion by June 2007 covers 65% of the population as illustrated in Figure 8 (Waweru 2007). Safaricom the largest operator however states that it covers 71% of the population and is targeting cover 95% of the population by March 2008 (Joseph 2007). Consequently, the opportunity to use cellular is now available to up to 71% of the population which demonstrates that the operators and the ICT regulatory framework has provided the opportunity for more Kenyans to use ICTs. It then becomes the duty of the citizen to acquire the necessary capacity to exploit the signal.

Figure 5: Mobile Cellular Coverage



Source: CCK

At this level of population coverage, Kenya compares favourably with developing countries, however land mass coverage is only 20% and therefore up to 80% of the landmass is not covered. Any human activity in such regions cannot use cellular.

3.1.2. Affordability - cellular and internet services

Where a signal is available, the next test of digital opportunity is the capacity to pay. High tariffs are a barrier to exploit the opportunity provided by the internet and cellular services. DOI measures the affordability based on tariffs of cellular and internet services against the per capita income. According to International Telecommunications Union (ITU), countries that have tariffs beyond 10% of the per capita income are not likely to have widespread use of cellular and internet. (ITU 2006)

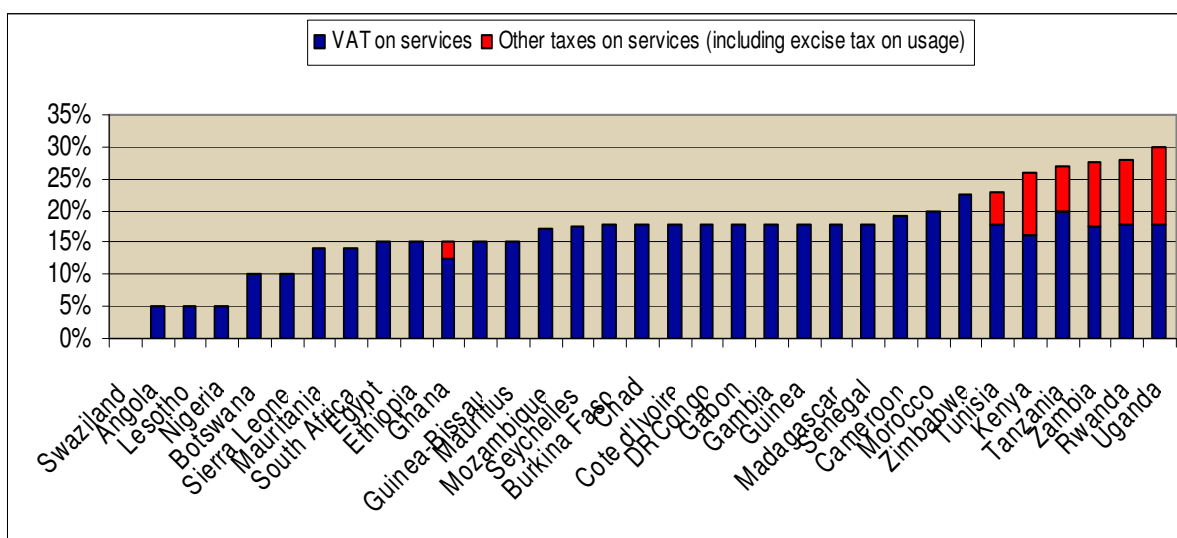
Measured by this benchmark, Kenya's cellular tariffs are high. The cheapest cellular tariff package used for 20 hours a month as proposed by DOI is 30% of the per capita income², which is over 3 times the tariffs that would make cellular services pervasive. Certainly, the

² A tariff of Ksh 10 per minute for 20 hrs per month and a per capita income of USD600 used

tariff per minute in some countries like South Africa compared for this study are higher, but the per capita income is higher than Kenya. Therefore performs poorly on affordability on cellular because Kenyas spend a higher proportion of their income for the service.

Government tax is a significant factor for high tariffs and the government can contribute to make the cellular services cheaper by reducing the 10% excise duty and 16% VAT. According to a study by the GSM Association, Kenya is among some of the countries with the highest applicable tax on airtime as demonstrated in Figure 9. Egypt, South Africa and Mauritius total tax is around 15% i.e. almost 10% cheaper than Kenya and is not surprising that all other factors remaining constant this has made services affordable and increased teledensity.

Figure 6: Comparative Taxes on Airtime in Africa



Source: GSM Association

Taxes inhibit access to cellular services. Another study commissioned by GSM Association found that taxes on mobile services add 20 per cent to the overall cost of ownership in about one third of the countries analysed and that a one per cent reduction in taxes could result in a two per cent increase in mobile penetration by 2010 (GSMA 2005). Kenya as a member of the WSIS, committed to ensure ICT access to all citizens 2015. The study demonstrates that easiest way is through reduction of taxes.

With a mandate to facilitate ICT diffusion nationally, this research provides the necessary ammunition that CCK needs to lobby the government to reduce taxes so that ICT services are affordable. This is common even for regulators here in Kenya as the Capital Markets Authority(CMA) successfully lobbied the government for lower taxes for companies that list in the stock market. This strategy was intended to deepen the stock market.

Since 2002, cellular services overtook fixed line services globally as reported by ITU and are now the most pervasive tool of the information society. This trend is true for Kenya where

cellular lines are 25 times more than the fixed lines. The tariffs of the cellular and SMS are therefore critical for one to exploit the benefits of the information society.

A challenge for most developing countries is that both cellular and internet were considered as value addition to the fixed line service and therefore in most countries they were not price regulated. Most countries do not therefore regulate or control the tariffs including Kenya. Operators only have to file and use the tariffs they chose if they want to increase the tariffs. None of the cellular operators in Kenya has increased tariffs since 2000.

Operators believe that the tariffs are low and have considerably reduced since 2000 in real terms taking into account inflation. It can also be argued that due to the large customer base, the operators now have the capacity to reduce tariffs due to the economies of scale the operators enjoy. The greatest challenge for the customer however is to keep track of packages being introduced in the market to benefit from lower tariffs. Safaricom has a cheap package at Ksh 8 for certain times of the day, while Celtel has a similarly package at Ksh 6. The challenge is to determine the effective cost to the consumer.

With the liberalisation of the international gateway and award of an international gateway licence, the international tariffs have reduced by as much as 70%. The same trend is observed at the regional and international level.

The volume of Short Message Services (SMS) has increased since introduction of the service by the two mobile operators. According to CCK, the volume of SMS use increased to 355m in 2004/2005 but reduced to 201M in 2005/2006. A key driver of SMS has been the low cost of SMS compared to voice. The cost of the SMS has come down from KShs 10 in 2000 to the current level of KShs 5 and in some instances offered free by the mobile service providers.

A tariff study commissioned in 2005/2006 by CCK was to enable CCK to use evidence-based data to monitor the market. A key focus was network interconnection and based on the report; CCK intervened and ordered cellular operators to reduce cross network calls to below Ksh 30. Safaricom previously charged up to Ksh 50 per minute for calls terminating in Celtel. All the operators offer per second billing. It should be noted that the basis of intervention on the tariffs was due to a complaint by Celtel that that cross network tariffs was discriminatory and placed a barrier to traffic to Celtel. An operator initiated the intervention and not consumers. Safaricom disputed the intervention arguing that this could signal a return to a price control regime.

Like regulators in many developing countries, CCK does not monitor internet tariffs and has left the market to determine the tariffs. Market competition has however brought down the tariffs. From 1997, the cost of Internet services in the cyber cafés has for example reduced from Ksh. 15 per minute to Ksh. 1 per minute in 2007. This has made the services to be more affordable a trend noted for GPRS /EDGE offering by cellular operators, leased line services by

ISPs etc. Despite the competition, Kenya obtains its international bandwidth exclusively through satellite and therefore the bandwidth remains comparatively expensive. In an interview for this paper, CCK recognises that internet tariffs are still high and need to come down and compares poorly with Europe. The high cost is a concern to the government and as a long-term measure; the government is promoting the construction of the submarine optic fibre cable and terrestrial optic fibre to reduce the cost of bandwidth and ultimately the user cost of bandwidth and increase availability.

What then should be the role of the regulator in a regime without price control for key services of cellular and internet? It is difficult in today's more liberalised ICT world to expect a regulatory authority like CCK to play a very effective role in regulating/controlling tariffs. However, CCK can and should play a big role with gathering and disseminating information to the public on the more important charges for these services. Like in other countries, operators are very creative with constructing confusing tariff arrangements. They also like to create and use monopoly-style practices to enhance their turnover/profits. CCK should be well equipped to guide consumers about the charges being made for these services to allow the consumer make better choices/decisions about purchasing ICT services.

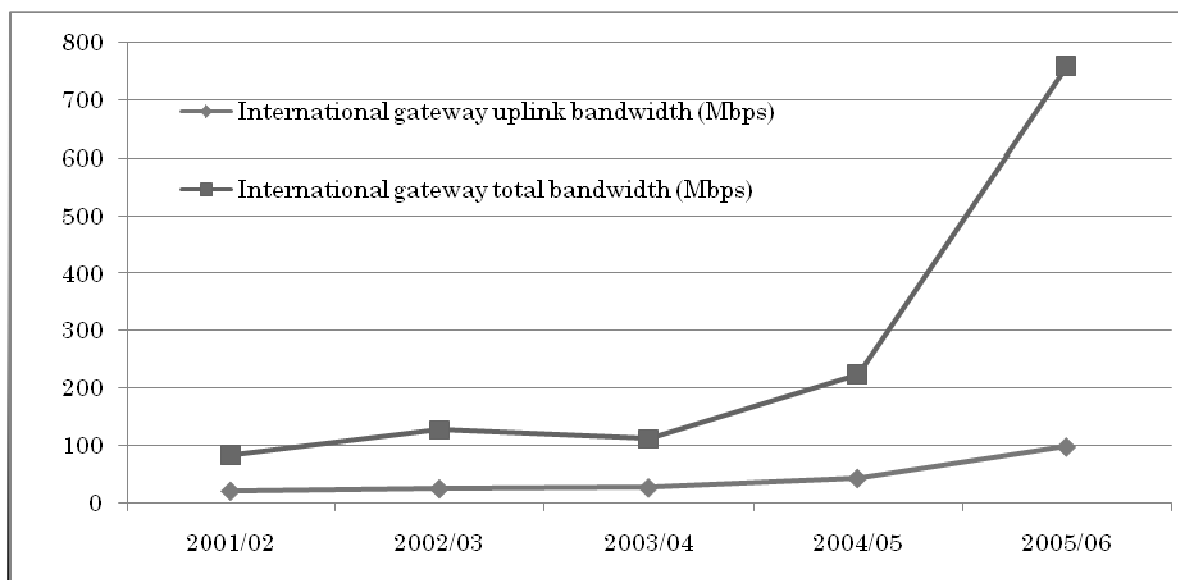
To address and assess affordability, CCK needs to establish a framework for monitoring and publishing tariffs for cellular and internet for information to the consumers. For Internet tariffs, 20 hours of Internet access per month is a popular yardstick. The European Union monitors 20 hours in its Internet access cost eEurope indicator, the OECD used 20 hours of use in its analysis.. This makes it easy to compare and enable the consumer make an informed decision.

Another solution for mobile phone service is implementation of number portability that makes it possible for cellular users to switch from one cellular operator to another while retaining their existing phone number. This switching is now possible in other countries and indeed the UK regulator (OFCOM) for example has ordered operator to provide the service to the customer within 2 hrs of request from March 1st 2008. This will liberate the consumer from being locked into one operator because the customer does not want to change the number!

3.1.3. Availability

Availability parameter describes growth in quantity of bandwidth available to the consumers for business or personal use. It seeks to express the efforts and results of operators to supply 'adequate' bandwidth to the consumers. Availability in relation to bandwidth has improved as statistics in figure 7 illustrates in response to the end of monopoly in 2004.

Figure 7: International Gateway Bandwidth

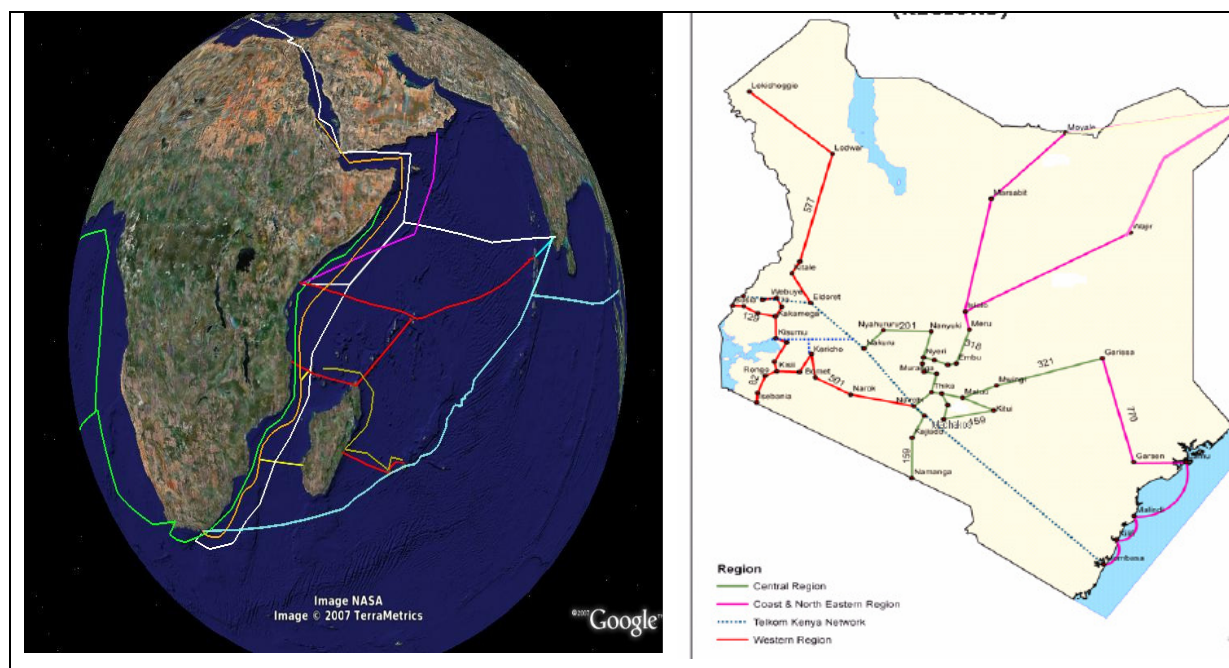


Source: *Internet Market Analysis Study 2007*

Optic fibre will however radically change the availability and cost structure of bandwidth to ICT enabled services. It is radical transformation of the Kenya ICT scene and leap of faith from digital to optic era within 3 years. After waiting for decades, Kenyans will have more than one submarine and terrestrial fibre to choose from, courtesy of a combination of government and private sector initiatives. There are now four submarine fibres under active consideration with completion dates as early as last quarter of 2008 while within the country; up to 4 companies - telecom operators and utility companies have built or are building terrestrial fibre. Telkom Kenya Ltd has already completed a link from Mombasa to Busia. This is followed closely by Kenya Data Network's own national link on the same route while Kenya Power and Lighting Company and Kenya Pipeline Company are planning to build one each. To drive the fibre to the rural areas, CCK is supporting a government led project to build 4300 km fibre to link all districts. These initiatives will wean Kenya away from exclusive reliance an expensive satellite or microwave based connectivity to reap the benefits of the information society.

Kenya has commissioned The East African Marine System (TEAMS) project to hasten provision of bandwidth and in longer term provide variety when other submarine cables land in Mombasa to ensure competition and redundancy. Key driver is to provide cheap and abundant bandwidth to support ICT enabled activities including digital villages, and business process outsourcing. At national level, the government led national fibre project Fibre Optic National Network (FONN) will be managed by a PPP style body constituted by the government to offer bandwidth at cost to users. With these fibre initiatives Kenya is on track to reduce the cost of the internet services.

Figure 8: Fibre Route Network under Implementation



3.1.4. Infrastructure

Once the ICT sector provides the opportunity through signal coverage and affordable tariffs, the next challenge is the access to the services. Access to services can be shared or personal. The former emphasises universal access and the latter emphasis universal service. DOI tracks progress to the information society by fixed lines to the household i.e household with a computer and households with internet access at home. Another indicator for personal service is cellular penetration and mobile internet penetration. Table 4 illustrates the Kenya penetration situation.

Table 4: Penetration of Services

Telecommunication services	Penetration and quantity
Mobile subscriber base ³ as at June 2007	9,304,818
Local Loop Operator Subscribers	10,000
Telkom Kenya Ltd Fixed and Wireless	350,000
% of Population connected	25%
Land Coverage	20%
Population with Coverage	65%
Internet Users	2.7 million

Source: CCK

³ (Returns filed quarterly) Subscriber: received or made calls in last 90 days

Multiple operators as indicated in Table 5 -supply this capacity

Table 5: ICT Market operators as at June 2007

Category	Licence category	licensed operators
Facility Based Network Operators	Local Loop Network Operators	20
	International Network Operators	1
	National Network Operators	3
	Data (Local & International) Network Operators	9
	Cellular Mobile Network Operators	2
Applications Service Providers	ISPs	56
	Value Added Services providers e.g. Premium Rate Service Providers	42
	Resale Services providers	3

Source CCK

The greatest challenge facing Kenya is access of the services to the household as described in the following section.

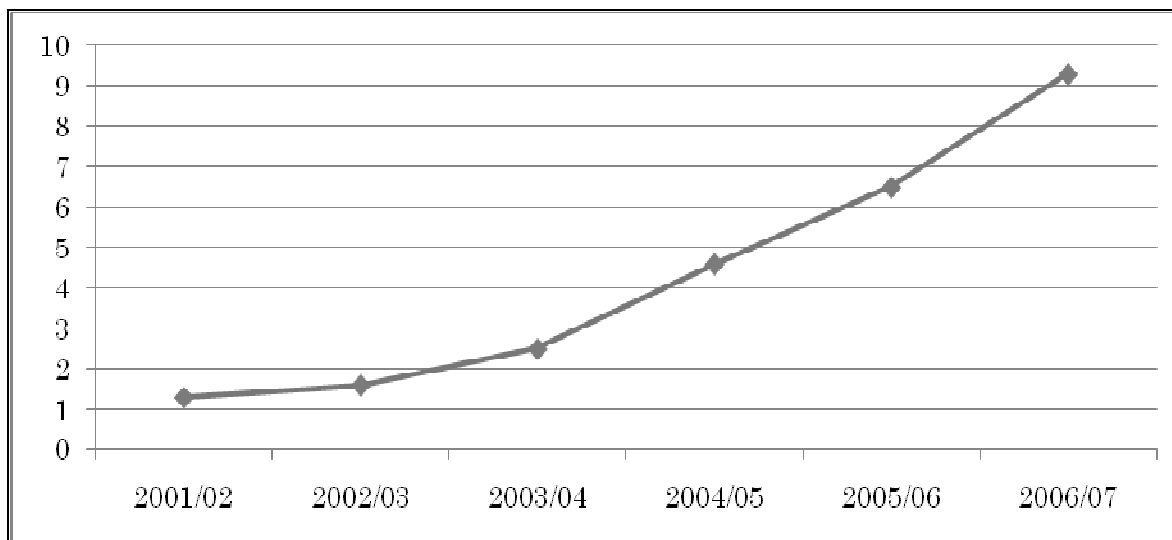
3.1.5. Universal Access to Fixed Line, Computer and Internet at Homes

Since the onset of liberalisation in 1999, fixed line service growth has stagnated at approximately 1% and indeed is falling. In June 2002, TKL had 328,116 customers connected, this figure fell to 293,364 in June 2006 with 95% of the lines in urban areas. Within this period, cellular grew from 0.9M to 6.5M clearly demonstrating the reduced role of fixed line. With the low penetration of fixed line to below 1% nationally, it follows that the number of lines to the home are even fewer. Fixed lines in the home is main the basis for internet use through a computer. While no data is available on fixed line at the household, computers in the household and internet access to the home the penetration is extremely low hence the low DOI score.

3.1.6. Cellular services

Kenya government liberalized the cellular market and currently there are two operational mobile cellular operators, Safaricom Ltd and Celtel International while Econet Wireless is due to commence operations. As demonstrated in fig 14, the mobile sector realised a high growth rate with the year 2006/2007 recording growth of 43%.

Figure 9: Cellular Growth Trend



Source: Internet Market Analysis Study

This fast growth places Kenya ahead of EAC partner states in terms of penetration of mobile services with a quarter of the Kenyan population on the cellular services as illustrated in Table 6.

Table 6: Kenya Tele Density Compared To Selected Countries (2 Quarter 2007)

	Countries	Penetration	Annual change
EAC	Burundi	2.54	12.53
	Uganda	10.3	46.67
	Kenya	25.2	38.51
	Tanzania	17.73	51.40
	Rwanda	4.74	70.85
Comesa	Mauritius	65.97	19.30
	Egypt	28.28	60.44
	Ethiopia	1.62	57.63
Other Africa	South Africa	87.89	21.59

Source: Informa Telecom & Media

Compared to key COMESA countries Egypt and Mauritius, Kenya has a long way to go. Egypt despite having a penetration of 28% recorded a 60% growth in the year and thus is likely to widen the gap. South Africa has a lower growth rate but the penetration is now closer to that of developed countries at 88%.

Kenya needs to maintain a high growth to ensure a high penetration and enable Kenya compete with major trading partners.

3.1.7. Mobile internet

Kenyan cellular operators in 2003 launched GPRS and in 2004 EDGE, and in 2007, Safaricom is launching 3G services. This opened up mobile internet to Kenyans. GPRS covers all the areas with cellular coverage and therefore up to 70% of the population potentially can access GPRS. The challenge is the handset and its capability to handle internet services.

Data service operators are establishing hotspots in strategic locations and are now introducing limited mobility of internet services. Kenya Data Network (KDN) for example has established over 150 hotspots in the country. Users however have to move to the hotspots and would ordinarily need a WIFI enabled computer to access data. At present, the mobile internet users are below 1% penetration hence the low score on DOI.

3.2 Utilisation

With opportunity and infrastructure available, the next key indicator is the actual use of ICTs. Key indicators are the per capita use of internet, quality of access and the means of access to the services. Emerging applications in the information society require broadband access and improving quality of access means providing broadband access.

3.1.8. Internet usage

The Internet penetration is low with an estimated penetration of 8% having risen from 0.65% as illustrated in Table 7. In addition to the low penetration, the distribution of internet usage is unequal with high concentration in the urban areas. According to the Internet market analysis study commissioned by CCK, there are 2,770,296 Internet subscribers with 80% of the subscribers in the capital city while 20% are distributed in the major urban areas.

Table 7: Internet Subscribers

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Number of licensed ISPs	66	72	76	78	51	51
Users by ITU (estimates)	200,000	400,000	1,000,000	1,054,920	1,111,000	2,770,296
Internet subscribers per 100 inhabitants	0.65	1.29	3.17	3.28	3.39	8.29
Dial-up Internet subscribers		10,076	9,608	10,490	12,482	12,308
Number of clients subscribers from all the ISPs		16,136	20,307	30,803	35,748	179,384

Source: CCK

The low penetration and disparity is due to the high cost of connectivity in comparison to the income levels of Kenyans. Availability and reliability of the local access network has also been a challenge in addition to the limited local content to induce demand.

It is noteworthy that the number of the licenced ISPs has reduced from a high of 78 in 2004/2005 to 51 in 2006/2007 though the number of the users increased dramatically. This attests to the reducing role of the traditional ISPs to deliver internet and increasing convergence with cellular operators and the fixed line operators are now providing internet services through leverage of their national infrastructure.

This connectivity is supported by the infrastructure indicated in Table 8.

Table 8: Options for Internet Access

Type of internet access		Reported number of subscribers
Dial up	From homes	13273
	From offices	6371
	Cyber cafes	158
Access technologies in use	Analogue	23
	Digital	692
	Wireless	809
	xDSL	31
	ISDN	40
	VSAT	32
	Cable Modem	142

Source: CCK

Table 8 demonstrates the range of the technologies to access internet. Wireless is a leading technology presumably due to poor copper infrastructure and lack of fibre to the home and offices. Most dial-up are from homes.

3.3 Concluding remarks of DOI ranking

Overall , Kenya scores well on the opportunity due to high level of signal coverage , has low score on infrastructure to the household and equally low on mobile broadband internet. Experience from countries that have realised a high score in Africa indicates that an ambitious commitment by a country is imperative. Some examples include the following

- Algeria launched Ousratic project known as ‘family ICT’ to place a computer in every household by 2010 by increasing the computers by 5 million
- Tunisia programme calls for favourable financing for families to reach one million households by 2009 (ITU 2006)

Increase of access takes an initiative. By launching a massive optic fibre project, Kenya leadership has shown singular commitment to launch Kenya in to an information society. A critical next step is the tools and technologies to exploit bandwidth and the computer. Kenya should take the cue from Algeria and increase computer penetration to enhance exploitation of the bandwidth landing in Kenya after implementation of the TEAMS and FONN.

4

Emerging Policy and Regulatory Challenges

To address the needs of the Kenyan ICT consumer and enable Kenya make progress towards an information society there are certain issues that needs to be addressed. A long-term vision of the sector that energises and captivates all the stakeholders is paramount. Other issues are strategic and tactical that are discussed in the following section.

4.1 Inspiring long term-vision of the ICT sector

The long-term vision of the ICT sector is set out in the national policy as set out below.

VISION -A prosperous ICT-driven Kenyan society

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

ROK (2006)

The ambitious goal of the National ICT Policy is to chaperone Kenya to the information society sooner. DOI provides a mechanism to track progress towards the information society and ability to compare with other countries. Two areas that Kenya is especially weak as discussed in the preceding section is in the infrastructure and utilisation. In infrastructure cluster, access to the internet is very limited as noted in the previous section largely due to lack of PCs to access internet in the household. Kenya should take a bold initiative to have a computer with internet in every home in a specific date in future. Another challenge is the cost of services. This will harmonise resources towards achieving an information society but at the same time review the targets set in the policy, that are already surpassed or irrelevant.

Table 9: Status of accomplishment of policy targets

National ICT policy targets	Status of the targets in Kenya
<p>5.4 TARGETS</p> <p>To realise these objectives, the Government has set the following targets to be achieved:</p> <ol style="list-style-type: none"> 1. Improve the fixed-line teledensity in rural areas from the current 0.33 lines to 5 lines per 100 inhabitants by the year 2015; 2. Improve the fixed-line teledensity in urban areas from the current 1.97 lines to 20 lines per 100 inhabitants by the year 2015; 3. Increase the number of mobile subscribers from the current 4 million to 10 million by the year 2015; 4. Expand the current international internet bandwidth from the current 69 Mbps to 1 Gbps by the year 2015; 5. Provide all primary schools with affordable internet access by the year 2015; and all secondary schools and tertiary institutions to have affordable internet access by the year 2010;=and 6. Establish internet access nodes at all district headquarters by 2010. 	<p>Irrelevant now as societies prefer wireless solutions - fibre to the cub preferable</p> <p>Irrelevant as above</p> <p>Already achieved by 2007</p> <p>Already achieved by 2007</p> <p>Primary schools not yet achieved but will be achieved much earlier considering GPRS coverage</p> <p>Safaricom has launched an initiative to connect all secondary schools by 2008</p> <p>All district headquarters now have some form of internet at present. TEAMS will connect all districts by 2008.</p>

Source: ROK (2006)

As noted in Table 9 the targets cease to captivate and energise Kenyan ICT stakeholders because some of targets are now irrelevant or have already been surpassed⁴. It is now time to review the targets taking into account the market growth and set Kenya on an ambitious path towards an information society.

4.2 Creating space for entrepreneurship in the ICT industry

With liberalization, some market segments have gained extensively while some are on the verge of collapse. The most negatively affected is the traditional ISP. While in the 1990's the ISP business was a promising entry to the ICT investment, the situation has changed drastically. In

⁴ The author of this paper was a chair of telecommunications group that proposed the targets in 2006. These targets were a compromise among very sensitive stakeholders at the time .

1990's, the regulatory framework clearly defined and protected the ISP space, this is not more. Other players have entered the space and squeezed out the traditional ISP. Indeed, Industry operators believe that traditional ISPs that are not dead already will die with the only viable business model being infrastructure provision. The industry operators indicated that only large ISPs could survive in the Kenya market.

For the consumer, the internet services are available and may be better provided by the larger operators, while for entrepreneurs however, the ISP provided an easy entry into the ICT services market. With ISP route now not feasible, it is desirable to create space for budding entrepreneurs to nurture entrepreneurship. One possibility is to structure the market to provide for horizontal licensing to allow niche players to enter the market using the available infrastructure.

4.3 Regulating the Cross-Boundary Services

Telecommunications operators and in particular the mobile operators offer services that are outside the traditional core business. One such service is money transfer services that are rapidly growing. Within six month of the launch, Safaricom for example had transferred Ksh 1.7Billion thus positioning the company as key player in the financial services sector. This fast growth indicates that there was a need that was not being fulfilled by the traditional money transfer players and therefore a welcome move. The challenge however is regulatory oversight of such players and to define a boundary on the ICT and banking regulatory oversight to monitor any business activities that can harm either sector by cross subsidisation. The regulatory challenge is where to create a demarcation between the new entrants into these markets (operators) and those who have traditionally offered those services i.e. the banks.

Presently the regulators - CCK and Central Bank of Kenya indicate that they have developed a framework to regulate such services. For the long term, a regulatory framework is critical instead of informal arrangements.

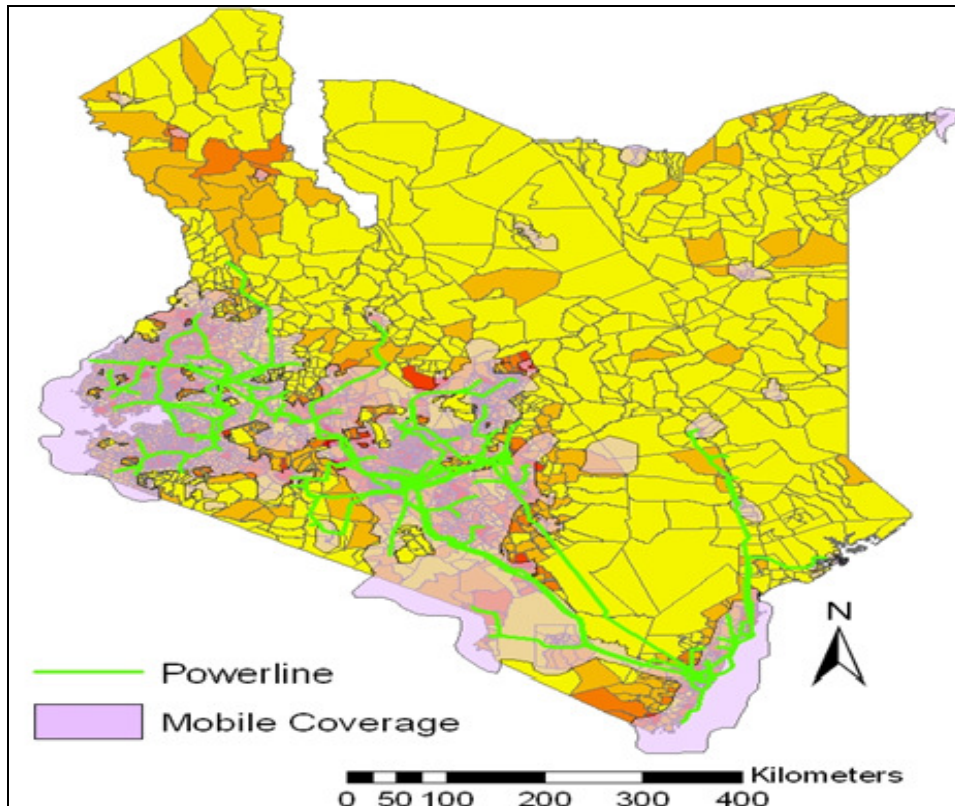
4.4 Overcoming the Poor Infrastructure in the Rural Areas

Poor or lack of physical infrastructure in most rural areas has made rollout of ICTs challenging. Specifically the rural areas pose the following challenges;

- Lack of electric power resulting in high fuel costs and slow pace of rural electrification (see fig 10). Due to lack of power, Safaricom for example is working with Kenya Power and Lighting Company to extend the grid to new base station sites. In the meantime, Safaricom is piloting other sources of energy including solar and wind.
- Lack of mobile phone charging facilities in the rural areas where there is no power. At present, Safaricom is providing charging facilities adjacent to the sites which creates interest and sense of ownership among the community who can now guard the infrastructure

- Poor road infrastructure
- Land registration issues/Land policy to access land to build base station sites
- Low literacy levels of the rural consumers
- Harsh geographical terrain

Figure 10: Electricity and Mobile Coverage on Population Distribution



Source: CCK

These factors continue to impede service rollout to the rural areas. To address the special needs of the rural areas, CCK commissioned a study on rural areas which recommended the establishment of the rural development fund to support operators and/or communities to build ICT infrastructure in such areas. The Fund was to be established through the ICT bill 2007 which was withdrawn on the floor of parliament. Kenya therefore does not have a framework to support to rural ICT development.

Operators like Safaricom do not believe the fund is appropriate. According to the operator, they are already expanding coverage to the rural areas on their own hence do not need to be penalized further by a fund. Informed by the study, CCK has developed a number of initiatives to overcome the challenges of rural access.

CCK initiatives include:

- Fee subsidy for spectrum in rural areas,
- Piloting ICT access centres in rural areas,

- Pricing scheme review for rural areas
- Contribution to infrastructure rollout of the national backbone infrastructure, on fibre-The East African Marine System (TEAMS), and Eastern African Submarine System (EASSy) to increase bandwidth at lower cost

CCK is also working with operators and other stakeholders and has supported a Kiswahili operating system and search engine, deployment of new efficient cost effective and affordable ICTs, assembly and refurbishment of computers, community telecentres; School based E-centres and E-Learning

Initiatives to address power challenges in the rural areas include efficient batteries, rapid phone chargers using coil/wind, solar and bicycle and for the operators the use of solar panels for base stations powering and wind powered generators.

The Kenya government is implementing rural electrification programme and is connecting 10 000 new customers every month. While this will go long way to support rural communications, a concern that may impede the rural electrification is the lack of energy. Power generation into the grid is not moving as fast and therefore the telecommunications sector will have to continue with research on alternative energy sources particularly to serve the North and Eastern parts of the country (Waweru 2007).

4.5 Repeal of Kenya Communications Act 98 to usher a new era

The year 2006 was a critical milestone for Kenya ICT industry. Kenya had a national ICT policy and in 2007 an ICT Bill to repeal Kenya Communications Act 1998. The objective of the Bill published on May 17th, 2007 was ‘to provide for the institutional and legal framework required to implement the National Information and Communications Technology Policy (NICTP)’. The bill emphasised convergence of ICTs, rural development fund, and an electronic transactions framework. The minister however withdrew the ICT bill in August 2007. With the country currently preparing for the elections, it will take the next parliament to enact new legislation.

4.6 Establishing an electronic transactions framework for services

With the growth of the ICT networks, e-commerce is now prevalent and exploiting internet infrastructure for business transactions. Additionally, other non-commercial services use the infrastructure that include e-government, distance learning, telemedicine etc. While the technology to facilitate transactions is developed and now widely in use, a legal framework is important to safeguard and ensure integrity of the transactions. Kenya does not have such a framework and this will continue to impede the use of internet for the electronic transactions

Benchmarking Kenya on Regulatory Performance

From the old model of telecommunications sector management of the Post Telephone and Telegraph (PTT) characterised by a monopoly and controlled by a government minister, WTO's Basic Telecom Agreement of 1996, European Green Paper of 1993 and USA Telecommunications Act of 1996, unleashed forces of competition and multiple operators in telecommunications markets. The market referee was to be an independent regulator to oversee competition and fairness. To date virtually all countries now have an 'independent' regulator. Kenya as an example established CCK as an independent ICT market referee in 1999 to manage a competitive ICT sector.

5.1 'Services' of a regulator

According to the ICT Regulation tool kit and citing additional research by UN ICT Task Force on Financing, ICT regulators have generic duties to undertake in the ICT sector. Consequently the 'services' an effective regulator should offer include;

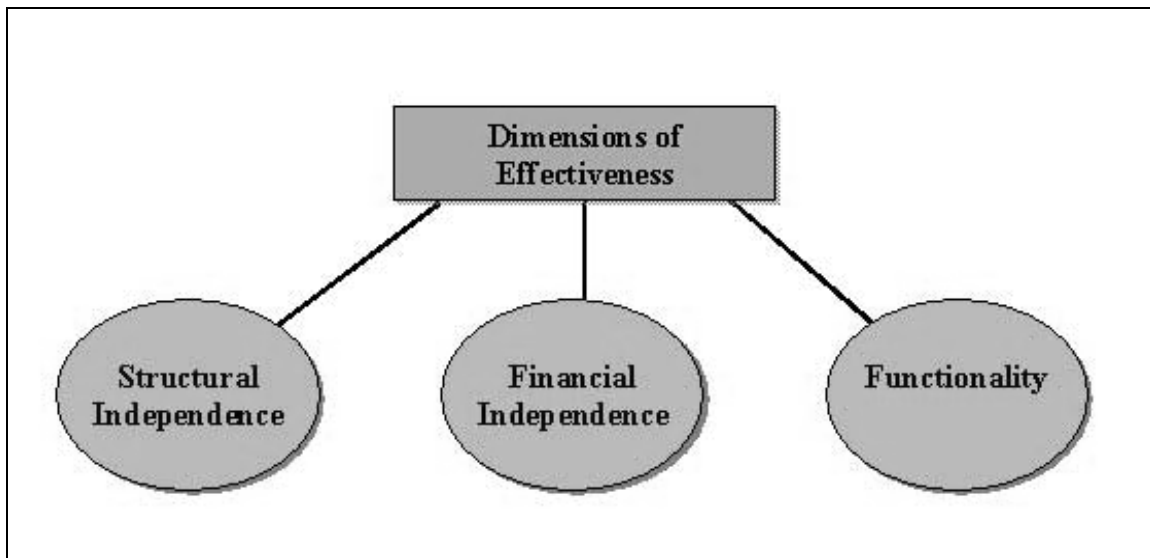
- 'Implementing the authorization framework that provides opportunities for new companies and investors to establish ICT businesses.
- Regulating competition (including tariffs) involving the effective enforcement of fair and equitable competitive market principles, restraining the power of dominant suppliers and levelling the playing field for new entrants
- Interconnecting networks and facilities through transparent rules established for interconnecting all types of traditional and new communications networks and associated cost-based payments
- Implementing universal service/access mechanisms to ensure the widespread (and affordable) diffusion of ICT
- Managing the radio spectrum effectively to facilitate new entrants and new technologies, which is particularly relevant to new broadband wireless opportunities such as Wi-Fi and wimax and
- Minimizing the burden and costs of regulation and contract enforcement'

To offer the services, the regulator, have to be designed with certain features to enable it discharge this mandate effectively.

5.2 Parameters of an effective regulator

A concern expressed by stakeholders all over the world is who would oversee the regulator and how they performed. Infodev an arm of World Bank and ITU developed a toolkit on regulation to help addresses what constitutes an effective regulator. The toolkit establishes three dimensions of an effective regulator namely structural independence, financial independence and functionality as illustrated in figure 11.

Figure 11: Dimensions of effectiveness



Source: infodev/ITU

While structural and financial independence are largely given by the enabling legislation, practice shows that a regulator by their actions can enhance or jeopardise this independence. An effective regulator therefore will seek to enhance the independence space. This space in turns affects its capability to function. In the case of Kenya , the enabling Act - KCA 98 provides for the general principles of the structural and financial independence and leaves the regulator to position itself to function appropriately in the market . In doing so CCK does not operate in a vacuum but in an environment shaped by politics, other laws, people's expectation , economic realities and most importantly technological and global forces of change.

Table 10 analyses the CCK score in the Kenyan market based on the public perception and published pronouncements.

Table 10: Aspects of effectiveness

Dimension parameters of effectiveness		CCK score
Structural Independence	<ul style="list-style-type: none"> Is the regulator a separate legal entity from the other government ministries and entities? Is the regulator separate from those entities which it regulates? 	<ul style="list-style-type: none"> Yes yes
Financial Independence	<ul style="list-style-type: none"> Is the budget for the regulator established in the law? Does the regulator have sole authority over its budget? How is the regulator financed? 	<ul style="list-style-type: none"> Principles of the budget making are established Yes but has to be approved by the Minister Financed through a levy from licensees
Functionality		
Well-Defined Functions and Responsibilities:	<ul style="list-style-type: none"> Are the functions of the regulator clearly specified in the law or regulation? 	<ul style="list-style-type: none"> yes
Decision-making Authority:	<ul style="list-style-type: none"> Does the regulator have autonomy in making decisions? Does another government entity have authority to overturn regulatory decisions? What is the mechanism for appeals of decisions made by the regulator? 	<ul style="list-style-type: none"> Yes but must take cognisance of gazetted policy directions by the minister Yes - The Appeals Tribunal can overturn CCKs decision on appeal Apply to appeal to The Appeals Tribunal
Appointment, Removal and Mandate:	<ul style="list-style-type: none"> Who appoints the head of the regulator, the members of the board or the commission? What qualifications are necessary to be the head of a regulator, members of the board or the commission? What are the grounds for removal of the head of the regulator, the members of the board or the commission? Is the term of the head of the regulator set forth in the law? Can the head of the regulator be reappointed? 	<ul style="list-style-type: none"> President appoints the Chairman and the Director General and the Minister appoints other Board members. No criteria prescribed by law Presidential and Ministerial prerogative only Specified in the KCA 98 but precedent set when the Director General was removed in 2004 Yes but the tenure can be interrupted Yes
Staff:	<ul style="list-style-type: none"> Are there any qualification requirements for staff? Does the regulator have discretion over its own internal 	<ul style="list-style-type: none"> Professional qualification for the respective task Yes

	<p>organization?</p> <ul style="list-style-type: none"> • Is the regulator in charge of personnel policy and compensation? • How do salaries for the regulator and the staff members compare with those in other agencies and private industry? 	<ul style="list-style-type: none"> • Yes • competitive
Ethics:	<ul style="list-style-type: none"> • Does the regulator have ethics and conflict of interest rules that apply to the board members, staff and their family members? • Are there post-employment restrictions for the regulator regarding lobbying the agency? 	<ul style="list-style-type: none"> • Ethics guidelines set in the KCA 98 for Board Members (for staff not published if any) • None
Consistency:	<ul style="list-style-type: none"> • Is the regulator consistent and predictable in its decisions? • Does the regulator publish written decisions along with reasons for its decisions? 	<ul style="list-style-type: none"> • Yes • Yes – calls for stakeholder discussions before taking the decisions
Accountability:	<ul style="list-style-type: none"> • Is the regulator required to publish annual reports or be subject to external audits? • Is the regulator required to report to the legislature or other bodies on its activities? 	<ul style="list-style-type: none"> • Yes – required by the Act and implemented • No but Parliamentary Committee on Energy Communications and Public works do summon the regulator periodically
Timeliness:	<ul style="list-style-type: none"> • Is the regulator subject to timeframes within which it must make decisions? 	<ul style="list-style-type: none"> • Yes – specified in the regulations
Transparency and Public Participation:	<ul style="list-style-type: none"> • Are regulatory decisions and comments and filings made by third parties published and accessible to the public? • Are sector participants subject to <i>ex parte</i> rules? • Is there a mechanism by which the regulator seeks and receives input from the public regarding sector issues? • Is public participation sought before issuing regulations or making decisions? • Is there a complaint mechanism for the public? • Does the regulator have published criteria for dealing with claims for confidentiality relating to evidence filed, and other information and comments provided to the body? 	<ul style="list-style-type: none"> • No • No – decisions are inter-parties , exparties decision are to maintain status quo as full hearing proceeds • Organises workshops , attends related activities , • Yes • Yes within CCK structure • Yes set out in Kenya Communications Regulations
Enforcement	<ul style="list-style-type: none"> • Are the regulator's enforcement powers specified by statute? 	<ul style="list-style-type: none"> • Yes

<p><i>and Dispute Resolution:</i></p>	<ul style="list-style-type: none"> • Does the regulator have authority to issue sanctions and impose fines? • Is there a mechanism established for the resolution of conflicts between the regulator and the sector participants and/or between sector participants? 	<ul style="list-style-type: none"> • Yes • Yes through The Appeals Tribunal
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Source: ICT regulation Toolkit

Based on the scoring in Table 10, CCK has developed its niche and expanded its space and has not encountered a major challenge of its relevance, authority or mandate since establishment. Certainly, its decisions were challenged in court and to the Appeals Tribunal. That process is allowed for in the Act. Where its decisions were challenged for example by ISPs to open up the international gateway, the case proceeded to the Appeals Tribunal and CCK lost. The decision of the Appeals Tribunal was respected and the market for international gateway is now open.

An area of concern is appointment and removal of the Board members and Director General. As the drivers of the regulatory agency, countries have gone to great lengths to insulate these officials from the politics of the day by entrenching security of tenure and stringent conditions for removal. Countries also specify qualifications for appointment. KCA 98 does not provide qualifications for appointment leaving the prerogative to the President and the Minister. The Act provides for tenure and basis of removal. However, in 2004, the Board was changed and the new members appointed and some dropped without reference to the Act.

5.3 Evolution from regulatory to sector leadership

In terms of the exploiting the independence space, regulators can exercise their mandate through leadership and authoritarian rule. According to Jamison (nd) regulators exercising authority set the pace for others to follow while those exercising leadership help the operators to scan the environment and the future. Table 11 illustrates the distinctions

Table 11: Style of creating independence space

Authority	Leadership
Provides solutions by applying established instruments from political science, management, economics and finance, law, and engineering.	Identifies challenges by questioning how problems should be defined and pointing out why technical solutions cannot solve adaptive problems.
Protects people and the system from external threats.	Discloses threats by calling attention to the fundamental changes in external forces that threaten the status quo and defy traditional solutions.
Restores order so that work can continue when internal or external forces disrupt the normal performance of work.	Exposes real conflicts or facilitates their emergence so that those involved face and work through tough choices.
Maintains norms so that people can work by following established rules and procedures, and not waste time “reinventing the wheel.”	Challenges norms to ensure that “solutions” are not adopted before the new environment is fully understood, the real conflicts are resolved, and key trade-offs are made.

Source: Jameson (Nd)

The enabling legislation provides the authority CCK needs to function but CCK has to nurture leadership in the sector. ITU captures the continuum of developing leadership in the

sector on a number of parameters and notes that regulators are adapting from authority to leadership or old approach to new approach as illustrated in Table 12

Table 12: Operational Approaches to Regulation

Parameter for regulation	Old approach	New approach
Regulation decision making	Limited to partial	active involvement
Decision making style	Not transparent	participative, transparent, flexible
Information disclosure	Limited to confidential	Extensive, openly available
Regulatory intervention	control	oversight
Measure of success	work process	industry development and growth

Source: ITU

CCK has moved towards this new approach in most aspects. One area that is not evident is regulation intervention and measures of success. Intervention is control oriented and measure of success is based on work processes as discussed in the next section

6

Report Card to Stakeholders; CCK Annual Reports

The Kenya Communications Act 1998 Section 22(1) requires CCK to present an annual report and states that;

The Board shall, within three months after the end of each financial year, prepare and submit to the Minister a report of the operations of the Board for the immediately preceding year. The Minister shall lay the annual report before the National Assembly within three months of the day the Assembly next sits after the report is presented to him.

ROK (1998)

The Act requires a record of the activities of the CCK board in line with the powers conferred by the Act. CCK Board since 2000/2001 has prepared the annual reports and submitted the same to the Minister. The annual reports are available to public as hard copies or on the website. A typical report covers the following issues;

- Foreword by the Chairman of the Board highlighting the commission's policy directions and initiatives geared towards achieving the policy objectives and internal activities of the Commission.
- A detailed review of CCK's activities by the Director General. Director General's report further stipulates new developments in the sector and the measures put in place to realise the policy objectives.
- Review of ICT sub-sectors - namely postal and telecommunications
- Corporate matters of CCK which include corporate affairs and summary of financial information
- A final section introduced in 2001/2002 annual report is the Future Outlook. The Commission highlights the key issues that are likely to impact the sector in the coming year

The report size has been growing since the inaugural report of 2000/2001 as the activities of the Commission increased.

Is the information in the report sufficient? In trying to figure out if the information is sufficient for the Minister as the primary addresses and to the public, the guide would be the Act. CCK fulfils the mandate as required by the Act .However, when compared with other regulatory

agencies, the CCK annual report is a departmental report and does not address the state of affairs of the ICT sector adequately.

6.1 Additional information for comprehensive annual reports

Annual reports of Capital Markets Authority, Central Bank of Kenya, Commissioner of Insurance, Electricity Regulatory Board, Retirement Benefits Authority were reviewed for purpose of this study and CCK annual reports do not address the stakeholder sufficiently in the following areas;

CCK annual report omits the full *financial affairs* and only indicates that the statutory duty to prepare accounts and submission to Ministry and Auditor General has been done. All other regulatory agencies reviewed for purpose of this research, take pride in publishing audited accounts for the stakeholder to comment on. One advantage of this information is that licensees can understand the cost of regulation and contribute in an informed way on how to minimise the cost of the regulation. Minimising the cost of regulation is a fundamental requirement for the regulator to maximise the investment of the operators to expand rollout. Kenya is competing with the other countries and the report should help Kenyans understand where they are with respect to the global economy. It is also an *opportunity to understand the global context* in the political, economic, social and technological and how they are impacting the ICTs in the region and in the country. For example the report by the Commissioner of Insurance gives this background information to set the context to the annual report

In terms of content, CCK annual reports give a lot of emphasis of fixed line telecommunications, which is no longer of *significance*. More emphasis should be on mobile services, internet and broadband access.

While CCK annual reports gives the statistics of the operators as an indicator or measure of success, the report can *go beyond the data* to justify its contribution to the economy and social development. As the agency responsible to chaperone Kenya into the information society and all its benefits, the annual report should indicate benchmarks as the country matches towards the information society. This will explain to the stakeholders the implication of the telephony statistics, the coverage as well as make sense of the various services being introduced in the market. The Capital Market Authority for example devotes space to justify the contribution of the sector to the economy as a tool for development. Additional data that CCK should publish is the call volumes across the operators.

CCK report after addressing matters at the commission needs to take a *broader view of the industry*. Human resource for example should address the HRD issues for the sector – where are the training facilitates, certifications etc. This will seek to create linkages with other sectors that contribute resources to make ICT sector effective.

CCK occupies a special space in the ICT sector with important information on the market performance of operators. This information includes the capacity growth, coverage , quality of services and tariffs which CCK publishes . CCK also has access to financial information on the performance of the licensed operators. While most of the ICT companies are private and therefore not required to publish accounts, the stakeholder would want to know the state of the industry and the linkages between tariffs and the profitability. To this extent, CCK should prepare a *proforma financial statement of the ICT sector* for the stakeholders to understand the financial health of the sector. Commissioner of insurance prepares a very detailed state of financial health of the sector that empowers the stakeholders to engage in informed discussion. ISPs complain that they do not make profits , Safaricom makes profits, Telkom Kenya is not profitable etc – this information is confusing to the stakeholder and CCK should endeavour to generate a report on the financial state of the health of the industry.

It would be useful to *publish the list of all the licensees* in the annual report and associated institutions in the ICT sector as a directory so that the report is a one stop shop. Again, the reports by Capital Markets Authority and Commissioner of Insurance are great examples in terms of disclosures.

The annual report should create space to report on regulatory issues that affect the industry – regulations changes if any, administrative changes and operations in the year. This therefore establishes *an annual catalogue of legislative or regulatory decisions promulgated* in the year.

CCK finances *The Appeals Tribunal and the National Communications Secretariat*. These agencies should report their activities in the annual report to make the report a fuller description of what is happening in the sector. Commission of Insurance report cites its Appeals tribunal in its report.

Issues for Reform

Kenya is not yet out of the woods despite the high growth witnessed in the cellular market segment. By ranking number 153 in the DOI globally and 27 in Africa, Kenyans are far from being able to embrace and exploit the benefits of the information society in competition with other major countries. This affects the competitiveness as a nation. Critical areas affecting the national progress to information society are affordability, accessibility to infrastructure at the household, the capacity and quality of the ICTs. Yet, it is possible to chaperone Kenya in the information society rapidly. Countries that have high scores in the DOI made a commitment captivated by a inspiring vision. This is the case of Korea that ranks number 1 globally and Mauritius, the leader in Africa.

It is possible for Kenya to leapfrog and rapidly improve the DOI. The government has shown a clear resolve and commitment in ICTs by building and commissioning the submarine cable and the terrestrial fibre to the districts. This will catapult Kenya as one of the most advanced in fibre infrastructure in sub Saharan Africa and the DOI score will jump aided by lower cost. However, it is necessary to address tools to use the bandwidth i.e. the PCs. As Algeria and Tunisia illustrate *Kenya needs to come up with a daring vision to increase PC penetration as the fibre rolls out which calls for a review of the national ICT policy and strategy. It is time to review the national ICT Policy*

ICT benefits will continue to elude Kenyans until an electronics transactions framework is established. While technology to exploit ICTs is in place, *Kenya needs an electronic transactions law* to support e-applications that include e-commerce, telemedicine, distance learning and e-governance among others.

Rural areas will continue to require special attention in medium to long tern. *To ensure that ICT services are extended to the rural areas, there should be a form of support.* Other issues that need to be addressed include;

- *Open access to national infrastructure* - duplicating of infrastructure in the rural areas make the calls expensive. National roaming as well as cross border roaming be enforced to reduce the need for infrastructure and help reduce implementation costs in the rural areas
- *Defining rural areas* - not all the rural areas are similar and therefore need the same level of support. There are areas that can be commercially viable but not covered while others need support.

Other issues for reform include the following:

- The CCK should work closely with other institutions such as the Central Bank of Kenya to formulate and develop rules and regulation that will govern e-banking and e-transactions and in particular the mobile banking that is growing very fast.
- Rural electrification program should be hastened and CCK should lobby the electricity regulator.
- Strengthen the independence of the regulator in particular the appointment and removal of the Board members and the Director General
- Review the role of ICTs to reconsider telecommunication as a basic infrastructure in line with WSIS considerations. In this regard being a public good, taxes telecommunications equipment and services should be reviewed. This will reduce costs and make it affordable

8

Areas for Further Research

The research for this paper noted areas that are critical for the continued growth of the sector which need further attention. The issues include;

8.1 Tariffs Cost Structure

ICTs are very important for every day life and consume a sizeable personal and corporate budget in pursuit of daily socio-economic endeavours. As illustrated in this report, Kenya tariffs are high and need to come down to increase penetration. The current focus is on taxes which is significant contributing up to 26% of the cost of airtime. Nevertheless, it is also important to understand the factors contributing to the other component of 76% and how this could be reduced as well. This research will inform debate on affordability

8.2 Implications Of Cross - Boundary Services and Appropriate Governance Framework

With the rapid growth of mobile banking, it is conceivable that this revenue stream could rival and or equal the core business of telecommunications in future. The possible scenarios would have far-reaching consequences on the core business of telecommunications (cross subsidisation) or on banking sector (core business taken over). This is only one service and it is likely that others are in the design stage. While competition is to be pursued for the good of the consumer, the implications of such services needs to be known beforehand and corrective actions taken again for the long term good of the consumer. The research could develop a framework for regulation

8.3 Cost of Regulation

One 'service' of an effective regulator is to reduce the cost of regulation. An in-depth study on cost of regulation would unearth critical issues on how much the regulator costs and therefore how much licensees should pay. A fixed percentage levy on the revenues as applied now, assumes that the cost of regulation is directly related to the cost and volume of services. This research would test this logic and provide a way forward.

8.4 Framework to Empower the Consumer

Consumers have not come up with a consistent voice that can engage the regulator, the operators and the government. This is not peculiar with the ICT sector but is noted in other sectors as well. Without a well informed consumer voice, the issues of interest search tariffs, quality of services and distribution will be largely supplier-defined. A research in this area

would help to understand what information is necessary to empower the consumer to contribute in the ongoing debate of ICT growth. It would also define the role of CCK in dissemination of that information.

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Other resources

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<http://www.safaricom.co.ke>

<http://www.celtel.com>

<http://www.telkom.co.ke>

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