



2007 Kenya
Telecommunications
Sector Performance Review
a supply side analysis of policy outcomes

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List of Abbreviations and Acronyms

ADSL	Asymmetric Digital Subscriber Line	KIXP	Kenya Internet exchange Point
ARICEA	Association of Regulators For Information and Communication in Eastern and Southern Africa	LAN	Local Area Network
ASP	Applications Service Provider	LLO	Local Loop Operator
BSS	Base Station Subsystem	NFP	Network Facilities Provider
CBK	Central Bank of Kenya	MISD	Micro-Information Systems Department
CCK	Communications Commission of Kenya	MOIC	Minister of Information and Communications
CDMA	Code Division Multiple Access	MPC	Monopolies and Prices Commission
COMESA	Community of Eastern and Southern Africa	NCS	National Communication Secretariat
CPE	Customer Premises Equipment	NEPAD	New Partnership for Africa's Development
CSP	Contents Service Provider	PCK	Postal Corporation of Kenya
CTRO	Commercial Trunked Radio Operator	PDNO	Public Data Network Operator
DCNO	Data Carrier Network Operator	RIA!	ResearchICTAfrica!
EAC	East African Community	RTO	Rural Telecommunications Operator
EASSy	Eastern Africa Submarine Cable System	SNO	Second National Operator
EDGE	Enhanced Data rates for GSM Evolution	TEAMS	The East African Marine System
EGPRS	Enhanced General Packet Radio Service	TESPOK	Telecommunications Services Providers Organisation of Kenya
ETACS	External Total Access Communications Systems	TKL	Telkom Kenya Ltd
FM	Frequency Modulation	TV	Television
GATS	General Agreement on Trade in Services	UA	Universal Access
GDP	Gross Domestic Product	VANS	Value Added Network Services
GITS	Government IT Services	VAS	Value Added Services
GNI	Gross National Income	VAT	Value Added Tax
GPRS	General Packet Radio Service	VoIP	Voice over Internet Protocol
GSM	Global Mobile Systems	VSAT	Very Small Aperture Terminal
HSDPA	High Speed Downlink Packet Access	WTO	World Trade Organisation
ICT	Information and Communications Technology	XDSL	Digital Subscriber Lines
ISP	Internet Service Provider		
IT	Information Technology		
ITU	International Telecommunications Union		
ISDN	Integrated Services Digital Network		
IXP	Internet Exchange Point		
KBC	Kenya Broadcasting Corporation		
KCA 98	Kenya Communications Act 1998		
KDN	Kenya Data Network		
KEBS	Kenya Bureau of Standards		
KP&TC	Kenya Posts and Telecommunications Corporation		
KES	Kenya Shilling		
KICTANET	Kenya ICT Policy Action Network		
KIF	Kenya ICT Federation		

Kenya

Executive Summary

This report reviews the status of the Information and Communication Technology (ICT) sector in Kenya in 2006. The report of the study is an update of a similar review carried out in 2003, which covered the period 1999 to 2003. This earlier review focused on the telecommunications sub-sector. The review on which this report is based covers the whole of the ICT sector and goes up to 2005, and 2006 where data was available. The study was carried out under the framework of ResearchICTAfrica! (RIA!) Network and the approach is similar to that adopted in the sector review of 2003. The data collection involved review of relevant secondary data, review of websites of relevant organisations and targeted one-on-one interviews with experts and managers in the ICT sector in both public and private institutions. The data collected was analysed and forms the basis of this report.

The deregulation of the communications sector in Kenya was initiated by the 1998 Kenya Communications Act (KCA). The KCA repealed the Kenya Posts and Telecommunications Act and provides the current framework for regulating the communications sector in Kenya. The Act unbundled Kenya Post and Telecommunications into five separate entities including Telkom, the fixed line operator; the Postal Corporation of Kenya (Posta); the regulator, the Communications Commission of Kenya (CCK); and the National Communications Secretariat (NCS). It also created an Appeals Tribunal for the purposes of arbitration in cases where disputes arise between parties under the KCA.

The key institutions that influence ICT policy formulation and implementation are the Ministry of Information and Communications, CCK, NCS, Appeals Tribunal, E-government Directorate, Government IT Services, Parliamentary Committee on Energy, Communications and Public Works and Monopolies and Prices Commission. In general, ICT responsibilities are still distributed between different arms of the government, with little, if any, coordination.

"The Communications Commission of Kenya has been fairly successful in introducing competition in most market segments. For example, the following are the licensed operators in different markets; 1 national operator, 2 regional telecommunications operators, 51 Internet service

providers, 2 Internet exchange points, 20 public data network operators, 8 Internet backbone gateway operators, 6 VSAT hub/commercial VSAT operators, 19 local loop operators, and 2 mobile operators. The operational operators and service providers represent a significant investment in the economy, a big employer of ICT staff and a major contribution to national development. In the last year, for example, in 2005/2006, the Transport, Storage and Communications sector contributed 10.9% to GDP. A significant proportion of this came from the communications sub-sector."

As a summary of the performance in the various ICT services, the fixed-line network has largely stagnated, with a decline in subscribers from 2002/2003 to 2004/2005. There has also been stagnation in the number of rural connections, which remain on average at 5% of the total connections. Although the first mobile operator was only licensed in 1997, the mobile network surpassed the fixed network in 2000/2001 and has since then experienced phenomenal growth. By 2006/2007, the mobile network was over 20 times the size of the fixed network, with a mobile teledensity of 19.42. Although mobile services are more expensive than fixed services, in order to access communications services or enjoy the benefits of mobility many people have opted for this "premium" service. This may be attributed to the relatively better customer service, the ease with which connections are obtained and the relative reliability of the mobile networks. Internet services have not experienced the kind of growth experienced in the mobile segment of the market, despite sustained liberalisation in the Internet market. With over 50 licensed ISPs and many other categories of operators getting into this market, the amount of Internet bandwidth and the number of Internet users has remained relatively low. The Communications Commission of Kenya is currently carrying out a survey to establish why the situation is as it is, but an obvious reason must be the low fixed-line penetration for dial up services and the relatively high cost of sustained usage.

Tariffs in the various services have remained relatively high despite the competition that has been introduced by the regulator. This signals the fact that the introduction of competition may not be an adequate regulatory mechanism to bring down costs. Other regulatory environment challenges identified were lack of tariff regulation, scarce resources for investment, high interconnection charges and lack of mechanisms to protect the consumer.

In summary, the following are the achievements that the current government has realised in the ICT sector against planned interventions as per the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007):

INSTITUTIONAL FRAMEWORK

The key arms of government that deal with ICT were merged into one ministry (Ministry of Information and Communications). However, there are still other arms of government that in one way or another deal with ICT and are in other ministries with little or no coordination. In addition, there has been restructuring of ICT in government, by the creation of ICT units in ministries and the establishment of an Inter-Ministerial Committee to mainstream ICT in the government's operations. However, structures for coordinating and managing national ICT programmes and projects have not been created.

ICT POLICY

A first national ICT policy was approved in January 2006 and came into effect in March 2006. There was significant participation and influence by the private sector, civil society and non-governmental organisations in the finalisation of this policy. However, the strategy for implementing the policy has not yet been drawn up.

E-GOVERNMENT STRATEGY

An E-government strategy was launched in 2004 but its implementation has been limited and slow.

DUTIES AND TAXES ON ICT

Customs and excise duties and taxes on computers were removed but all duties and taxes on other categories of ICT are still in force.

COMPETITION IN ICT MARKETS

The regulator has been fairly successful in introducing competition in most ICT markets. However, the fixed-line business is still dominated by Telkom Kenya while the cellular mobile market is still a duopoly. This is because of the problems in licensing the second national operator and the third mobile operator respectively. In addition, restructuring and privatisation of Telkom Kenya has faced many obstacles and is yet to be finalised.

E-COMMERCE

There is very little in terms of e-commerce in Kenya, largely because of the lack of an appropriate legislative framework. The new ICT policy has committed to creating an enabling environment for e-commerce.

In conclusion, the Kenyan regulator has continued to liberalise the telecommunications sub-sector with a certain degree of success. The mobile telephone market in particular has performed extremely well while the fixed-line sector has not grown in the last five years. Competition has been introduced in most market segments and the quality of services has generally improved. However, most stakeholders in the industry perceive the costs of services as very high, especially mobile telecommunication services. Unreliable and slow Internet connections

also impact negatively on this market segment. Operating costs of mobile service providers are also high due to poor infrastructure and high cost of electricity and related taxes. The implications and real impact of telecommunications liberalisation in this market segment still need to be quantified.

This review recommends that the process of privatisation of Telkom Kenya be hastened to pave the way for the revitalisation of the national telecommunications backbone infrastructure, particularly as the second national operator will be licensed and as the regulator plans to give unified licences in early 2007, effectively increasing competition in most markets. This is partly in line with international precedent which suggests that while attracting investors and securing a high price for the sale of the incumbent are often gained for a monopoly provider, greater gains are achieved in the longer term for users and consumers with the introduction of competition prior to privatisation.

The study also recommends that the regulator implements reforms that address the high user and interconnection tariffs. We also recommend that the government develops and implements the detailed plans from the national ICT policy that came into effect in March 2006. Key plans to be implemented are universal access plans to ensure accessible, available and affordable telecommunication services in the rural areas.

Introduction

SOCIO-ECONOMIC DATA

The Central Bank of Kenya (CBK) July 2006 economic review shows the provisional focused figures for the Kenyan population in 2005 as 33.4 million. There is no rural/urban disaggregation but one can use the 1999 census which showed that 64% of the population resided in the rural areas (18.6 million of the total population of 28 686 607 lived in rural areas). Using this ratio¹, it is estimated that 21.6 million of the 2005 population live in rural areas. The average number of persons in a household is five and the 1999 census shows that Kenya has 6.4 million households.

The CBK 2004/2005 annual report and July 2006 Economic Review shows Kenya's GDP per capita as US\$431.14, average annual consumer price index (1995=100) as 194.45 and average annual exchange rate as US\$1 = KES73.57.

STATUS OF ICT SECTOR IN KENYA

Kenya has witnessed significant growth in the ICT sector as demonstrated by the number of telephone lines, Internet Service Providers (ISPs), Internet users, broadcasting stations, and market share of each of them. The Government has continued to liberalise the ICT sector. Some of the key statistics are:

- There were 303 905 fixed-line subscribers and 6.48 million mobile subscribers as at June 2006. This translates into fixed teledensity of 0.91 per hundred inhabitants for fixed-line and 19.42 per hundred inhabitants for mobile;
- The number of registered ISPs has been growing, reaching a peak of 78 in 2003/2005 and reducing to 51 in 2005/2006. Out of 51 ISP licences, less than 50% are active, with approximately 1.5 million Internet users. There were also over 1 000 cyber cafés and telephone bureaus by June 2005;
- There were 16 operational television stations and 24 FM radio stations;
- There were around 8 915 public phones installed throughout the country by the year 2004;
- The national broadcaster (Kenya Broadcasting Corporation), with the highest penetration of radio and TV coverage, has 95% of the population covered by radio and 65% covered by television. At the same time, an estimated 87.2% of households have a radio set and 17.1% a television set.

PURPOSE AND SCOPE OF STUDY

This study reviews the ICT sector in Kenya from the supply side perspective. The report of the study is an update of a similar review carried out in 2003, which covered the period 1999 to 2003. This earlier review focused on the telecommunications sub-sector. The review on which this

report is based covers the whole of the ICT sector and goes up to 2005, and 2006 where data was available. The purpose of the study is to assess the performance of the telecommunications sector against national policy objectives.

METHODOLOGY

The study was carried out under the framework of (RIA!) and the approach is similar to that adopted in the sector review of 2003. The aim is to create a rich database of the ICT sector in selected African countries that will allow for comparison of policy outcomes in different countries against national strategies and sector performance. The database had the following indicators:

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

The data collection involved a review of relevant secondary data, review of websites of relevant organisations and targeted one-on-one interviews with experts and managers in the ICT sector in both public and private institutions. The data collected was analysed and forms the basis of this report. The study also included an assessment of the Telecommunications Regulatory Environment on the basis of stakeholders' perceptions. The informal survey methodology for this was devised by LIRNEasia and is merely an indicator of industry perceptions rather than an accurate barometer.

Policy and Regulatory Environment

POLICY AND REGULATORY FRAMEWORK

The Kenya Communications Act (No. 2 of 1998) provides the framework for regulating the communications sector in Kenya. Enacted by Parliament in 1998, the Act was a deliberate attempt by parliament to give legislative teeth to the Postal and Telecommunications Sector Policy Statement, which had been issued by the then Ministry of Transport and Communications in January 1997 and updated in 1999 and 2001. The said Act is clarified and expounded in the Kenya Communications Regulations 2001.

The most influential document regarding ICT legislation and regulation in Kenya is the 1998 Kenya Communications Act (KCA). The KCA, which repealed the Kenya Posts and Telecommunications Act, provides the current framework for regulating the communications sector in Kenya. The Act unbundled Kenya Post and Telecommunication into five separate entities including Telkom, the fixed line operator; the Postal Corporation of Kenya (Posta); the regulator, the Communications Commission of Kenya (CCK) as the sector regulator; and the National Communications Secretariat (NCS) to advise the government on the adoption of a communication policy. It also created an Appeals Tribunal for the purposes of arbitration in cases where disputes arise between parties under the KCA.

As part of the post-exclusivity regulatory strategy, CCK issued a statement in September 2004 containing a new licensing framework. The general goal of this framework was “to ensure that the regulatory environment in the sector is friendly to investment and conducive to the provision of modern communication services” (Waema, 2004). The specific objectives of the new licensing framework were to ensure that Kenya has a more dynamic and competitive ICT environment, improved access to ICT infrastructure and services and choice in the provision of communication services to meet socio-economic needs of the society.

One notable aspect of the new licensing framework is that the CCK was abandoning licensing based on a bidding process in favour of open, market-based licensing. The CCK argued that licensing through a bidding process, especially in a liberalised market, was “not only unnecessary but undesirable and inconsistent with market dynamics”. The problems of using the bidding process were evident in the licensing of rural telecommunications operators (RTOs), commercial trunked radio operators (CTROs) and the third GSM operator, which were generally a failure. In effect, CCK abolished the “beauty contest” in preference to simple issuance of a licence if a potential operator met the requirements, on a first come first served basis.

The post-exclusivity statement by CCK in September 2004 stated that in the medium to long term, CCK “shall adopt a unified and absolute technology neutral licensing framework that permits any form of communications infrastructure to be used to provide any type of communications service that it is technically capable of providing”. It went further to suggest that in the next two to five years, the market structure, largely driven by technological convergence, would be technology neutral with the following categories:

- Network Facilities Providers (NFPs) – to own and operate any form of communications infrastructure;
- Applications Service Providers (ASPs) – to provide all forms of services to end users using the network services of an NFP;
- Contents Service Providers (CSPs) – to provide content services, for example, broadcasting material and information services.

To date, however, CCK has not implemented the new licensing framework. CCK had indicated that it would issue unified licences as a way of implementing this framework in early 2007 after concluding the planned licensing of an SNO. However, discussions with both the winner and runners up of the SNO tender fell through in early 2007. It does appear that CCK will take longer than originally planned to issue the unified licences it had promised. This is presumably because such an act would reduce the attractiveness of the SNO licence. There is nevertheless a halfway house in that CCK has created a new licence called Data Carrier Network Operator (DCNO). This new licence combines the Internet Backbone and Gateway Operator (IBGO), Public Data Network Operator (PDNO) and Commercial VSAT Operator (CVO). This action would also essentially abolish the CVO licence, which is based on a specific technology. The services allowed with the new DCNO licence, which is yet to be issued, are:

- Domestic and International dedicated data links to licensed network operators, Internet service providers and corporate entities;
- Internet Backbone services to licensed network operators, Internet service providers and corporate entities;
- Dedicated domestic and International VSAT links to licensed network operators, Internet service providers and corporate entities;
- Voice over Internet protocol (VoIP) to licensed Internet service providers and corporate entities in accordance with the Commission’s guideline on provision of VoIP); and
- Any other services provided that no separate licence is required and such other telecommunication service, which the Licensee is under an obligation to provide under this Licence.

This licence essentially means that Internet customers can now connect to network operators without necessarily going through ISPs. This will reduce the vertical tiers that customers go through in order to have Internet access, which may lead to reduced costs of Internet connectivity. It

will also force ISPs to move away from focusing their business primarily on Internet Access and diversify into providing Internet Services. The services that an ISP can offer were recently enhanced in a modified licence, eg to include VoIP services.

Other than the Kenya Communications Act of 1998, two more pieces of legislation are pertinent in the ICT sector: the Science and Technology Act, Cap. 250 of 1977 and the Kenya Broadcasting Corporation Act of 1988. As recognised in the new ICT policy, these Acts are inadequate in dealing with issues of convergence, electronic commerce and e-Government. There is thus a need for a comprehensive policy, legal and regulatory framework to:

- support ICT development, investment and application;
- promote competition in the industry where appropriate;
- ensure affordability and access to ICT nationally;
- address issues of privacy, e-security, ICT legislation, cyber crimes, ethical and moral conduct, copyrights, intellectual property rights and piracy;
- support research and development in ICT; and
- develop an institutional framework for policy development, implementation and review.

INSTITUTIONAL ARRANGEMENTS

With the enactment of KCA 1998, the country had created a highly centralised process of policy formulation. The key institutions that can influence ICT policy formulation and implementation are outlined below:

THE MINISTRY OF INFORMATION AND COMMUNICATIONS.

In a cabinet reshuffle in 2004, a new ministry was created, namely the Ministry of Information and Communications. According to some observers, the previous Minister of Transport and Communication had an uneasy relationship with the private sector. As was the case with his predecessors, the Permanent Secretary's attention under the old ministry of Transport and Communications tended to focus more on the transportation sector than the communications sector. It is this new Ministry of Information and Communications that is in charge of national ICT policy formulation and that is the one that eventually delivered the new national ICT policy, which was approved by the Cabinet in January 2006 and came into effect in March 2006.

NATIONAL COMMUNICATIONS SECRETARIAT

The National Communications Secretariat (NCS) advises the Government of Kenya, through the Ministry of Information and Communications, on ICT policy. Although NCS took several years to get started, it is the only key organisation with an explicit and legislatively mandated policy function. Among other goals, it is expected to pay particular attention to policies that promote the development of technological capabili-

ties, deliver social services, foster economic growth and encourage competition and efficiency in the industry.

COMMUNICATIONS COMMISSION OF KENYA

The Communications Commission of Kenya (CCK) is a statutory agency, whose purpose is to licence and regulate telecommunications, radio communications and postal services in Kenya. A new information and communications bill (2006) proposes the transformation of CCK to regulate the total ICT sector, including IT and broadcasting (converged regulator).

THE APPEALS TRIBUNAL

The Appeals Tribunal was established for arbitrating in cases where disputes arise between parties under the Act. Any dispute in the application of the Act by CCK, for example, is referred to the Appeals Tribunal. The decision of the Appeals Tribunal can be appealed in the highest court, the Court of Appeal. The Tribunal jurisdiction is limited to the interpretation of the spirit of the Kenya Communications Act. One of the first cases the Tribunal handled concerned interconnection. The decision by CCK on the interconnection dispute between Kencell Communications Ltd and TKL was appealed in the Appeals Tribunal. At issue are interconnection rates that TKL felt do not cover the cost of call termination. These rates had been established when the cellular operators were small. In 2003, the Tribunal delivered a judgment revising the interconnection rates between Kencell Communications Ltd and Telkom Kenya Ltd in favour of the latter.

E-GOVERNMENT DIRECTORATE

The E-government Directorate was founded in March 2004 in the Office of the President (OP) and a Director appointed in September the same year. According to interviewees, the Cabinet saw the need for ICT and thus mandated the creation of this entity. The E-government Directorate is called for as part of the structural composition of the e-government strategy. The official purpose of the E-Government Directorate, according to the Strategy, is to oversee the implementation of e-government strategy, and assist the Government of Kenya to more effectively deliver services to citizens. The E-Government Strategy proposes that each ministry should have its own ICT department.

GOVERNMENT INFORMATION TECHNOLOGY SERVICES (GITS)

The predecessor of the Government IT Services was the Micro-Information Systems Department (MISD). In 2000, MISD was abolished and GITS created. GITS provides computer services to government ministries and departments and some parastatal organisations. GITS writes relevant computer applications, updates existing systems, evaluates system design and conducts feasibility studies. The agency aims to ensure uniform ICT standards within government organisations. GITS remains a technical entity. The head of GITS is at Director level and reports to the Permanent Secretary, Ministry of Finance.

PARLIAMENTARY COMMITTEE ON ENERGY, COMMUNICATIONS AND PUBLIC WORKS

This Committee provides Parliamentary oversight in one aspect of ICT only, namely communications.

MONOPOLIES AND PRICES COMMISSION

The Monopolies and Prices Commission Act allows the Commissioner to determine matters that may affect competition in the economy, including companies in the telecommunications business. Monopolies established by an Act of Parliament are, however, excluded from the Monopolies and Prices Commission (MPC) control. Consequently, the MPC had little effect on the telecommunications sector exclusivity until June 2004. In the liberalised segment of the Internet provision, MPC has had a role to ensure competition and control mergers. In 1999, MPC cleared the take-over of an ISP (Net 2000) by another ISP (Africa Online), concurring that the resulting merger did not affect market concentration of Internet business. No other telecommunications-related case has been handled by the Monopolies and Prices Commission.

From the above outline, ICT responsibilities are distributed in different arms of the government, with little, if any, coordination.

GATS COMMITMENTS

Kenya has since 1998 made commitments in five areas of telecommunication services:

- Fixed-line telephony;
- Mobile telephony;
- Value-added services;
- Internet; and
- Audiovisual services.

The specific services committed to including telecommunication services except video and audio broadcast, voice telephony services, facsimile services, packet swift-data transmission services, telegraph services, electronic mail, and electronic data interchange (Otieno, G and Aligula, EM, 2006).

With these commitments, however, there are limitations, especially on market access. These limitations include foreign equity limits; public monopoly over basic telecommunications (often for specified periods); and prohibition of international call-back services. Movement of natural persons is unbound except for managers and other expert staff. In addition, commercial presence in audiovisual services, motion picture and videotape production (except distribution services) is unbound; and cross-border trade for motion picture projection is unbound (WTO, 2006).

The policy reforms embraced in the Kenyan telecommunications sector since 1998/99 largely coincided with the country's commitments in telecommunications under the GATS framework.

Besides the commitments Kenya has already made within GATS, the country has received a number of requests for further commitments on market access and clarifications. The requests were received as part of the ongoing GATS 2000 negotiations that are yet to be concluded. The US, EC and Norway have made requests for commitments in communication express delivery; commitments that reflect market opening in audio-visual; explanation and/or removal of restrictions on international call-backs, Telkom monopoly, satellite-based services, mobile services, the limitation of foreign equity participation to a maximum of 30%; and full commitments in basic telecommunications and value-added services.

COMPETITION ISSUES

As at October 2006, the second national operator (SNO) has been selected (late 2006) and is to be licensed in early 2007, while the third mobile operator is yet to fully pay for its licence before it can be given the go-ahead to start the infrastructure roll-out.

Telkom Kenya as a result of liberalisation and the intention to privatise, had to restructure and rationalise its number of employees through retrenchment, which has seen about 11 000 employees retrenched since the process began in 1999. It is set to retrench a further 6 500 staff in January 2007 in readiness for privatisation. The initial plan was to privatise TKL within the 2003-2005 period. A new date for privatisation has not been made public.

By late 2006 the planned privatisation of a majority stake in Telkom Kenya had not yet taken place. However, Telkom's monopoly in the provision of Internet backbone and international bandwidth services ended and other operators were licensed in 2005. This led to price reductions and other services introduced into the sector, such as ADSL and wireless broadband technologies. VoIP Internet telephony has also been liberalized. Mobile phones have out-numbered fixed-lines by a ratio of 20:1. The licence for mobile networks to operate their own international gateways was granted in June 2006 and the expected introduction of mobile number portability is expected to enlarge the ratio.

NUMBER PORTABILITY

Number portability is a feature that enables telecommunication networks to provide users with the ability to migrate from one service provider to another without changing their telephone number. Currently, CCK and service providers are working on modalities of introducing number portability in the Kenyan telecommunications sub-sector. Several charging options exist, but a decision is yet to be made on whether

or not to charge and what option would be suitable in order to ensure that competition is not frustrated through punitive charges for those wishing to port. Despite the theoretical importance of number portability for enabling competition, the experience of early adopters in Africa, such as South Africa, shows that initially anyway, there has not been significant up-take of this facility by consumers, who appear to find the process complex if they are aware of it at all, or are tied into long-term contracts that would be expensive to get out of.

CARRIER SELECTION

The carrier selection code for Kenya is (1XX). CCK issued a new numbering system in 2002 in anticipation of a telecommunications multi-carrier environment. This was necessitated by a high demand on the existing numbering resources as a result of the liberalisation of the telecommunications sector and the subsequent growth of telecommunications services in the country. The plan provided for the introduction of short codes in the range of 1xx to facilitate the selection of the preferred carriers by subscribers. Further, short codes for essential services are in the range of 9xx (eg 999 for police) while the mobile-subscriber numbers remain at six digits, despite the standardisation of access codes for mobile networks to three digits. According to CCK, the subscriber number length for the rest of the country is to change gradually to seven digits during modernisation and expansion of switches.[M1]

NEW DEVELOPMENTS IN ICT POLICY

The Kenyan ICT policy remained in draft form for several years, largely because of a disjointed institutional framework for policy development, lack of a high-level ICT champion in government and lack of adequate and sustainable funding for ICT (Waema, 2005). Things began to move however after the Ministry of Information and Communications was created in mid-2004. This Ministry facilitated and led the organisation of the first truly stakeholder-driven national ICT workshop held over a three day period (in June 2005). At the end of this workshop, a small group of participants was appointed to use the inputs from the stakeholders to create the final draft ICT policy. By August 2005, the Ministry of Information and Communications had prepared a cabinet memorandum on the draft ICT policy. This policy was discussed and approved by the cabinet in January 2006 and an ICT policy document published in March 2006. For the first time in more than two decades of failed attempts, Kenya had an official ICT policy.

It was anticipated that the new policy would quickly be followed by an ICT master plan to implement the policy. However, just like the processes of developing the policy were long and drawn out, interviews with persons involved in creating the project to draw up implementation plans indicate that the process is going to take a long time. The main reasons for this are that the Ministry of Information and Communications does

not have adequate capacity to lead the process, lacks funding and a committed champion, and the interests of the key stakeholders have started to become apparent, much like at the time of development of the ICT policy itself. For example, several private sector organisations have positioned themselves to influence the nature of the implementation plans to serve their own interests.

In 2006, the Ministry of Information and Communications introduced a draft Information and Communication Bill². The government also published a guide to the bill³. The new legislation is intended to address convergence in telecommunications, Internet, etc. From the guide:

“The draft Information and Communications Bill outlines the proposed new regulatory regime to be managed by the converged sector regulator. It transforms regulation in the ICT sector by providing a new regulatory framework that will adapt to the changing market. The following changes are being introduced:

- (a) the transformation of Communications Commission of Kenya into a fully-fledged ICT sector regulator for the rapidly evolving and converging industry thereby allowing all regulatory decisions affecting the sector to be made within a single strategic framework;*
- (b) the removal of the requirement for licensing of telecommunications, broadcasting and multi-media services separately, hence creating a new framework where electronic communications networks, electronic communications services and associated infrastructure and services can be licensed;*
- (c) the setting up of a universal service fund; and*
- (d) the creation of a one-stop shop for making decisions affecting the use of radio frequency spectrum and access networks.”*

This Bill has been circulated and stakeholders are still commenting on it, although there is no appropriate framework to facilitate these comments.

REGIONAL CO-OPERATION ON POLICY AND REGULATORY ISSUES

A regional ICT governance study (Waema, 2005) found that Kenya takes regional issues seriously and actively participates in, and influences, regional ICT discussions, especially in the Community of Eastern and Southern Africa (COMESA) and the East African Community (EAC). However, the influence of Kenya is waning, largely due to very slow progress in developing and implementing a national ICT policy. Nevertheless, Kenya has benefited to a great extent from regional ICT models. The regional study also found that the influence of regional institutions is only restricted to ICT policy development. Even then, this influence is limited. One of the explanations is the existence of multiple ICT policy and programme initiatives, some of which are often in competition with each other. Some of these initiatives have their origins in the “develop-

ment partners” funding the initiatives, with very little ownership from African governments. A second explanation is that regional institutions lack institutional mechanisms to ensure compliance with model policies and frameworks or to monitor and evaluate implementation of ICT policies in member countries. This is made difficult by the fact that member states are sovereign states and have no obligation to go by the policy guidelines of regional bodies.

A further explanation is that the various countries in the region are at various stages of economic, political and social development, making it difficult for member countries to have common priorities and therefore to adopt common models or frameworks. Other reasons are that participation in meetings and other fora of regional institutions is often dominated by the most senior persons in the ministries concerned at the expense of the more junior people who deal with the matters on a day-to-day basis, and that there is no clear mechanism to coordinate the inputs of the various ministries involved in a regional institution’s agenda.

The regional study further established that regional institutions do not have any significant role in ICT policy implementation and evaluation. Although member countries are entrusted with, and are expected to carry out, implementation and evaluation of ICT policy, most regional institutions do not have mechanisms to track implementation and to gauge the degree of compliance⁴. For Kenya, the institutional framework to ensure implementation of policy, and its subsequent monitoring, has not been clear. In the liberalisation of the communications sector, CCK has been implementing policy guidelines. As we move into the implementation of the newly approved national ICT policy, the institutional framework is once again in focus and discussions on an appropriate framework are yet to be finalised.

Finally, in the last couple of years, a number of local institutions and groups have come to exert a significant influence on ICT policy and regulation. The more notable ones include the Telecommunications Services Providers Organisation of Kenya (TESPOK), Kenya ICT Federation (KIF) and Kenya ICT Policy Action Network (KICTANET). TESPOK represents the telecommunications service providers in Kenya. For example, TESPOK lobbied government regarding the establishment of the Kenya Internet exchange Point (KIXP) and the liberalisation of very small aperture terminals (VSATs). It also encouraged the government to establish the Ministry of Information and Communications and helped to set up Internet exchange points in other regional countries.

KIF is the umbrella body which brings together all private sector organisations with an interest in ICT. TESPOK and the Computer Society of Kenya are members of KIF, which vigorously lobbied the finalisation of Kenya’s ICT Policy. KICTANET is a recently formed civil society organi-

sation that is a loose network of donors and NGOs. It collected comments from various parts of civil society in Kenya regarding the ICT policy and forwarded them to the Ministry of Information and Communication (MOIC). In general, three bodies, representing private sector, civil society and donors played a significant role in the development of the national ICT policy and also influenced regulatory reform.

The ICT Market

MARKET STRUCTURE

The telecommunications market is divided into six main categories, namely;

- Facility-based Public Telecommunications Service Providers;
- Private Telecommunications Networks;
- Non-Facility-Based Telecommunications Service Providers;
- Value-Added Service Providers;
- Telecommunications Dealers' Licences;
- Technical Personnel.

(see Annexe 1 for details)

The broadcasting and information technology sectors do not have an official regulatory framework. However, the draft broadcasting sector policy statement of 2000 suggested that CCK should be responsible for regulating the broadcasting sector as well. The ICT policy (2006) has backed the idea and suggested that for the information technology sector, the Kenya Bureau of Standards (KEBS) and CCK should be strengthened to ensure quality and compatibility of IT products and services.

As proposed by the draft broadcasting sector policy statement of 2000, the broadcasting sector can be considered to have the following market structure:

- **National public broadcasting services station.** This is a broadcast service provided by the Kenya Broadcasting Corporation (KBC) which is a statutory body operating commercially but with universal obligation as the national public broadcaster;
- **Commercial broadcasting stations.** These are private commercial entities that are licensed to provide broadcasting services on a competitive basis in accordance with the terms of the licences issued to them by the government (Department of Information, Ministry of Information and Communications) in a specific geographical area of coverage;
- **Community broadcasting stations.** A community broadcasting station is that which is fully controlled by a non-profit entity, carried for non-profit purposes and serves a particular community. This could be a geographical community or a community of interest with specific and ascertainable common interest (eg educational institutions).

MARKET SHARE

In the various sectors more than one operator has been licensed. For local-loop operations, though, there are 15 licensed operators – only three have rolled out their operations. Among the key reasons given by the licensees are that the interconnection rates from TKL are very high, the

process of negotiating interconnection rates takes very long and that TKL had started providing fixed-wireless services (using CDMA technology) in competition with the new licensees. Telkom Kenya commands a majority of the market share. Flashcom and Popote wireless, new entrants in the market, are in the initial stages of establishing themselves. Telkom Kenya has retained a monopoly for the regional telecommunications operations as well as national long distance operations. There are 15 licensed public-data network operators (PDNOs). Telkom Kenya and Kenya Data Networks are the dominant operators providing domestic leased-lines. It is estimated they both have over 90% of the market share.

For the mobile GSM operators, there are three licensed operators but only two operators, Safaricom and Celtel have rolled out their network. SafariCom commands 66% of the market while Celtel commands 34% of the market. A third mobile operator Econet is yet to be licensed and to roll out its network.

MARKET INVESTMENT

Investment in Telecommunications has been heavy. The mobile industry (Safaricom and Celtel) invested KES8 billion in the year 2005/2006 with a combined revenue of KES45 billion. This investment was for both network extension and service upgrade. Although figures from Telkom Kenya were not available, its recent investment is thought to be small in comparison to that of the mobile operators. Table 1 below shows the gross revenue (an indicator of investment) of the mobile operators. It also shows the revenue per line. The table shows that the average annual revenue per line for Safaricom has consistently come down over the years. This trend is to be expected as the operator expands to reach poorer members of society. It is, however, interesting to note that the average annual revenue per line for Celtel has been lower than that of Safaricom and remained around KES13 000 except for the 2001/2002 financial year when there was a phenomenal growth in revenue.

TABLE 1. FINANCIAL PERFORMANCE OF MOBILE OPERATORS

	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005
<i>Gross Revenue in KES. (to nearest billion)</i>					
Safaricom	2 000 000 000	9 000 000 000	14 000 000 000	18 900 000 000	26 900 000 000
Celtel	800 000 000	6 000 000 000	6 300 000 000	7 400 000 000	NA
<i>Customer connections</i>					
Safaricom	54 000	325 235	728 163	1 000 000	1 627 378
Celtel	60 000	259 896	458 959	590 785	918 779
<i>Approx. average gross revenue per line (KES/line)</i>					
Safaricom	37 037.04	27 672.30	19 226.46	18 900.00	16 529.66
Celtel	13 333.33	23 086.16	13 726.72	12 525.71	NA

US\$1=KES67

NA - Not Available

Source: CCK, Safaricom financial reports

Safaricom has grown to become one of the most profitable companies in Kenya and the region. In the year ended 31 March 2005, for example, Safaricom posted a net profit of KES5.86 billion against a gross revenue of KES26.9 billion and an operating profit of KES8.97 billion. Safaricom's revenues have been growing at an annual compound rate of 48 per cent (Safaricom financial report 2005).

EMPLOYMENT

The telecommunications industry has created significant employment, especially in the mobile sector. Telkom Kenya has a staff base of 12 000 people after staff rationalisation that led to a 33% reduction. According to Safaricom and Celtel, they have 800 and 600 staff respectively. In addition, they have created employment indirectly to over 20 000 people through their retailer outlets and community phones.

Table 2 below shows the computation of lines per staff for the three main operators.

TABLE 2. STAFF EMPLOYED AND LINES PER STAFF

	TKL	Safaricom	Celtel
No of staff employed	20 000	800	600
No of lines as per 2005/2006	293 364	2 512 826	2 099 144
Lines per staff	15	3 141	3 499

Source: Operators

Although Telkom Kenya employs the bulk of people in the sector, the lines per staff ratio is very poor. Despite the fact that fixed-line operations are more labour intensive than mobile networks, this has the implication that a huge percentage of the revenue goes into salaries and thus impacts on the efficiency of the company.

Access to ICT Services

FIXED-LINE SERVICES

PERFORMANCE

The performance of fixed-line network services over the last six years is shown in Table 3 below. It can be observed that for the first time, the exchange capacity dropped from 531 804 in 2005 to 513 824 by February 2006. A further observation is that there has been a steady drop in the number of those waiting for a line from 107 938 in 2003 to 85 177 by 2006 while the number of payphones has also steadily dropped from 9 964 in 2003 to 8 915 in 2006. Finally and most importantly, the subscriber base of TKL has declined since 2002, with the lowest drop experienced from 2003 to 2004, while the percentage of unused switch capacity peaked in 2005 at almost 50% (47%).

TABLE 3. SUMMARY OF FIXED TELEPHONE NETWORK PERFORMANCE, 2000-2006

Year	Exchange capacity	Subscriber connections	% unused switch capacity	Average % growth in connections	No of people waiting for a connection	Pay-Phones
1999/2000	444 422	313 470	29		127 169	8 684
2000/2001	445 822	326 282	27	4.09	133 862	9 135
2001/2002	507 652	331 718	35	1.67	108 761	9 618
2002/2003	508 230	328 358	35	-1.01	107 938	9 964
2003/2004	531 442	299 255	44	-8.86	107 260	9 798
2004/2005	531 804	281 764	47	-5.84	85 177	8 967
2005/2006 (Feb. 2006)	513 824	293 364	43	4.12	85 177	8 915

Source: Telkom Kenya Ltd, 2006

By February 2006, the fixed-line teledensity stood at 0.88 per hundred inhabitants while the percentage of households with a telephone was 4.58% (calculated over 6.4 million households). The decline in the number of fixed-line customers can be attributed to delays in service provision, network congestion resulting in poor quality of service and inflated bills, as well as delays in resolving billing queries or complaints. This decline has benefited the mobile service-operators as evidenced by the data provided below.

By June 2006, the number of subscribers had grown to 303 905. Out of the total of 25 038 new fixed-line subscribers in the last year, the two active local loop operators (LLOs), Flashcom and Popote Wireless, contributed a total of 3 995 subscribers, representing a contribution of 16%.

Both LLOs have been in operation for less than one year. At the same time, TKL through its subsidiary of Jambo Telkom, has launched wireless landlines (with Internet capability) based on CDMA technology, increasing the competition on the local loop. No figures for subscribers to individual LLOs were publicly available at the time of the study.

There has been only one national operator to date. The winner of the Second National Operator (SNO) tender was announced in October 2006 (VTel Consortium) and CCK plans to issue the licence by the end of January 2007. The licensing of the SNO and service roll-out by the other licensed local-loop operators is expected to boost the penetration of fixed-line telecommunications services and improve Kenya's teledensity.

SUB SUB HEADING RURAL/URBAN DIVIDE

Fixed telephone lines in the country have been based largely in the urban areas, with Nairobi having the highest teledensity. For example, by 2003 Nairobi had 56% of the subscribers while the remaining 44% were distributed in the other provinces as follows: Coast (13%), Rift Valley (12%), Western (2%), Nyanza (4%), Eastern (5%), North Eastern (1%) and Central (7%) (CCK's Annual Report, 2003/2004). Table 4 below shows the detailed rural/urban divide with respect to fixed telephone lines. It is evident that the number of rural connections has not grown – indeed it has declined between 2003 and 2006.

TABLE 4. RURAL CONNECTIONS

Year	Exchange capacity	Subscriber connections	Rural connections capacity	% of rural connections
1999/2000	444 422	313 470	14 779	4.71
2000/2001	445 822	326 282	17 486	5.36
2001/2002	507 652	331 718	18 238	5.50
2002/2003	508 230	328 358	19 288	5.87
2003/2004	531 442	299 255	NA	NA
2004/2005	531 804	281 764	NA	NA
2005/2006 (Feb. 2006)	513 824	293 364	14 285	4.87

Source: CCK

NA – Not Available

Rural connections as a percentage of the total connections have almost been stagnant at 5%. With a rural population of 21.65 million, rural teledensity as at 2006 stands at about 0.066 fixed lines per 100 people in the rural areas, compared to 2.38 fixed lines per 100 people in the urban areas. Based on teledensity, this means that the urban population is 36 times better off than the rural population. This enor-

mous rural/urban divide must be addressed through an appropriate universal access strategy.

ADSL services are concentrated in the urban areas. They are largely used by corporate organisations. With the decreasing cost of ADSL, there is now an increasing use of Internet access by individuals. The only problem, especially in Nairobi, is to get a fixed line.

GOVERNMENT USAGE

The total number of fixed-telephone lines in government was not available. The E-readiness assessment of 2002 showed that the Government sector had 13 392 telephone lines. However, given that there has been little growth in the total number of fixed lines (actually a reduction) since 2002, it is reasonable to assume that the number of government lines has hardly changed. This number is nevertheless low compared to a staff base of about 800 000 (includes core government staff of 130 000 and 250 000 teachers; military and police staff). Therefore the teledensity in government is about 1.7 telephones for every 100 government staff members.

MOBILE TELEPHONE SERVICES

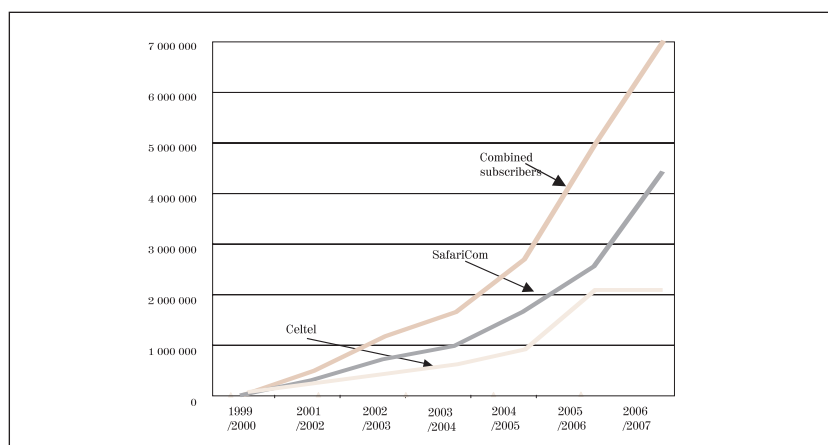
Mobile telephony was first introduced in Kenya in 1992, and the technology has moved from the initial External Total Access Communications Systems (ETACS) to the second and third generation of Global Mobile Systems (GSM). Safaricom was Kenya's first GSM operator and began offering services in 1997. Subscriber growth however did not take off until 2000 after a combination of factors, including the licensing of a competing GSM operator and the investment provided by Vodafone for network expansion. Kencell, the predecessor of Celtel, was the first licensed mobile operator and became the second GSM operator in January 2000. With the launch of the second mobile operator, competition in the cellular market had commenced. Since then, the growth has been phenomenal as shown on Table 5 below.

TABLE 5. PERFORMANCE OF THE MOBILE CELLULAR MARKET

	1999/2000	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
SafariCom	54 000	325 235	728 163	1 000 000	1 627 378	2 512 826	4.3 million
Celtel	60 000	259 896	458 959	590 785	918 779	2 099 144	2.14 million
Combined	114 000	585 131	1 187 122	1 590 785	2 546 157	4 611 970	6.48 million
subscribers							
Average % growth in subscribers		413.27	102.88	34.00	60.06	81.13	

Source: Communications Commission of Kenya

TABLE 5.1



The mobile network surpassed the fixed network in 2000/2001 and has since then experienced phenomenal growth. By 2006/2007, the mobile network was over 20 times the size of the fixed network, with a mobile teledensity of 19.42. Although mobile services are more expensive than fixed services, many people have opted for this “premium” service. This may be attributed to the relatively better customer service, the ease with which connections are obtained and the relative reliability of the mobile networks.

It is to be noted that of the 6 484 791 mobile subscribers by 2006/2007, 6 379 627 are pre-paid while 105 164 are post-paid (contract clients). This means over 98% of the mobile subscribers are pre-paid customers.

TKL has already started rolling out mobile data services and with the granting of a unified licence expected in January 2007, TKL is expected to start rolling out GSM mobile phone services. This however may be complicated by the fact that TKL would be competing with its own subsidiary, Safaricom Ltd. Once the SNO and the third mobile operator start rolling out their networks, Kenya may end up with a total of five mobile operators. Expectations are that there will be more growth in mobile subscribers and cheaper services.

RURAL/URBAN DIVIDE

There is lack of data disaggregating mobile penetration in urban and rural areas. However, it is well known that the penetration of mobile phones in the rural areas has been high. For example, both mobile operators have a presence in most major towns and along major highways, thereby covering many rural areas. In addition, a rising network of private telephone equipment dealers, mobile operators and TKL continue to extend their community phone services through agencies

and franchises. The services, known by the brand names “Simu ya Jamii” for Safaricom , “Simu Yetu” for Celtel, and “Mzalendo” for Telkom have gained immense popularity due to their ease of access. Records from CCK shows that there are 29 888 telecentres in the country. These include the new mobile community phones mentioned above as well as TKL’s public pay phones. These are distributed throughout the country and are an important means of extending communications services to the rural areas.

The high price levels associated with new mobile community phones have, however, rendered them less effective as Universal Access tools. As an example, Table 6 below shows the tariffs for the Safaricom’s “Simu ya Jamii”. This tariff is generally higher than Safaricom’s normal mobile tariffs, as shown in Table 7.

TABLE 6. “SIMU YA JAMII” TARIFFS

	Per minute	Per 3 minutes
Simu ya Jamii to Safaricom (same network)	KES18.00	KES54.00
Simu ya Jamii to Celtel (different mobile networks)	KES27.00	KES81.00
Simu ya Jamii to landline (mobile to landline network)	KES27.00	KES81.00

US\$1=KES67

TABLE 7. ICT PRICING: LOCAL CURRENCY (KES)

	Telkom Kenya Ltd	Safaricom Ltd	Celtel Ltd
Cost of fixed-line call: 3-minute local call	8.35	N/A	N/A
Cost of fixed-line call: 3-minute national call	36.00	N/A	N/A
Cost of fixed-line call: 3-minute call to the US	194.40	N/A	N/A
Cost of a mobile call (prepaid): 3-minute off-peak to same network	N/A	48	33
Cost of a mobile call (prepaid): 3-minute peak to same network	N/A	48	96
Cost of a mobile call (prepaid): 3-minute off-peak to different network	N/A	75	72
Cost of a mobile call (prepaid): 3-minute peak to different network	N/A	105	117
Cost of a mobile call (prepaid): 3-minute off-peak to fixed line	N/A	66	72
Cost of a mobile call (prepaid): 3-minute peak to fixed line	N/A	75	117

Jambo tariff used for Safaricom and Celtel 35 S plan used for Celtel
Source: CCK and individual operator websites

Products such as the Safaricom’s “Sambaza” airtime sharing service and Safaricom Simu ya Jamii tariff, were specifically developed to pro-

vide rural-sensitive solutions. With its growing popularity, Safaricom's Sambaza service has become the main urban to rural money transfer system with Safaricom airtime units acting as the currency of choice.

BROADBAND SERVICES

The total international bandwidth is 209 MBps in 2006. This is the combined bandwidth of all Internet Backbone Gateway operators but excludes that of corporate organisations (eg embassies and UN Agencies) which have private links with international service providers. Before liberalisation of the telecommunications sub-sector, the total international bandwidth was about 50 MBps. Although there has been a tremendous growth in bandwidth, the current total translates to only 139 Bps for every user (assuming 1.5 million Internet users), which is still very little.

In 2005, licences were issued to local loop operators (LLOs) and public data network operators (PDNOs) to offer broadband access services. With the liberalisation of the market, ADSL, wireless and iBurst technology have been introduced. The iBurst service offers high speed, secure, mobile and portable wireless broadband access. Estimates by CCK indicate that there are 31 DSL and 4 000 ADSL subscribers. The cost of a 64 KBps ADSL link is KES5 000 per month while that for 64 KBps and 128 KBps DSL links is KES30 000 and KES60 000 respectively. This is still very expensive in comparison to other countries.

The mobile operators have increasingly entered into high bandwidth services by introducing new data services such as General Packet Radio Service (GPRS) and Enhanced Data rates for GSM Evolution (EDGE) or Enhanced GPRS (EGPRS). The former is a new non-voice value added service that allows information to be sent and received across a mobile telephone network. To use GPRS, users specifically need a mobile phone or terminal that supports GPRS as well as a mobile telephone network that supports GPRS. The latter is a digital mobile phone technology that allows for increased data transmission rate and improved data transmission reliability. Although EDGE requires no hardware changes to be made in GSM core networks, base stations must be modified. EDGE compatible transceiver units must be installed and the base station subsystem (BSS) needs to be upgraded to support EDGE. New mobile terminal hardware and software are also required to decode/encode the new modulation and coding schemes and carry the higher user data rates to implement new services.

Safaricom has introduced EDGE services to enhance the mobile Internet speeds that subscribers currently experience on the GPRS network. Though the data speeds will be determined by the number of users connected at any time, EDGE can increase GPRS speeds by approximately three times. EDGE is currently available at selected areas in major towns

countrywide¹. Celtel has also introduced GPRS/EDGE technology.

The mobile Internet tariffs are:

- KES10 per MB for Safaricom;
- KES10 per MB for 150 MB and KES12 per MB for 25 MB services for Celtel.

The average cost per MB is US\$0.157. If we assume 25MB per month for an ordinary user, then the average annual cost of mobile Internet is US\$47.14. With a GNI of US\$530 in 2005/2006, the average cost of mobile Internet as a percentage of GNI is 8.9%. This is still unaffordable by most Kenyans, although cheaper than fixed dial-up, and needs to come down if mobile Internet is to have wider adoption. At the same time, the throughput through the mobile network is still in the narrowband range, and therefore very slow for useful browsing purposes and broadband applications.

It should be noted that it was difficult to get data on satellite, VSAT and cable bandwidth. Operators and service providers considered some of this data confidential. In addition, data was not available on homes with Internet, broadband wireless access and ISDN / modem (dial-up) Internet subscribers.

RURAL/URBAN DIVIDE

High bandwidth services are concentrated in the urban areas. GPRS and EDGE can be accessed in most of the rural areas where the two mobile operators have a network. However, the costs of access are still very high and the speeds are low. True broadband services such as 3G HSDPA have not been introduced.

INTERNET SERVICES

Until 2005, only ISPs could offer Internet services. However, the situation has changed since CCK issued a new licensing framework in late 2004 after TKL's monopoly came to an end in June 2004. For example, two Internet Backbone Gateway Operators were licensed in December 2004 and Telkom Kenya, through its subsidiary Jambo Telkom, moved into the Internet market in 2005/2006. Mobile companies Safaricom and Celtel have been licensed to offer Internet services as well in the form of GPRS and EDGE.

According to the telecommunications market structure (see Annexe 1), the following are the licencees who participate in Internet service provision:

- **Internet gateway operators.** These are licensed to operate International gateway services for data (Internet). Currently they serve as the main providers of Internet connectivity to the country through satellite-based earth stations. The Internet backbone gateway and VSAT operators fall into this category. These operators rely exclu-

sively on satellite bandwidth, which is very costly. Kenya is involved in several regional and national initiatives on fibre cable as an alternative medium to connect to the Internet backbone, as explained elsewhere in this report;

- **Access infrastructure providers.** These are licensed to provide in-country communication links, ie carry traffic between different geographical locations and regions as well as local-loop connectivity. This category includes PDNOs, mobile operators, LLOs and VSAT network operators;
- **Applications providers.** These provide services, content and all other related applications to the end users. ISPs fall into this category.

The number of licencees in the Internet market in the last seven years are presented in Table 8 below.

TABLE 8. LICENCEES IN THE INTERNET MARKET

Licence Category	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2005/2006
Cyber Cafes	-	-	-	51	70	
/Telephone Bureau						
Internet Service Providers	43	66	72	76	78	51
Internet Exchange	-	-	1	2	2	2
Point Providers						
Value-added Service Providers	-	1	1	3	17	
Public Data Network Operators	1	1	1	4	6	20
Public Switched Network Operators	1	1	1	1	1	1
Internet Backbone and Gateway Operators						8
VSAT Hub Operators/Commercial VSAT Operators	1	1	1	2	2	6
Leased Circuit Resale Service Providers						3
Local-loop Operators	-	-	-	2	4	19
Mobile operators	2	2	2	2	2	2

Source:CCK

In January 2006, the ISP licences were modified to permit VoIP services. Before the modified licences were issued, all licensed ISPs were required to submit their outstanding statistical returns to CCK. Those ISPs that did not meet the requirements were deregistered through a gazette notice. Only about 35 of the licensed 78 applied. Those who did not apply

were also deregistered. At the same time, a number of new firms applied for the new ISP licence. It is to be noted that out of the 51 ISP licences, less than 40 are operational. This number is likely to come down as the Internet market becomes more competitive, as the national network operators move into Internet access market segments (with the DCNO licence) and the margins dwindle.

Table 9 summarises the trends in the Internet market from 1999/2000 to 2005/2006. Although the ITU estimates show 1.1 million users as at 2005/2006, CCK has been using an estimate of 1.5 million. The common view in the industry is that the number is much higher than 1.5 million.

TABLE 9. KEY TRENDS IN THE INTERNET MARKET

	1999/2000	2000/2001	2002/2003	2003/2004	2004/2005	2005/2006
Number of licensed ISPs	43	66	72	76	78	51
Number of Internet users (ITU estimates)	100 000	200 000	400 000	1 000 000	1 054 920	1 111 000
Internet users per 100 inhabitants (ITU estimates)	0.326	0.639	1.270	3.154	3.215	3.243
Total international bandwidth (Mbps)	10.512	56	26	26	105	NA
ISDN channels	0	NA	4 690	4 680	5 972	NA
ISDN subscribers	0	NA	385	352	648	NA

NA – Not Available
Source: CCK and ITU

There are no public data on the homes with Internet connection and subscribers on broadband wireless access as well as modem dial-up subscribers.

RURAL/URBAN DIVIDE

The liberalisation of the communications sector has not changed the situation with respect to access to ICT in the rural areas, as is evident in the case of fixed-line networks shown in Table 4 above.

The Universal Access strategy (Waema, 2004) recommends a raft of measures to address the huge disparities in rural/urban access to ICT, including the reduction of frequency spectrum and licence fees for rural areas and zero-rating of import duties for the various types of equipment to be deployed in rural areas. These measures are yet to be implemented. However, CCK has waived all applicable fees for a new ISP setting up and operating in the rural areas.

At the same time, access to ICT in the rural areas continues to be beset by a number of constraints. Key among these include access to road and telecommunications infrastructure in rural areas, the unreliability and poor quality of services, and the slow speed and constant interruptions of the little infrastructure available.

GOVERNMENT USAGE

In April 2004, the Kenya Government launched a comprehensive strategy on information and communications technology (E-government strategy). Under this strategy it is estimated that KES3 billion will be spent by the time it becomes fully operational in 2010. The overall goal of e-Government is to make the Government more result oriented, efficient and citizen-centred.

The plan attempts to introduce and entrench ICTs in the day-to-day operations of the government. Local Area Networks (LANs) have already been installed in readiness for the rolling out of the fibre optic network that will connect all the government offices.

Government usage of ICT is relatively low. There is an estimated total number of 800 000 government staff, 12 000 PCs (including laptops), 13 392 fixed lines (2002 data, assuming the lines have not grown significantly), 108 000 networked PCs/laptops, 1.6 MBps Internet bandwidth, KES2.045 billion ICT recurrent budget and total investment budget of about KES8 billion (based on 2005/2006 budget). Table 10 gives a summary of the indicators for ICT usage in government.

Table 10. Government ICT usage

Government Access Indicators	Statistics
Total number of civil servants	800 000
PC and laptops/ Government staff	0.015
Fixed Lines / Government staff	0.017
Networked PCs / Government staff	0.014
Internet bandwidth / Government staff	2 bits/sec
Annual ICT Usage Costs / Government staff	KES2 557
Annual ICT Investments / Government staff	KES10 000
Number of government portals	22

Source: Directorate of E-government

NEW DEVELOPMENTS IN INTERNATIONAL FIBRE CONNECTIVITY

Kenya, like most other countries in the region, faces high costs of international bandwidth. She has therefore been struggling to achieve connectivity to international fibre networks as a way of bringing down the costs and enabling broadband access. At the moment, three options have evolved over the years:

EASSy

The Eastern Africa Submarine Cable System (EASSy) is an initiative by the New Partnership for Africa's Development (NEPAD) to connect Eastern African countries via a high bandwidth fibre optic cable. This cable would run from South Africa to Port Sudan in Sudan, with landing points in six countries along the Indian Ocean coast, and provide connectivity to at least five landlocked countries. This initiative was started in 2003 and is funded by the World Bank, Development Bank of Southern Africa and telecommunications companies in the region. In 2006, Alcatel won the tender to implement the cable system at a cost of US\$300 million (KES14 billion).

TEAMS

As a result of the frustrations in delays in the EASSy cable, the Kenya Government started another initiative, dubbed The East African Marine System (TEAMS). It signed a memorandum of understanding with a telecommunications firm in the United Arab Emirates (Etisalat) to build two fibre pairs with an initial capacity of 10 GBps upgradable to 320 GBps. This cable will be owned by the Kenya Government (40%), Etisalat (20%) and investors in the East African region (40%). It is estimated to cost KES5.7 billion and is planned to be ready by November 2007.

KDN

The Kenya Data Networks (KDN), one of the telecommunications service providers, signed a contract with India's FLAG Telecom. Its under-sea cable would link Mombasa at the Kenyan coast to the Yemen coast. This link is planned to be ready by the first quarter of 2008 at a cost of KES8 billion.

The three initiatives represent a significant duplication of effort and are a sign of problems in implementing the oldest initiative, EASSy.

Cost of ICT Usage

The increase in mobile telephony services in the country has been accompanied by a decline in the cost of connections and handsets. The connection fees for Celtel, for example, have declined by 44%, from KES1 490 to KES990 currently. The price of mobile calls has remained fairly constant in the last four years (see Table 11 below). This is partly because of the introduction of an excise tax of 10% on airtime introduced in the budget paper of 2002. There has been adequate demand for both mobile operators and in the absence of severe competition, this tax has acted to maintain the cost at the same level. Even if this tax had not been imposed, it is unlikely that the operators would have brought down the tariffs in the absence of additional pressure of intense rivalry.

The cost of local fixed telephony services has gone up significantly while that of distance and international calls has fallen. This can be attributed to tariff re-balancing. The purpose of tariff re-balancing is to remove any subsidies in some services, historically on local calls. The cost of international calls dropped further due to the introduction of VoIP. Depending on the destination of the calls, data from Telkom Kenya shows that prices fell by 55%-73% from US\$2.00-US\$3.30 per minute in 2000 to US\$0.90 in 2006.

TABLE 11. TELEPHONE CALL CHARGES (KES PER 3 MINUTE PEAK HOURS), 2000-2005

Year	Local Calls			Distance Calls 60-230km TKL	Distance Calls >230 km TKL	Calls to Mobile	Calls to East Africa
	TKL	Safaricom	Celtel				
2000	4.70	28.50	28.20				
2001	4.70	28.50	28.20				
2002	5.60	28.50	28.20	20.00	25.00	27.00	44.00
2003	6.50	28.50	28.20	17.80	22.30	27.00	39.00
2004	7.40	28.50	28.20	17.40	17.40	27.00	46.00
2005	8.00	27.00	28.50	12.00	12.00	27.00	40.00

Source: Telkom Kenya and CCK, 2006

RETAIL

FIXED-NETWORK SERVICES

The 2005/2006 tariffs (in KES) for Telkom Kenya are as shown in Table 12 overleaf.

TABLE 12. ICT PRICING

Service	Calls	Currency	Tariff
(Postpaid)	Local Calls	KES	5.50 per min
(peak and off-peak same for all)	Calls to Mobile		19.90 per min
	Trunk Calls		10.00 per min
	Calls to East Africa		30.00 per min
(Prepaid +0845)	Local Calls	KES	7 per min
(peak and off-peak same for all)	Calls to Mobile		26.4 per min
	Trunk Calls		12.8 per min
	Calls to East Africa		38 per min
(Payphone)	Local Calls	KES	6.38 per min
(peak and off-peak same for all)	calls to Mobile		11.60 per min
	Trunk Calls		20.00 per min
	Calls to East Africa		38 per min
(Calling card +0845)	Local Calls	KES	7.7 per min
(peak and off-peak same for all)	Calls to Mobile		26.4 per min
	Trunk Calls		14.0 per min
	Calls to East Africa		42 per min
International calls	Weekday (peak)	US\$	0.9 per min
Weekdays Mon -Fri	Weekend		0.64 per min
Peak =	Public holiday peak		0.64 per min
08:00 – 20:00 hrs	Off-peak		0.64 per min
Off-peak =			
20:00 – 08:00 hrs			
Sat, Sun and public holidays are charged at off-peak			

Source: Telkom Kenya

MOBILE SERVICES

The tariff on mobile airtime has remained high. This is in part due to 10% excise duty on airtime and 16% value added tax, which makes 26% of airtime costs as government taxes. The cost of acquiring a SIM card in the year 2000 was in the range of KES2 500. As at October 2006, the cost was KES200, a reduction of more than ten times. There are cheap handsets in the market that can be acquired at a cost of KES2 000.

Both mobile operators have postpaid and prepaid services, which are shown in Tables 13 – 16 below.

TABLE 13. SAFARICOM PREPAID TARIFFS (KES)

Product name	Cost per minute															
	Cell to Cell own network		Cell to Cell other network		Cell to fixed line		Inter-national		To East Africa		SMS own network		SMS other network		SMS Inter-national	
	*	**	*	**	*	**	*	**	*	**	*	**	*	**	*	**
Jambo Tariff	16.0	16.0	35.0	25.0	25.0	22.0	110	78	48.0	48.0	5	5	5	5	10	10
Tariffic Tariff	32.5	11.0	50.0	25.0	45.0	22.5	110	78	48.0	48.0	5	5	5	5	10	10
Taifa Tariff	28.5	28.5	28.5	28.5	28.5	28.5	110	78	48.0	48.0	5	5	5	5	10	10
Sema Tariff	25.0	11.0	40.0	25.0	35.0	22.5	110	78	48.0	48.0	5	5	5	5	10	10
Safari Tariff	28.5	28.5	28.5	28.5	28.5	28.5	110	78	28.5	28.5	5	5	5	5	10	10

* Peak

** Off-peak

Source: Safaricom Ltd

TABLE 14. SAFARICOM POSTPAID TARIFFS (KES)

Product name	Cost per minute															
	Cell to Cell own network		Cell to Cell other network		Cell to fixed line		Inter-national		To East Africa		SMS own network		SMS other network		SMS Inter-national	
	*	**	*	**	*	**	*	**	*	**	*	**	*	**	*	**
Advantage	10.0	10.0	34.0	34.0	25.2	25.2	79.2	56.3	38.2	33.8	3.97	3.97	3.97	3.97	7.94	7.94
Corporate	12.6	12.6	25.2	17.4	25.2	17.4	79.2	56.3	38.2	33.8	3.97	3.97	3.97	3.97	7.94	7.94

Advantage

* Peak

** Off-peak

Source: Safaricom Ltd

Prepaid services are best suited for individual clients while postpaid services are best fitted for the corporate clients. However, prepaid tariffs are generally higher than postpaid tariffs (see Tables 12 and 13). Changing from one tariff to another is easily done at a fee of KES200. The billing type for all the tariffs is per minute.

There are two categories of postpaid services – Advantage and Corporate advantage. There is a connection fee for KES5,000 (excluding VAT) for both services. There is also a connection fee of KES200 and KES550 (excluding VAT) respectively.

TABLE 15. CELTEL PREPAID TARIFFS (KES)

Product name	Cost per minute															
	Cell to Cell own network		Cell to Cell other network		Cell to fixed line		Inter-national		To East Africa		SMS own network		SMS other network		SMS Inter-national	
	*	**	*	**	*	**	*	**	*	**	*	**	*	**	*	**
35 S Plan	32.0	11.0	39.0	24.0	25.0	22.0	99	99	49.0	49.0	5	5	5	5	10	10
40 Plan	15.31	15.31	25.61	25.61	25.61	25.61	99	99	40.8	40.8	5.135.13	5.135.13	5.135.13	5.135.13	10	10
30 F Plan	20.4	20.4	28.2	28.2	28.2	28.2	110	110	40.8	40.8	5.135.13	5.135.13	5.135.13	5.135.13	10	10
24 S	24.0	24.0	24.0	24.0	24.0	24.0	99	99	49.0	49.0	5.135.13	5.135.13	5.135.13	5.135.13	10	10
30 S	28.2	28.2	28.2	28.2	28.2	28.2	110	110	40.8	40.8	5.135.13	5.135.13	5.135.13	5.135.13	10	10

* Peak

** Off-peak

Source: Celtel (K) Ltd

TABLE 16. CELTEL POSTPAID TARIFFS (KES)

Product name	Cost per minute															
	Cell to Cell own network		Cell to Cell other network		Cell to fixed line		Inter-national		To East Africa		SMS own network		SMS other network		SMS Inter-national	
	*	**	*	**	*	**	*	**	*	**	*	**	*	**	*	**
240S	15	15	33	33	33	33	90	90	32	23	5	5	5	5	10	10
160S	21	21	21	21	21	21	90	90	32	23	5	5	5	5	10	10
155S	21	21	31	29	31	29	90	90	32	23	5	5	5	5	10	10
180	10.68	10.68	34.0	26.7	26.7	26.7	99.5470.56	99.5470.56	32	23	5.345.34	5.345.34	5.345.34	5.345.34	10	10
90	10.68	10.68	26.7	26.7	26.7	26.7	42.2199.54	42.2199.54	32	32	5.345.34	5.345.34	5.345.34	5.345.34	10	10

* Peak

** Off-peak

Source: Celtel (K) Ltd

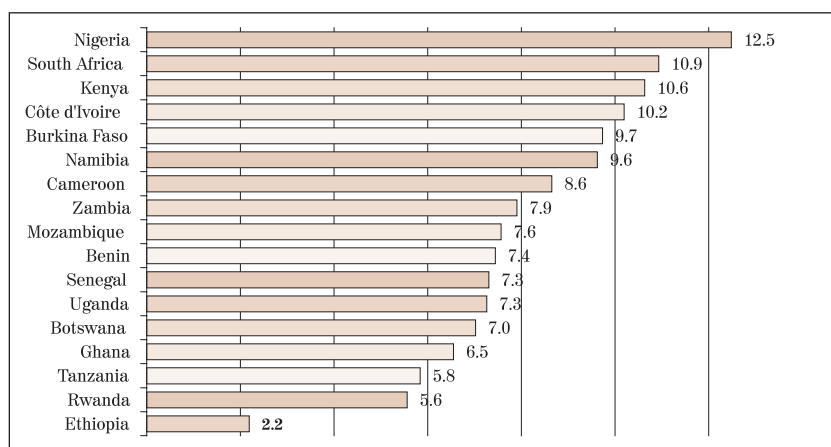
Celtel has both per minute and per second billing in both postpaid and prepaid options. Each of the products has a connection fee of KES990. In addition, products 240S, 160S and 155S have a deposit fee of KES4 000 while products 180 and 90 have a deposit fee of KES10 000 and KES7 000 respectively.

In June 2006, the mobile phone operators were issued licences to operate international gateways. This has brought the cost of international calls down by over 50%.

Despite the drop in mobile prices in Kenya, using an OECD method to establish the cost of a basket for low mobile users (which would be more aligned to African mobile usage than their middle or high user

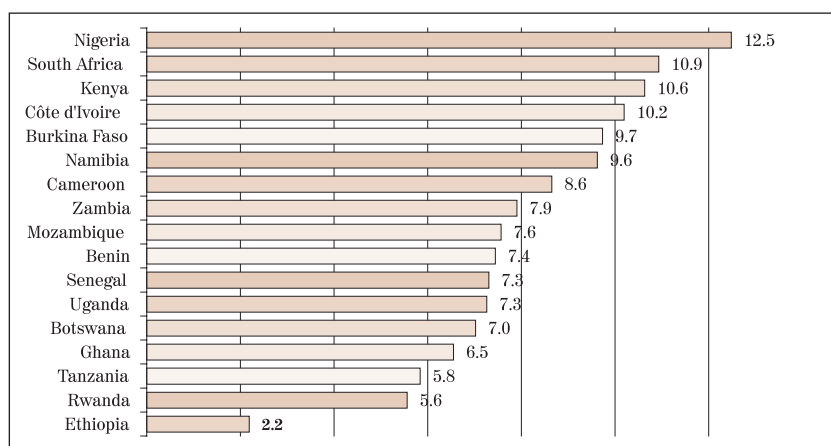
baskets) RIA!'s comparative analysis of pricing across several African countries in Figures 1 and 2 below, demonstrates that prices in Kenya remain high. But even when nominal prices are adjusted for purchasing-power parity, Kenya is the eighth highest of the 17 countries reviewed. There are obvious caveats to the pricing in the table, as all markets are not evenly liberalised or tariffs rebalanced. So the very low prices in Ethiopia with its very low penetration rates are unlikely to reflect cost-based prices.

FIGURE 1. 2006 LOW OECD USER BASKET – COST IN US\$ USING NOMINAL END OF 2006 EXCHANGE



Esselaar, Gillwald and Stork (2007)

FIGURE 2. 2006 LOW OECD USER BASKET – COST IN US\$ USING IMPLIED PPP CONVERSION RATES



Esselaar, Gillwald and Stork (2007)

BROADBAND SERVICES

Telkom Kenya launched a broadband service in 2005 which is based on the Asymmetric Digital Subscriber Line (ADSL) technology that carries voice and broadcast services through the existing Telkom lines. Telkom partnered with two firms to sell the service. The table below shows the Telkom charges for this service. The penetration figures were not available.

TABLE 17. TELKOM BROADBAND TARIFFS FOR ADSLS (KES)

Capacity	32/128KBps	64/256KBps	128/512KBps
Price per month	5 604	16 008	35 914

Other products like ADSL2 have been introduced in the market, that will sell to individuals for below US\$50 per month, with all local calls free, TV, video and at least 1MBps Internet.

Table 18 below shows selected international leased-line tariffs.

TABLE 18. SELECTED INTERNATIONAL LEASED-LINE TARIFFS (US\$) PER MONTH

	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006
64Kbits	8 200	6 150	6 150	6 150	6 150	4 613
2Mbits	46 386	34 789.5	34 789.5	34 789.5	34 789.5	26 092

Source: Telkom Kenya

The costs of international leased-line tariffs were reduced by 25% in 2006 but remain high by international standards.

INTERNET SERVICES

The cost of Internet service has declined over the years. On average the cost of a full, unlimited dial-up Internet account per month was KES5 000 plus VAT in the year 2000, plus the telecom usage charge. This has been reduced to a cost of KES1 000 plus VAT. With access from a cyber café, this cost has reduced from KES5.00-10.00 per minute in 2000 to the current cost of between KES50-1.00 per minute, which has improved access to many low-income earners.

In 2005, Telkom Kenya revised its domestic leased line tariffs (bought by ISPs and corporate organisations that were allowed to connect directly to Jambonet-like ISPs, eg Universities) through its Jambo Telkom subsidiary. Prior to the revisions, the tariffs had been constant from year 2000. The Kenstream charges (dedicated point-to-point domestic links) remained the same until July 2006 when they were reduced by 50% as shown in Table 19. This reduction can be associated with competition in

the provision of leased domestic links following the licensing of several Public Data Network Operators (PDNOs).

TABLE 19. KENSTREAM LINE TARIFFS (KES)

	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
64 Kbits	14 400	14 400	14 400	14 400	14 400	14 400	14 400	7 200
	(US\$200)							
2 Mbits	96,477	96,477	81,457	81 457	81 457	81457	81 457	40 728.5
	US\$(1,340)							

(Exchange rate of 72)

Source: Telkom Kenya

Telkom Kenya has monopolised the provision of domestic leased line bandwidth to ISPs and corporate organisations. New competition is, however, bringing down this cost as shown in Table 19.

TABLE 20. TARIFF CHARGES FOR INTERNET ACCESS STANDARD SERVICE PER MONTH (US\$)

Bandwidth	Telkom Kenya One of the PDNOs	
64 KBps	521.68	290
128 KBps	1 225.77	490
256 KBps	1 740.00	850
512 KBps	2 719.90	1 450
1024 KBps	5 774.12	2 900
2048 KBps	10 022.23	5 800

Source: Telkom Kenya 2006 for TKL costs

WHOLESALE

INTERCONNECTION

Kenya's interconnection guidelines are contained in the Communications Regulations, 2001. These guidelines provide special conditions imposed on major or dominant operators and define dispute resolution procedures, amongst other interconnection issues. Operators are supposed to use these guidelines to negotiate and agree on interconnection rates. The interconnection charges are high, making it expensive to call from one network to the other (as shown in Table 21) for 2004 interconnection tariffs. These interconnection tariffs have come down since 2004 to KES8.12 per minute for cross-network mobile calls. Discussions with industry stakeholders indicated that interconnection tariffs were still high.

TABLE 21. INTERCONNECTION RATES (OPERATOR TERMINATION RATES) OF FIXED AND CELLULAR (KES) IN 2004

	TKL terminating calls to	Celtel (formerly Kencell)	Safaricom
Call originating from	International to mobile	13.62	13.62
	PSTN payphone to cellular payphone	20.00	19.20
	National termination	20.00	19.20
	Cellular terminating to TKL	Kencell	Safaricom
	Mobile to International	70% of published rates	
	Cellular payphone to PSTN	2.50	n/a
	Mobile to TKL national	16.00	16.00
	Mobile to TKL Nairobi (code -20)	7.00	7.00

Source: CCK

The analysis of the assessment of the telecom regulatory environment indicates that charges on interconnection are perceived by the consumers to be high, with 89% indicating that the interconnection regulation ranged from being ineffective to being highly ineffective. Due to high tariffs imposed on interconnection, the inter-mobile traffic has remained low with most consumers maintaining two lines to avoid making off-network calls.

CCK indicated that it was aware that the interconnection charges are too high. In April 2006 it hired a consultancy firm (Analysys Consulting of UK) to undertake a study on the wholesale and retail costs and prices of telecommunications services. The aim of the study was to determine cost-based retail and interconnection charges. The following are the interconnection tariff recommendations from the study:

- reduce the mobile termination charges from KES8.12 a minute to KES6.28 per minute;
- reduce the fixed local termination from KES4 to KES1.74 per minute; and
- reduce the rates for double-tandem termination from tandem exchange from KES6.69 to KES4.82 per minute.

These new tariffs were due to come into effect on 1 March 2007. As a result of the new interconnection rates, CCK required the operators to enter into new interconnection agreements and submit their agreed rates to the Commission by 15 March 2007. The Commission at the same time directed that mobile calls across networks should not exceed KES30 per minute with effect from 01 July 2007. The regulator hopes that these pronouncements will lead to reduced costs to the consumers.

FACILITY LEASING

Operators lease two types of facilities; mast infrastructure and dedicated-link bandwidth. Table 22 shows the tariffs for Kenstream bandwidth leases.

TABLE 22. KENSTREAM CAPACITY LEASES 2006 (KES)

	0 – 20 km	21 – 50 km	51 – 100 km	401 – 450 km	451 – 500 km
64 KBps	8 645	11 768	21 135	64 850	71 095
128 KBps	12 226	16 642	29 889	91 712	100 544
256 KBps	17 290	23 535	42 270	129 700	142 190
512 KBps	24 452	33 284	59 779	183 423	201 087
1024 KBps	34 580	47 070	84 540	259 400	284 380
1536 KBps	42 352	57 649	103 540	317 699	348 293
2048 KBps	48 904	66 567	119 558	366 847	402 174

Source: Telkom Kenya

Analysis of Planned vs. Achieved

The current ICT policy being implemented is based on communications policy statements of 1997, 1999 and 2001. In particular the telecommunications and postal policy of 2001 had two main objectives in the telecommunications sector:

- To improve fixed-line penetration in the rural areas from the present 0.16 lines to five lines per 100 people by the year 2015;
- To improve fixed-line penetration in the urban areas from the present four lines to 20 lines per 100 people by the year 2015. These targets translate to installation of 1.5 million fixed lines in rural areas and 2.4 million fixed lines in urban areas respectively.

The objectives and targets set out in the policy statements above are out of line with the prevailing circumstances. Targets for example were only set for fixed-telephone lines; the policy did not address mobile telephones. Given that mobile telephone penetration is more than twenty times that of fixed-telephone lines this indeed was a very serious omission. At the same time a significant part of the rural areas has a mobile telephone signal, yet the rural people do not make use of the communication services. This may indicate that part of the problem is not on the supply side which is the major underlying assumption of the policy position summarised above.

Further very little has been achieved towards realising the set targets, signifying that the mechanisms that have been put in place to implement the policy for example the liberalisation of fixed-telecommunication services have not worked as expected. For example the licensing of a second national fixed-telephony operator was to be completed by the end of fiscal year 2004/2005, and a third mobile operator by December 2003. The second national operator was only announced in October 2006 and will not be granted a licence until early 2007. The legal tussle of Econet the third mobile operator was also concluded in October 2006. The fate of the roll-out of its network is still unclear.

However apart from the slow pace in the fixed-line network liberalisation by the regulator has enabled the entry of many operators and service providers into various market segments. For example as at October 2006 there were 19 local-loop operators 20 public-data network operators six VSAT operators 51 ISPs and seven Internet backbone providers. This liberalisation has enabled the telecommunications sub-sector to record a high growth rate over the years. In 2005 for example the sub-sector expanded tremendously with mobile telephony experiencing a record 56.1 percent growth (Economic Survey 2006).

Annexe 2 summarises the status of the key restructuring actions that the government intended to achieve in order to increase competition and reduce costs in the ICT sector as per the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007).

Regulatory Challenges

Interviews were conducted with 27 representatives of the telecommunication institutions civil society government technology suppliers and research and training institutions. They were asked to rank the Telecom Regulatory Environment on a scale of 1 to 5 with 1 being highly ineffective and 5 being highly effective. The three broad areas covered were Fixed Mobile and VANS. The following table gives a summary of the responses.

TABLE 23. TELECOMMUNICATION REGULATION ENVIRONMENT ASSESSMENT

	Fixed	Mobile	VANS
Market entry	Neither	Neither	Neither
Scarce resources	Highly ineffective	Neither	Neither – Ineffective
Interconnections and facilities	Ineffective	Highly ineffective	Highly ineffective
Tariff regulation	Ineffective	Ineffective	Neither – Ineffective
Regulation of anti-competitive practices	Highly ineffective	Highly ineffective	Ineffective
Universal service obligation	Ineffective	Highly ineffective	Ineffective

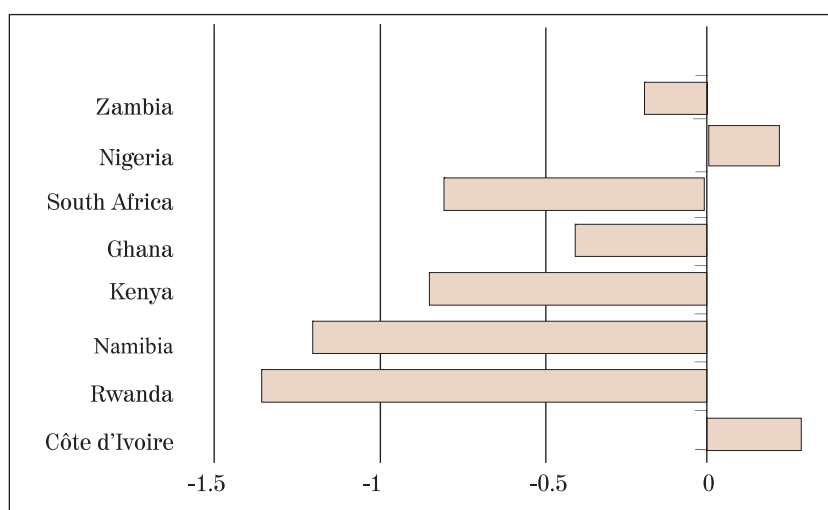
One of the regulatory challenges has been the inability to bring about competition in the fixed network as explained in this report. As a result the fixed-network has stagnated even declined, over most of the past five years. The poor performance of this network is evident from the analysis of the regulatory environment shown in Table 22 above. In particular the percentage of respondents that considered allocation of scarce resources, interconnection tariff regulation, regulation of anti-competitive practices and universal service obligation to be either highly ineffective or ineffective was 70%, 89%, 63%, 70% and 52% respectively. The biggest regulatory challenge in the mobile market has been the inability of the regulator to bring down interconnection charges. This is supported by the regulatory environment survey that showed that 85% considered interconnection to be either highly ineffective or ineffective. Even in the regulation of the more lightly regulated VANS environment, while showing more positive attitudes to tariff regulation and to some degree market entry overall the attitudes remained concentrated in the neutral/moderate and ineffective categories.

In summary respondents felt that the regulator was not doing enough to protect the interests of the consumers. CCK confirmed this and indicated that they were conducting a study to determine the best way forward. In

addition the interconnection charges between the operators were considered to be very high.

In comparison with other countries the regulatory perception survey, which does not simply assess the regulator but the entire telecommunications regulatory environment including policy framework and regulatory effectiveness, Kenya fared badly with the third most negative perception of the eight countries surveyed, and of which only two countries Nigeria and Côte d'Ivoire, were viewed positively.

FIGURE 3. TRE FIGURES FOR EIGHT COUNTRIES IN AFRICA



Source: Esselaar Gillwald and Stork (2007)

Conclusions and Recommendations

The Kenyan regulator has continued cautiously to liberalise the telecommunications sector, with a certain degree of success. The mobile-telephone market has performed particularly well while the fixed-line market which has not been able to attract effective competitors has not grown in the last five years. Competition has been introduced in most market segments and the quality of services has generally improved. However most stakeholders in the industry perceive the costs of services as very high especially mobile-telecommunication services. Unreliable and slow Internet connections also impact negatively on the sub-sector. Operating costs of mobile service providers are also high due to poor infrastructure and high cost of electricity and related taxes. The implications and real impact of telecommunications sector liberalisation still need to be quantified.

This review recommends that the process of privatisation of Telkom Kenya be quickened to pave the way for the revitalisation of the national telecommunications backbone infrastructure. It also recommends that the regulator implements reforms that address the high user and interconnection tariffs. We also recommend that the government develops and implements the detailed plans from the national ICT policy that came into effect in March 2006. Key plans to be implemented are universal access plans to ensure accessible available and affordable telecommunication services in the rural areas.

ANNEXE 1: THE EXISTING TELECOMMUNICATIONS MARKET STRUCTURE

Category	Number of licensed operators	Main and operational operators
<i>1. Facility-Based Public Telecommunications Service Providers</i>		
Regional Telecom Operators (Regional Carrier)	2	<ul style="list-style-type: none"> ▪ Telkom Kenya Ltd ▪ Bell Western Ltd ▪ VTel Consortium
Long-Distance Telecom Operators (Inter-Regional Carriers)	2	<ul style="list-style-type: none"> ▪ Telkom Kenya Ltd ▪ VTel Consortium
International Telecom Operators (International Carriers)	1	<ul style="list-style-type: none"> ▪ Telkom Kenya Ltd
Local-loop Providers (Local Loop Operators)	19 (2 operational)	<ul style="list-style-type: none"> ▪ Flashcom ▪ Popote Wireless (Em Communications)
Cellular Mobile Telephone Service Providers (Mobile Operators)	3 (2 operational)	<ul style="list-style-type: none"> ▪ SafariCom Ltd ▪ Celtel International Ltd ▪ Econet
Public Data Communications Network Operators (PDNO)	20 (7 Operational)	<ul style="list-style-type: none"> ▪ Telkom Kenya Ltd Kenya Data Networks Broadband Access Ltd UUNET Communication Ltd Africa Spinoff Ltd Simbanet Com Ltd Open Systems Ltd
Commercial VSAT Network Operators	6	<ul style="list-style-type: none"> ▪ Commcarrier Satellite Services Limited Telkom Kenya Ltd Limited AFSAT Communications Kenya Limited Simbanet Com Limited Aldean Satellite Networks Limited Harun International Limited
Public radio paging services	12	<ul style="list-style-type: none"> ▪ EP Communications Ltd. Comm-link Africa Paging Services Ltd Capital Pagers Ltd Kiun Communications Ltd Beeper Communications Ltd Neptune Telecoms (K) Ltd Absolute Paging Services Ltd. Emtel (K) Ltd Alphanet Communications Ltd Pepe Ltd Electronics Info Services Ltd
Public commercial satellite uplink/downlink gateway services	3	<ul style="list-style-type: none"> ▪ Kiun Communication Ltd Satellite Tracking (Kenya) Ltd Frise Satellite Telemetry Systems
International voice and data gateway	2	<ul style="list-style-type: none"> ▪ Safaricom Ltd. and Celtel Ltd
Internet Backbone Services (IB & GS)	8	<ul style="list-style-type: none"> ▪ Comtec Integration Systems Limited Geonet communications Limited UUNET Communications Limited Internet Africa Network Limited Jamii Telecommunications Limited Telkom Kenya Ltd. Limited-Jambonet Kenya Data Networks Limited Sopanet Technologies Limited
Internet Exchange Point Services (IXP)	2	<ul style="list-style-type: none"> ▪ Kenya Internet Exchange point and Alma limited
<i>2. Private Telecommunications Networks</i>		
<i>3. Non Facility-based Telecommunications Service Providers</i>		
Public Internet Access Services (ISP)	51	Saponet/LIAN SahnNet Mitsuminet Todays Online Skyweb/Club Internet Wananchi Online Online data systems AfricaOnline UUNET Internet solutions AccessKenya Swiftglobal Jambo Telkom Kenya Ltd. Nairobinet ARCC Posta Surf Karibu Network KenyaWeb NITEL Simbanet
GMPCS Landing Rights Authorisation	3	Thuraya Satellite Telecommunications Co Imarsat Iridium
Resale Service Providers (including XDSL & MVNO)	3	S.I.T.A Telegoods Limited Communications Carriers (Tkl)
National Telecom Access Bureau Service Providers (including Cyber Cafés Telephone Bureaus Multi-purpose Community Telecentres (MCTs) etc)	80	Abacus Computers Systems Kisumu(Ltd) Adtel Phone Co Ltd CYBERTECH ENGINEERING Easy Surf Ltd EP Communications Ltd Nairbinet (K) Ltd Cybre Centre Wananchi online Ltd
<i>4. Value-Added Service Providers</i>		
Premium Rate Service Providers	26	Three Mice Interactive Media Limited Adtel Phone Company Limited Swift Global Kenya LimitedSasanet Limited Kenya Postel Directories LimitedMobile Planet Limited Yellow Pages Publishing And Marketing Limited Interactive Media Services VTS Fonework Limited
Audio-text Service Providers	1	VTS Fonework Limited
Store and Forward Service Providers	1	VTS Fonework Limited
Electronic Data Interchange (EDI) Service Providers	0	
Credit Card Validation Platform Services Providers	1	VTS Fonework Limited
Number-portability Platform Services Providers	0	
Call Centre Operators and Service Providers	4	Kencall (EPZ) Limited

ANNEXE 1 (contd): THE EXISTING TELECOMMUNICATIONS MARKET STRUCTURE

Category	Number of licensed operators	Main and operational operators
Other New Types of Value-added Service (VAS) Providers	3	
<i>5. Telecommunications Dealers Licences</i>		
Telecommunications Terminal Equipment Vendor's Licence (V)	0	
GMPCS Terminal Equipment Vendor	0	
Radio-Communication Terminal Equipment Vendor's Licence (V)	0	
Radio-Communication Terminal Equipment Vendor's Licence (V) X	0	
Telecommunications Terminal Equipment Installer's Licence (I)	17	
Telecommunications Terminal Equipment Maintainer's Licence (M)	17	
Telecommunications Internal Wiring Licence (W)	19	
Telecommunications External Wiring Licence (E)	3	
<i>5. Technical Personnel</i>		
Telecommunications Terminal Equipment Individual Installer's (I) Licence. (Classes A B & C)	5	
Telecommunications Terminal Equipment Individual Maintainer's (M) Licence (Classes A, B & C)	2	
Telecommunications Internal Wiring (W) Individual Licence	19	
Telecommunications Individual's External (E) Wiring Licence (Class A)	4	

1. Facility-Based Public Telecommunications Service Providers

Planned Interventions	Planned Timeframe	Status	Comments
Establish an Inter-Ministerial Committee to mainstream ICT in the government's operations	No timeframe	The Committee has been established. Its key function is to oversee the implementation of e-government strategy	Structures for coordinating and managing national ICT programmes and projects have not been created
Mainstream ICT into the government's operations	No timeframe	The Directorate of e-government is spearheading the implementation of the e-government strategy but progress is slow	A LAN infrastructure has been installed with 15 000 data points; installation of the high-speed core network infrastructure at the head quarters is on-going; applications acquisition is on-going but slow
Invest in adequate ICT education and training especially mainstream ICT into education curriculum	No timeframe	The Ministry of Science and Technology (MOEST) developed a paper in June 2005 that discusses the ways in which ICTs can be leveraged to support and improve the delivery of education for all Kenyans	No updates to date
Implement integrated financial management information system (IFMIS)		On-going	Behind schedule
Tax reduction on ICT		Customs and excise duties and taxes on computers removed but all duties and taxes on other categories of ICT still in force	
Operationalise ICT policy		The first official ICT policy was approved by the cabinet in January 2006 and came into effect in March 2006	
Privatise Telkom Kenya Ltd	2003-2005	Restructuring before privatisation is on-going. Discussions on privatisation are on-going	Various options have been floated, such as selling 9% of TKL's shareholding in Safaricom looking for an strategic investor and selling 30% of the stake or selling through an IPO at least 25% of the stake
License a third mobile operator	2003-2004	Work on this started in 2003 but the licensing process has been protracted by lawsuits and internal wrangling amongst the partners. The legal tussles have been concluded	CCK is waiting for Econet Wireless to fully pay for its licence to allow it to operate
License a second national fixed-line operator	2003-2004	VTel Consortium won the tender. A licence is expected to be issued by January 2007 at a cost of KES12 billion	The licensing process was protracted by alleged government's interference and lawsuits
License four Internet gateway service operators	2003-2004	Seven Internet backbone and gateway operators licensed as at October 2006	
Fully liberalise the use of VSAT services	2003-2004	Six licensed commercial VSAT Operators as at October 2006	
License at least 10 national data carriers	Not stated but June 2004 assumed	20 PDNO licences were issued as at the end of October 2006	
Develop and implement an e-government policy	June 2004	The e-government strategy was produced in March 2004	The e-government strategy implementation is very slow
Implement a well-targeted tax reduction and/or tax incentives on computer software and hardware to make them affordable to micro-enterprises and low-income earners	No timeframe	Duties on computers and software removed	Duties on telecommunications and other ICT items still exist
Review the legal framework to remove impediments that have discouraged adoption and use of e-commerce	No timeframe	E-commerce has been given prominence in the new ICT policy and the government has committed to create an enabling environment. However very little has been achieved	

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