

KENYA'S INFORMATION & COMMUNICATIONS
TECHNOLOGY SECTOR
2005



KENYA

EXPORT PROCESSING ZONES AUTHORITY



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Abbreviations

CCK -	Communications Commission of Kenya
CPE -	Customer Premises Equipment
ICT -	Information & Communication Technology
ISP -	Internet Service Providers
ITU -	International Telecommunications Union
IXP -	Internet Exchange Point
KCA 98 -	Kenya Communications Act 1998
KENIC -	Kenya Network Information Centre
KP&TC -	Kenya Posts & Telecommunications Corporation
KShs -	Kenya Shillings
LAN -	Local Area Network
NOC -	Network Operation Centre
PoP -	Point of Presence
SME -	Small & Medium Enterprise
SNO -	Second National Operator
TKL -	Telkom Kenya Ltd
VAS -	Value Added Services
VoIP -	Voice over Internet Protocol
VSAT -	Very Small Aperture Terminal
XDSL -	Digital subscriber lines

Annual Average Exchange Rates (KShs to US\$)

Year	Rate
1999	70.3
2000	76.2
2001	78.6
2002	78.4
2003	75.9
2004	80.0 (As at 31 st August 2004)

For latest rates click on <http://www.centralbank.go.ke/cbk/FXrates/archives.html>



1 Industry overview

1.1 Global ICT industry

Information & Communication Technology (ICT) may be defined as computer hardware and software and telecommunications technology. ICT is the World's fastest growing economic activity; the sector has turned the globe into an increasingly interconnected network of individuals, firms, schools and governments communicating and interacting with each other through a variety of channels and providing economic opportunities transcending borders, languages and cultures. ICT has opened new channels for service delivery in areas such as e-government, education, e-health and information dissemination.

Rapid development of ICT accompanied by the convergence of telecommunications, broadcasting and computer technologies is creating new products and services, as well as new ways of learning, entertainment and doing business. At the same time, more commercial, social and professional opportunities are being created through the unique opportunity provided by ICT. As a result, the world is undergoing a fundamental transformation as the industrial society that marked the 20th century rapidly gives way to the information society of the 21st century. The new society promises a fundamental change in all aspects of our lives, including knowledge dissemination, social interaction, economic and business practices and political engagement.

The rapid growth in ICT is evident from the fact that while it took the telephone close to 74 years to reach 50 million users, it took the World Wide Web 4 years to reach the same number. It took radio 38 years and the personal computer 16 years to reach the same number. Between 1995 and 1999, 88 million Internet connections were made compared to 15 million made between 1991 and 1994, an almost six-fold increase. In 2002, over 580 million people were estimated to have access to the Internet.

Mobile telecommunication services are also increasing faster than fixed-line networks. There were less than 200 mobile operators around the world in 1992, yet by the end of 2001, there were over 600 operators. By the end of 2001, there were over 940 million mobile cellular subscribers around the world compared to just over one billion fixed telephone lines. China overtook the United States in becoming the largest mobile telephone market in the world. Growth has also been robust in Africa where more than half the countries now have more mobile lines as compared fixed lines.

The environment for ICT access has improved relatively rapidly in most urban areas in Africa. Five years ago only a handful of countries had local Internet access or mobile telephones; now devices and access are available in major cities in Africa. Hundreds of new radio stations, newspapers and TV stations have been licensed. Despite the rapid growth of the ICT sector, the digital divide is still at its most extreme in Africa. It is estimated by UNESCO that out of the 816 million people in Africa in 2001:

- One in four have a radio (200, million)
- One in 13 have a television (62 million)
- One in 35 have a mobile telephone (24 million)
- One in 39 have a fixed line (21 million)
- One in 130 have a personal computer (PC) (5.9 million)
- One in 160 have the Internet (5 million)
- One in 400 have pay television (2 million)

The primary motivation for growth in ICT has come from the private sector, with the role of governments being that of a facilitator for creating an enabling environment. The challenges to incorporate ICT in various aspects of economic development centres on five major areas are:

- Support to small and medium business
- Education



- Attracting high tech industry
- Access to technology infrastructure
- Business – friendly government

1.2 ICT sector in Kenya

Kenya, a country on the eastern coast of Africa, covers a surface area of 582,664 square kilometres with a population of about 30 million. The capital city is Nairobi with a population of about 3 million people. Other big cities and towns include Mombasa, Kisumu, Nakuru and Eldoret. In 2003 the GDP per capita was about US\$ 390.

From introduction of telecommunication services in the country up to 1977, the services in Kenya were managed as part of a regional network with neighbouring Tanzania and Uganda. In 1977, the East African Community under which the regional telecommunications services operated, collapsed and as a result, the Government of Kenya established Kenya Posts and Telecommunications Corporation (KP&TC) to run the services.

A telecommunications policy statement was issued in 1997 that set out the government vision on telecommunications development to the year 2015. The challenge at that time was to transform the existing policy structure from one designed for a monopoly to a policy managing a liberalised telecommunication market. The government separated the functions and management of the sector. This clarified roles for the policy, regulatory and operational responsibilities with the government and specifically the Ministry of Transport and Communications retaining policy guidance.

In 1998/99, the government launched the telecommunications sector reform and introduced competition in certain market segments, while at the same time disbanding KP&TC. The cornerstone of the sector reform was a new telecommunication policy and telecommunication laws. The reform had three major components namely:

- Separation of roles in sector management – policy, regulation
- Creation of a multiple operator environment – liberalisation
- Reduction and eventually elimination of government operational role in the telecommunications sector – privatisation

KP&TC was consequently split into three legal entities, namely Telkom Kenya Limited (TELKOM), Postal Corporation of Kenya (POSTA) and the Communications Commission of Kenya (CCK):

- The Postal Corporation of Kenya (POSTA), which was established by the Postal Corporation of Kenya Act, 1998, is the public postal licensee with the specific role to ensure universal access of postal services. POSTA would have exclusivity only in stamp provision and private letterboxes but compete in all other segments.
- Telkom Kenya Limited was established as a public telecommunications operator under the Companies Act. Consequently, Telkom Kenya was issued with licenses in all areas that it is currently operating. It had universal access service requirements in its license and was obliged to provide interconnection facilities to other duly licensed operators.
- The Communications Commission of Kenya would be the regulatory body for the sector and was established by the Kenya Communication Act 1998.

The National Communications Secretariat was also formed under the Kenya Communications Act 1998 to serve as the policy advisory arm of the Government on all matters pertaining to the info-communications sector.

Since the launch of the telecommunication sector reform, Kenya has made great strides in the expansion of telecommunications services. Between 1999 to-date, the government has implemented policy reforms that have resulted in a number of structural changes. The main structural changes are – redefinition and clarification of roles for policymaking, market



regulation, dispute resolution and operation of services among multiple players. In the operation of services, multiple operators are competing in various market segments based on a policy of the private sector operating in a competitive environment that also safeguards consumer interest.

While the growth of the ICT sector in Kenya has been significantly influenced by global trends, it can be evaluated in terms of number of fixed and mobile telephone lines; the tele-density; the number of computers and services; Internet Service Providers (ISPs), the number of Internet users; broadcasting stations; and market share of each one of them.

Telkom Kenya is today the only fixed national operator and arrangements are underway to licence a second national operator. One regional telecommunication operator (Bell Western Communications Ltd) has been licensed to provide services in the North Eastern region.

The Government has liberalized the mobile cellular market and currently there are two mobile cellular operators, Safaricom Ltd and Celtel International (formerly Kencell Communications Ltd). The third mobile cellular service provider (Econet Wireless) has recently been licensed but is yet to commence operations.

By September 2004, there were 240,000 fixed telephone line subscribers and 2.8 million cellular mobile subscribers. This translates into fixed tele-density of 0.75 per hundred inhabitants for fixed and 9.75 per hundred inhabitants for mobile against the world average of 19 and 21 respectively. It is also lower than that of many African countries like Tunisia (11.3% and 16.9%) and Egypt (10.8% and 17.7%) respectively. There are about 121,000 applicants on the fixed telephone waiting list. There were approximately 11,500 public phones installed throughout the country by the year 2003.

By April 2004, there were 73 registered ISPs, 16 of which were active, approximately 1,030,000 users and over 1000 cyber cafes and telephone bureaus.

There were also about 520,000 personal computers in active use at the beginning of 2004 giving the number of computers per hundred inhabitants as 1.6. The total international Internet bandwidth was 28 Mbps, i.e. 0.9 Mbps per 100 inhabitants, which is above Uganda (0.4) and Tanzania (0.5) but is below South Africa (12.4), Tunisia (7.6) and Algeria (5.0). Kenya's computer market (hardware & software) reached US\$ 40.63 million in 1998, representing a growth of 33% from the previous year and US\$ 60 million in 1999, a further 40% growth due to the millennium bug preparations. Imported software, accounts for more than 95% of the market share in terms of value and installed base. Many US companies supply the market through their subsidiaries, while Indian software companies are also gaining ground in the market.

The Government has licensed 16 television stations and 27 FM radio stations. Although electronic media services have experienced rapid growth over the last 8 years, it is estimated that 60% of the population have access to television and 90% have access to radio services. In terms of geographic coverage, the radio and television coverage by the Kenya Broadcasting Corporation are 90% and 50% of the Kenyan landmass, respectively.

The Postal Corporation of Kenya (POSTA) already has a fairly extensive network with regard to postal services. The government hopes to create efficient, reliable, widespread and non-discriminatory postal services. POSTA has recently introduced Internet access through set up of Internet access points in some of its 890 post offices countrywide.

The government accepted the premise that private sector capital in a competitive environment will vastly expand telecommunications sector faster and allow the government to channel its resources to other social development goals. The government took a decision to reduce its direct involvement in provision of telecommunication services by privatising Telkom Kenya. This process has however been put on hold for legislation which will allow for prudent privatisation of public enterprises (the Privatisation Bill 2004).



The government also liberalised the supply and installation of VSAT terminals subject to obtaining the necessary authorization from the sector regulator (CCK). VSAT usage has for the last few years been restricted to intra-corporate communication.

The government intends to increase the number of telephone lines to 4 lines per 100 people. Telecommunication costs are also set to go down by the year 2006 after Kenya is linked to satellite transmission through the Regional African Satellite Communication project currently undergoing construction in France.

Availability of trained manpower in ICT sector is an important resource. The Kenya government has recognised this by introducing computer education in schools and other learning institutions, while the private sector has responded to the demand of skilled computer operators by setting up commercial computer training colleges in major urban centres all over the country. In the year 2001, over 150,000 Kenyans passed through basic computer skills training colleges and since 1980s, Kenyans who have undergone computer skills training in the country, stands at an estimated 1.1 million people.

Realizing that ICT is a primary instrument for realizing economic growth, Kenya offers attractive incentives and presents various investment opportunities for potential investors as it prepares to leverage ICT in its national priorities of growth and poverty reduction. As an entry point to the regional market and a communications and financial hub for the region, Kenya also offers potential investors a wide market for their products and services in the utilisation of ICT.

1.3 Government policy

The Government of Kenya has embarked on a series of initiatives to revitalise and transform the economy into a modern market-oriented one. The aim is to improve the economic well being of Kenyans by establishing Kenya, in the medium term, as the centre of industrial and financial activities in the region. The sector policies aim to define the framework within which telecommunications and postal services will be provided.

The overall Government objective for the sector is to optimise its contribution to the development of the Kenyan economy as a whole by ensuring the availability of efficient, reliable and affordable communication services throughout the country. In view of the anticipated growth of the economy and re-assessed demand, the government has set the national telecommunications targets as follows:

1. Improve the tele-density in rural areas from the current 0.16 lines to 5 lines per 100 inhabitants by the year 2015;
2. Improve the tele-density in urban areas from the current 4 lines to 20 lines per 100 inhabitants by the year 2015;
3. To increase the number of mobile subscribers from 2.8 million to 10 million by the year 2015;
4. Expand the current international internet bandwidth from the current 35 Mbps to 1 Gbps by the year 2015;
5. Ensure that all secondary schools and tertiary institutions have internet access by the year 2007; and
6. Encourage Internet Service Providers to establish Internet access nodes at all districts and local exchange areas.

These targets translate to installation of 1.5 million fixed lines in rural areas and 2.4 million fixed lines in urban areas respectively. At an estimated average cost of about US \$ 1,500 per line, the total investment over the 15-year period will amount to about US\$5.85 billion. This means that, on average, the annual requirements will be about US\$390 million. This is an enormous investment requirement that calls for new initiatives to attract capital into the sector. It is in this context that the restructuring of Telkom Kenya Limited and a step-by-step liberalisation of the sector is being undertaken particularly with a view to attracting capital from the private sector.



To exploit telecommunications for development it is necessary that cheap and reliable telecommunications are available. The government has reviewed the policies to address application of telecommunications as part of information and communications technologies strategies. Telecommunications and Postal Sector Policy Guidelines gazetted in 2001 recognised the role of telecommunications in ICT. Following from these policy guidelines, the government has developed a draft national ICT strategy, currently under discussion by stakeholders. The strategy seeks to mainstream and optimize the use of ICT in all national development activities.

2 Industry structure

One of the immediate goals of the telecommunications sector reform was to increase telecommunication supply. The immediate result of the reform has been witnessed in high growth in all areas that were open for competition. Low growth was noted in the areas without competition notably in the provision of fixed line services. Competition no doubt released resources from the private sector to serve the demand that could not be served under a monopoly environment.

In 2001, CCK reviewed and segmented the telecommunication sector market into various service streams that are licensed separately as:

- Facility based public fixed telecommunication service (type 1)
- Land mobile radio communication service (type 2 carrier)
- Fixed and mobile satellite services
- Facility based data communications networks and services
- Internet facilities and services and
- Value added services (VAS)

Under this framework, CCK licensed a number of operators as indicated in table 1 below.

Table 1: Licensed telecommunication operators

Service	Operator
Fixed line operators	Telkom Kenya Bell Western Telecommunication Ltd – rural telecommunication operators <i>NB: Tenders have already been invited for the Second National Operator (SNO)</i>
Mobile operators	Celstel International Ltd Safaricom Ltd <i>NB: Third mobile operator license granted to Econet Wireless but the company is yet to commence operations</i>
Public data network operators	Telkom Kenya Ltd Kenya Data Networks Ltd SimbaNET.com Ltd Broadband Access Ltd Azicon Engineering Ltd Pegrume Ltd Interconnexion Africa Ltd
ISPs	73 among the largest are Africa Online, Wananchi Online, Swiftglobal, ISP Kenya, Nairobi Net and UUNet
IXPS	Kenya Internet eXchange Point (KIXP)
Value Added Services	E M Communications Ltd Next Generation Ltd Soliton House
Fixed Satellite – VSAT operators	Telkom Kenya Ltd Gilat Alldean Satellite Network (Kenya) Ltd



Service	Operator
Other players in the sector	
Radio stations	Currently over 27 FM Radio stations licensed in the country with the main ones being Kenya Broadcasting Corporation (KBC) Swahili/English service, Kiss FM, Nation FM, Citizen FM, Kameme FM, Coro FM, Inoro FM, Ramogi FM etc
TV stations	16 TV stations licensed such as KBC, Metro, Family, KTN, Nation, STV, Citizen and Channel 5
Computer hardware companies with local presence	IBM, Compaq, Others (Sun Micro systems, Mackintosh, Dell, HP, Espson) etc. Other new entrants in the market include Mecer, which assembles computers.

Source: Communications Commission of Kenya 2004

The approved market structure is found in Appendix 1 while a comprehensive list of telecommunications and value added services providers is found in Appendix 2.

Telkom Kenya Ltd had a monopoly of basic infrastructure for landline services, international services, as well as Internet backbone until mid 2004. Under the monopoly framework it was expected that the Telkom Kenya would attract an investor to inject new capital for expansion; in turn the investor would take advantage of the monopoly and use the resources to expand and take services to the rural areas. Key indicators of the fixed line growth however, were low registering a net growth of 3.5% per year. Due to the low customer base, the tele-density did not change and remained below 1% over the past few years. Without competition, the sector did not grow and affected all other market segments – cellular and Internet that had to rely on this infrastructure as part of the licensing conditions. Government has taken a decision in line with the policy framework to licence a second national operator and consequently open up the market for full competition.

Other market segments with competition experienced high growth. Cellular for example, with two operators licensed - Safaricom Ltd and Celtel International (formerly Kencell Communications Ltd), both recorded very high growth rates of 27.8% per year ever since 1999. The cellular tele-density rose from one in 1999 to 9.75% in 2004. Further, the government has licensed a third mobile operator who is yet to commence operations.

In the Internet sector, the market is fully liberalised but growth has been constrained by poor underlying infrastructure. The liberalisation resulted in many potential operators seeking licences leading to Communications Commission of Kenya (CCK) licensing about 73 ISPs, though only half of these are active. The basic infrastructure to access Internet has been controlled under a monopoly basis by Telkom Kenya Ltd. With the upcoming licensing of second national operator, competition will improve such that the environment for ISPs will have to provide better services.

Some other positive factors affecting the telecommunications sector include:

- Telkom Kenya has been installing digital fibre-optic trunk lines. At the moment these connect major market centres like Nairobi, Mombasa, Nakuru and Eldoret. The company's Kenstream digital data network is available in a number of towns.
- Kenya plans to be part of the Africa One fibre-optic digital network being laid to connect countries around the continent.
- Digital Subscriber Lines (DSL) are now available from licensed ISPs operating in the country. Telkom has also recently introduced an Integrated Services Digital Network (ISDN) service.
- Value-added services such as VSAT, packet switching and leased lines have been under the monopoly of Telkom Kenya. Within the last 2 years corporate clients have been allowed VSAT licences for intra-company traffic only. ISPs have also been allowed VSAT use for downloading only. All these services are now liberalized.



- There is still no competition for Telkom Kenya in the international telephony services. International services are also offered by callback operators and technology-enabled VoIP (Voice over Internet Protocol) operators.

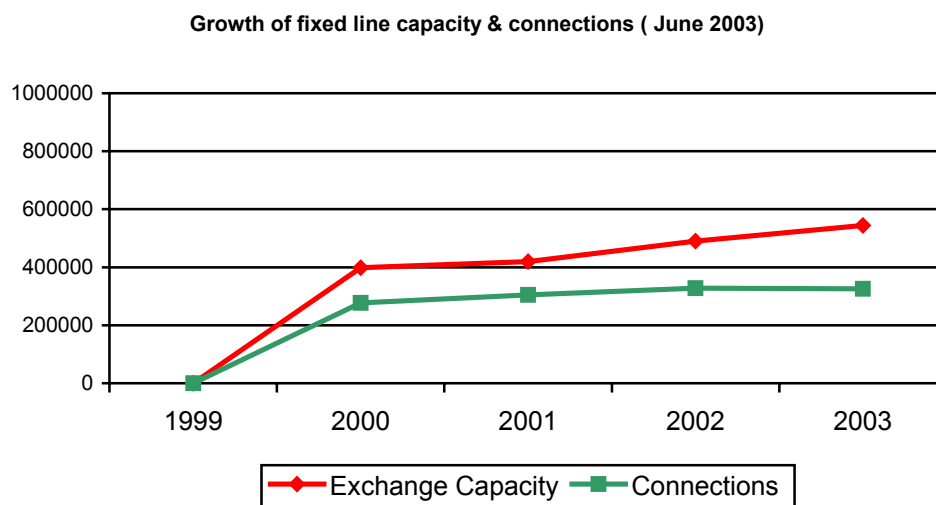
The market reform has affected certain market segments with collapse of some services. Commercial paging services for example collapsed due to the widespread use of Short Message Service (SMS). CCK also announced two trunking radio licences in 2002 but they have not yet commenced operations.

3 Supply & market conditions

3.1 Fixed line operator

The network capacity for fixed line services has increased since 1999 when the government initiated sector reforms. Under a statutory monopoly framework, Telkom Kenya Ltd has expanded the network capacity by 7% per year. The uptake however has not grown as much - growing by 3.5% per year and resulting in an increase of infrastructure that is unused as indicated in chart 1. Indeed, by end of 2003, 67% of the switch capacity was unused. Part of the reason for the slow uptake of fixed lines is the increasing consumer choice to cellular over fixed lines due to reduced connection fee, increased coverage and packaging of services. Another reason is due to lack of additional investments to expand the access network to the consumer.

Chart 1: Growth of fixed line capacity and connections



Source: Telkom Kenya Ltd 2004

International traffic flow depicts a changing traffic direction due to tariff differences. Between 1998 and 2003, the ratio of outgoing traffic to incoming traffic grew from a factor of 2.5 to 4.6. The general trend of more incoming traffic reflects the disparities in tariffs. The year 2003 was significantly different arising from government action to remove illegal VSAT installations carrying international traffic.

Outgoing international calls traffic has been reducing due to the use of other means of traffic transfer – VoIP (Voice over Internet Protocol), call re-file and voice traffic substitution to Internet due to high cost. Over the period, the outgoing traffic reduced by 2% per year. The trend of unequal traffic flow is not peculiar to Kenya. Table 2 and 3 demonstrate that this was common in the selected African countries as well. What differs is the magnitude. In 2000, the ratio of incoming traffic to outgoing traffic for Egypt and Nigeria was four times and Ethiopia three times. On the other hand Mauritius and South Africa had a ratio of less than two times. Uganda was the only country with increasing traffic parity in the same



period. This data suggests linkage between policies of liberalisation with international traffic flow. The level of liberalisation and a consequent reliance on market forces to determine international tariffs by the level of traffic disparity. Uganda with competition for international traffic reduced traffic disparity from a ratio of 3 to 1.7 over the period 1999-2001 suggesting a correlation with the stabilisation of the liberalised market.

Table 2: International outgoing telephone traffic (minutes)

Country	1999	2000	2001
Egypt	149,181,328	187,408,544	222,782,432
Ethiopia	12,453,411	13,420,355	13,415,739
Kenya	27,806,966	23,948,036	24,408,348
Mauritius	31,474,000	34,641,000	35,600,000
Nigeria	57,900,000	57,585,400	60,696,408
South Africa	461,700,000	494,600,000	510,000,000
Tanzania	11,471,952	12,953,604	9,370,612
Uganda	6,400,000	6,700,000	7,000,000

Source: International Telecommunication Union indicators 2002

Table 3: International incoming telephone traffic (minutes)

Country	1999	2000	2001
Egypt	532,172,992	620,584,128	222,782,432
Ethiopia	46,499,120	51,164,496	13,415,739
Kenya	64,089,380	57,218,296	24,408,348
Mauritius	47,100,000	51,000,000	35,600,000
Nigeria	-	204,583,728	60,696,408
South Africa	600,000,000	615,000,000	510,000,000
Tanzania	28,540,492	24,668,880	9,370,612
Uganda	18,900,000	-	12,683,235

Source: International Telecommunication Union indicators 2002

From the table above it is clear that countries with monopolistic operators have high disparity in traffic flow resulting into these countries being net payers of foreign currency to other countries. Upcoming liberalization with the licensing of the second national operator (SNO) is expected to hopefully address this problem in Kenya.

Tele-density for fixed lines is mainly concentrated in Nairobi with the other provinces having a density of less than 1 as shown in table 4 below.



Table 4: Tele-density per region (June 2001)

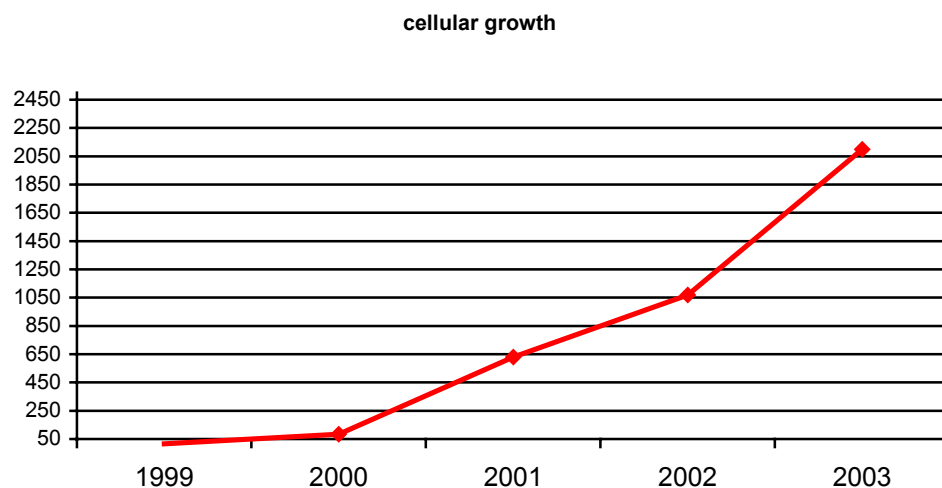
Region	No. of lines	Tele-density
Nairobi	191,202	7.92%
Central	21,837	0.52%
Eastern	16,645	0.32%
North Eastern	2,380	0.22%
Coast	40,184	1.43%
Western	6,948	0.18%
Nyanza	12,840	0.26%
Rift Valley	35,590	0.45%
Total	327,626	

Source: CCK, Telkom Kenya Ltd and National Development Plan (2002 – 2008)

3.2 Cellular telecommunication

Competition in cellular telecommunication commenced in 2000 with the launch of a second mobile operator and the combined connections for the two cellular operators have increased from 15,000 in 1999 to 2.8 million by 2004. Representing a simple average growth rate of 27.8% per year (chart 2). This is much higher than the 3.5% of the fixed line operator and confirms the change in consumer taste from fixed lines to cellular telecommunication.

Chart 2: Growth in cellular telecommunication (nearest '000)



Source: CCK, Government of Kenya Economic Survey 2003, operators

This growth in cellular quickly overtook fixed lines with fixed lines now comprising a small market segment.



In terms of tele-density, Kenya is comparable and slightly better than Uganda, Tanzania, Ethiopia and Nigeria though it ranks poorer than the bigger economies of Egypt and South Africa. Mauritius is also far ahead with a tele-density 16 times better than Kenya's.

Table 5: Total telephone subscribers per 100 inhabitants

Country	1999	2000	2001
Egypt	8	11	15
Ethiopia	0	0	0
Kenya	1	1	3
Mauritius	31	34	48
Nigeria	0	0	1
South Africa	25	30	36
Tanzania	1	1	2
Uganda	1	1	2

Source: ITU world Telecom Indicators 2002

Viewed against national per capita, the table above clearly reflects the correlation between tele-density and the wealth of nations. Thus, telecommunications policy in itself largely empowers operators to supply capacity, as the economy requires. The fast growth in Kenya was partly motivated by the rising demand that was unserved by a monopoly operator (KP&TC & Telkom).

3.3 Customer terminals

Prior to liberalization of Customer Premises Equipment (CPE) in 1991 the then Kenya Posts & Telecommunications Corporation (KP&TC) was the only source. There were frequent shortages of the required telephone instruments and PABXs due to lack of stocking in adequate quantities and the variety of the stock was also limited as only one manufacturer was engaged to supply. With liberalization the equipment suppliers increased both in variety and in sophistication but their sale was subject to type approval upon payment of a small fee. Today, consumers can access a wide variety of CPE with very advanced features both for fixed and mobile services. The prices have also drastically reduced.

3.4 Interconnection

An interconnection arrangement among operators is basically decided between two parties who are exchanging traffic through their networks. CCK licensing policy requires that network operators negotiate commercial charges for traffic exchange between operators that are not discriminatory. Should they fail to agree then CCK would intervene.

Interconnection framework

Operators provide interconnection facilities but Telkom Kenya Ltd (TKL), through its monopoly on some services, had been mandated and still offers access facilities to:

- International destinations
- National destinations and
- Local destination i.e. Nairobi only

The mobile operators have established interconnection between themselves and are already exchanging traffic without having to go through the TKL network.



Interconnection rates

The interconnection charges are negotiated between the operators and to date the following services have their charges agreed on between the TKL and the mobile operators. The rates range from KShs. 2.50 to KShs 19.20 as tabulated in table 6 below.

Table 6: Interconnection rates of fixed and cellular (KShs)

	TKL terminating calls to	Celtel	Safaricom
Call originating from	International mobile	14.30	12.00
	PSTN payphone to cellular payphone	20.00	19.20
	National termination	20.00	19.20
	Cellular terminating to TKL	Celtel	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 – 020)	7.00	7.00

Source: Mobile phone operators (www.ke.celtel.com, www.safaricom.co.ke)

Traffic between providers has been low due to the high tariffs imposed for inter-mobile traffic. This has forced consumers to subscribe to both networks to avoid inter-mobile calling. Unfortunately, there is no regulatory response to remove this barrier to inter-mobile traffic, which is anti-competitive by influencing traffic flow.

3.5 Network investment

The telecommunication reforms framework required the government to reduce and in the long term get out of investment in the telecommunications sector. Thus, the private sector investment would be the engine of telecommunications investment and growth. A condition for the private sector investment is the requirement for local participation. The policy initially required that local investment be a minimum of 60%. Consequently, both cellular operators Safaricom and Celtel (formerly Kencell) had 60% local ownership at set up. Strategic equity partners retained management in both companies. In December 2001, the government reviewed this limitation on ownership to a minimum of 30%. The third mobile operator and the SNO can now take advantage of the change. A concerted effort between 1999 and 2002 to privatise Telkom Kenya did not succeed on the grounds that bids from potential partners were low. Consequently, the company is still fully government owned.

The volume of investment varies widely among the key operators. TKL has not been able to invest heavily due to the uncertainty of privatisation and did not have adequate funds for investment. The company has been investing approximately Kshs 2 billion annually since 1999/2000. More investment is needed to upgrade and expand the network.

Cellular operators have invested heavily for the rapid expansion as mentioned above. In just under three years to 31st March 2003, Safaricom had invested KShs 18 billion for the rollout of its network and this expansion is still increasing. In March 2004, the company announced that it would invest a further KShs 8 billion for further expansion to provide high-speed data services. The expansion has extended its services to most of the major commercial and administrative centres and the entire Mombasa -Nairobi - Busia highway.

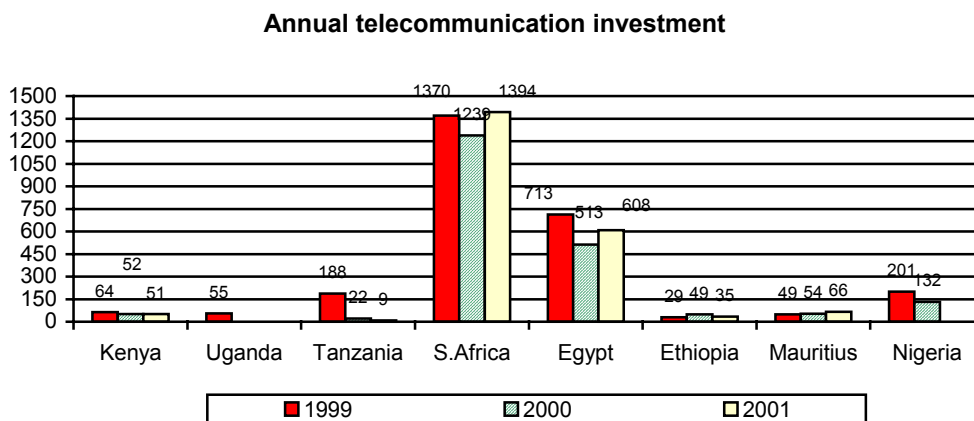
Celtel, as Kencell, had also invested in similar levels to roll out its network since starting operations in August 2000. It has also covered most of the major towns and commercial centres countrywide.



The market has other smaller operators that target niche markets – Internet, corporate data, and value added services e.t.c. The level of investment is however much lower.

Though Kenya's investment volumes in the telecommunication sector has been lower than other bigger economies in Africa namely Egypt and South Africa, investment volumes have drastically increased since liberalisation resulting in improved tele-density as shown in chart 3 below.

Chart 3: Annual telecommunication investment (Millions US\$)



Source: International Telecommunication Union indicators 2002

3.6 Revenue generation – average revenue per user

Fixed line services

The revenue per line for fixed line has not changed much as depicted in Table 7 below:

Table 7: Annual revenue generation for fixed lines

Year	1999	2000	2001	2002	2003
Revenue per line rounded to the nearest '000 in KShs	67,000	67,000	75,000	75,000	64,000

Source: Telkom Kenya Ltd, 2004

Corporate lines generated more income than Small & Medium Enterprises (SME) and personal lines. In 1999 for example, corporate lines generated annual average revenue per line of KShs 9,416 against KShs 3,417 for personal and KShs 6,577 for SMEs. The connections to SMEs and personal lines are much higher than corporate customers and account for 74% of the connections.

Compared with other countries with comparable per capita income, the Kenya telecommunication sector generated higher revenues. The revenue generation is much higher than Tanzania and Ethiopia (Table 8 below):



Table 8: Telephone service revenue (US\$)

Country	1999	2000	2001
Egypt	1,031,333,824	1,063,567,744	764,047,360
Ethiopia	71,469,520	68,482,600	73,189,560
Kenya	266,540,048	268,315,440	280,513,184
Mauritius	101,349,744	109,606,752	101,991,072
South Africa	3,876,609,536	3,754,278,656	3,170,731,776
Tanzania	114,238,144	127,459,680	126,217,184

Source: International Telecommunication Union indicators 2002

Mobile operators

As expected revenue generation per user is reducing for the cellular operators. As operators expand the customer base, they are reaching out to poorer members of the society who use the phone less. This may be discouraging expansion of the network because increased investment in network expansion nets users with lower revenue generation. Operators did not appear dissuaded and in March 2004, one of the operators announced increased investment in network expansion.

At the time of the introduction of the mobile service, the revenue per line was as high as KShs 30,000 per month in 1998 but has now reduced to KShs 1,500 per month. Safaricom average revenue per user has also come down as shown in Table 9 below.

Table 9: Annual average revenue per user for Safaricom Ltd

Country	1999	2000	2001
Revenue generation per line (KShs)	20,994.22	18,983.42	14,980.58

Source: Safaricom Annual published accounts

Sector profitability

The sector has recorded surplus for both the fixed line operator and cellular operators. The fixed line operator however has been experiencing increased operational costs without a corresponding increase in revenue generated. This can be attributed to competition from cellular operators, inability to upgrade to new services and lack of funding and uncertainties of privatisation. Cellular operators have recorded fast revenue growth. Total revenue grew from KShs 6 billion to KShs 27 billion in 3 years to rival the fixed line operator.

Telecommunications market is profitable for the operators and is going to be an enticing feature for increased investment and for new entrants to the markets.

3.7 Leased lines

The leased line service was for a long time an exclusive domain for TKL. This has since changed. Communications Commission of Kenya has now licensed several data service providers since 2003. Apart from TKL that has both landline and wireless data lines, other data operators are providing broadband wireless with capacities of several megabits though the market requirements are in the low speeds of 64 kbit/s to 2 mbit/s.

Capacities & volumes

TKL was the monopoly provider of leased lines until the licensing of data operators in 2003, consequently TKL has the largest number of leased lines as indicated in table 10 below.



Table 10: Leased lines connected

	Analogue	Kenstream (digital)	Jambonet (internet access)
1999	(1860)	(322)	(10)
2000	(2080)	(501)	(14)
2001	(2091)	(963)	(31)
2002	(1997)	(1236)	(37)
2003	(1963)	(1562)	(39)

Source: Telkom Kenya Ltd

NB: Jambonet is largely used by ISPs and is generally a reflection of the active ISPs in the market. Kenstream lines are provided in multiples of 64kbit/s up to 2mbps.

It is evident that analogue lines are decreasing against the fast growth of digital and Jambonet lines.

See Appendix 2 for a list of telecommunications and VAS providers.

3.8 Radio & television services

It is currently estimated that 90% of the Kenyan people have access to radios and 60% to television receivers.

The liberalisation of broadcasting media has led to the emergence of a number of private TV and radio stations which include Nation, Family, Citizen, Kameme, Capital, Kiss, KBC (English & Swahili) radio stations among others and KTN, KBC, Metro, Nation, Citizen, Family TV stations.

See Appendix 3 for list of FM and TV frequency holders and status of operation.

3.9 Postal services

The government hopes to create efficient, reliable, widespread and non-discriminatory postal services. The Postal Corporation of Kenya (POSTA) was created after the sector reforms to ensure universal access of postal services. Thus the government will ensure customer demands are met by facilitating more competition of postal services.

See Appendix 4 for list of postal/courier operators in Kenya.

4 Impact of competition and liberalization on telecommunications

The impact of competition in cellular services has resulted in faster expansion and growth. The government expects that competition in basic voice through the licensing of the Second Network Operator (SNO) will have the same impact of network expansion. Impact of liberalisation on Kenya's telecommunication sector can be viewed from the perspective of affordability, accessibility and availability as addressed below.

4.1 Affordability of services

This parameter is a demand side indicator that seeks to measure the capacity of consumers to pay for telecommunications services. The parameter addresses how the operators are responding to the pressure to make the services cheaper to the consumers. Affordability is



the greatest impediment affecting growth of telecommunications particularly in poor localities.

Over the last five years since telecommunication sector reform, the price of certain services has come down due to competition in certain market segments. This makes the services more affordable to the general consumer. In particular, the prices have come down on cellular and Internet services due to competition. A per second billing in cellular services has been a useful tool for the customers to reduce cost of using services. In the Internet, many people are increasingly using cyber cafes to overcome the cost of purchasing computers and maintaining an account with an ISP and having a telephone. Features such as per second billing are still currently not available in fixed line services.

Tariff re-balancing for fixed line operator

In fixed line services, cost of certain services e.g. local calls have gone up while others fell. Local call tariffs have increased since 1999 because TKL considered these tariffs as below cost and the company wanted to rebalance tariffs. The purpose of tariff rebalancing was to remove any subsidies in some services. International as well as national tariffs however, have come down. TKL's revised charges were reflected in the following areas:

- National calls reduced from KShs 28 to KShs17.80 a reduction equivalent to 36% over the five-year period (1999-2003).
- Local charges were previously heavily subsidised by both international and national services. Through tariff rebalancing the local charges have been increasing from KShs 3.50 to KShs 7.40 for three minutes - an increase of 111.40%.
- The international tariff reduced from a high rate of US\$ 3.30 to US\$ 1.66 a reduction of 49.7%.

The above tariff rates for fixed services apply to both residential and business customers. However, as competition increases, differential tariffs rates are expected to be applied in order to retain customers. Due to the problems on payment defaults, TKL has also introduced prepaid services to target residential, small, and medium sized businesses. The installation of the Intelligent Network (IN) makes introduction of per second billing possible in the fixed line network as well as in prepaid services.

Table 11 indicates that Kenya has one of the lowest connection charges for telephone. The low entry charge is one contributor to the higher penetration.

Table 11: Business telephone connection charges (US\$)

Country	1999	2000	2001
Egypt	294	288	252
Ethiopia	38	37	36
Kenya	30	30	29
Mauritius	119	76	69
South Africa	34	30	24
Tanzania	48	45	41
Uganda	117	103	63

Source: International Telecommunication Union indicators 2002

Tariff re-balancing for mobile operators

Cellular operators have introduced a range of tariff packages to suit different categories of users and wad off competition. The tariffs vary from as low as KShs 8.50 for mobile-to-mobile calls on Celtel to KShs 32.27 for Safaricom. Airtime tariffs have generally been maintained at the same level with 'cosmetic' reductions for marketing purposes.



Connection charges and periodic access charges however have come down. Connection charge for example reduced from as high as KShs 68,000 in 1998 to as low as the current KShs 900. The availability of cheap handsets has also improved the growth of the mobile service. Handsets now cost as low as KShs 3,500. The other reason why this service has experienced tremendous growth is due to the flexibility in charging where per second billing has been adopted by both mobile operators and the introduction of prepaid service.

Current tariffs for the two mobile providers can be obtained from their websites – www.ke.celtel.com for Celtel International and www.safaricom.co.ke for Safaricom Ltd.

Data services tariffs

The licensing of more data services players resulted in competitive tariffs and the improvement of the services. New operators are providing wireless broadband tariffs that are very close to the TKL Kenstream charges. Due to the quality, security and flexibility of the wireless broadband, more corporate customers are taking the service especially ISPs and banks for their ATM connections.

CCK has licensed new private data operators to offer data services in competition with TKL (See Appendix 2). The new operators are currently based in Nairobi but as they expand in the country the leased data line service charges are expected to come down. Access to data services by corporate, small and medium enterprises is now improved through the introduction and availability of high-speed data networks. Additionally, access to broadband services has been provided through VSAT, wireless, optical fibre and XDSL technologies.

The tariff for the data services is changing as competition increases. The charges for local digital leased lines as well as for international leased lines have been reducing as shown below. Other charges relating to connection apply depending on the distance from the exchange.

Table 12: Kenstream lines tariffs (KShs)

	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
64 kbits	14,400	14,400	14,400	14,400	14,400
2 Mbits	96,477	96,477	81,457	81,457	81,457

Source: Telkom Kenya Ltd, 2004

Table 13: Selected international leased lines tariffs (US\$)

	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
64 kbits	8,200	8,200	6,150	6,150	6,150
2 Mbits	46,386	46,386	34,790	34,790	34,790

Source: Telkom Kenya Ltd, 2004

The numbers of international leased lines are still few and less than 20 since Internet users have chosen to use Jambonet of TKL. Additionally, few major clients e.g. embassies and some large corporate organisations have their own VSAT links and therefore do not need TKL's international links.

Jambonet on the other hand, has seen a drastic reduction in tariffs for the connections to the Internet backbone for ISPs. The tariffs fell from US\$ 4,500 in 1999 to US\$ 1,687.5 in 2003 for a 64Kbit/s leased line and from US \$25,456 to US\$ 9,546, a reduction of more than 62.5% for a 2Mbit/s-leased line during the same period. This service was a monopoly of Telkom Kenya until June 30th 2004. Analogue leased lines tariffs have also increased rapidly. This is in recognition of the current applications using XDSL for broadband applications



SMS tariffs

The volume of Short Message Services (SMS) has drastically increased since introduction of the service by the two mobile operators. From almost no SMS in 1999, the volume has increased to 30 messages per month per cellular customer by end of 2003. A key driver of this has been the low cost of SMS. The cost of the SMS has come down from KShs 10 in 2000 to the current level of KShs 5 and in some instances offered free by the mobile service providers. Beyond the low cost, SMS is now widely used for commercial and social information dissemination.

4.2 Availability of services

Availability as a parameter describes growth in quantity of lines and services and bandwidth available to the consumers for business or personal use. It seeks to express the efforts and results of operators to supply 'adequate' services to the consumers.

Cellular services

A notable feature in the Kenya market since sector reform in 1999 is the fast expansion and uptake of cellular services. Cellular has grown from under 15,000 customers in 1999 to over 2.8 million in 2004. This growth is remarkable and far exceeds the operators' projections. Indeed the country was highly underestimated on its capacity to support cellular services. This fast growth has occasionally caused congestion, a factor that irritated customers and calls for the attention of the regulator. This fast growth against a stagnant economy is to mop up latent demand not served during the monopoly era.

Fixed line services

Unlike the cellular services, the fixed line services performed poorly. The tele-density level has grown at 3.5% per year over the period 1999-2003. This is despite the monopoly granted to Telkom Kenya Ltd up to June 30th 2004 in the following areas:

- International services
- National backbone
- Internet backbone
- Local loop services to consumers in Nairobi area
- Satellite services – VSAT

A key objective for the monopoly status granted to Telkom Kenya Ltd was to enable the company build over 800,000 lines by 2004 and use the resources to take services to the rural areas. Telkom Kenya however has not been able to achieve this objective.

Internet services

Internet growth was very rapid with the fast growth of ISPs, user base, and the cyber cafés. The estimated customer base rose to 1 million users through cyber cafés or office LAN networks. A great challenge is the cost of bandwidth, its quality and a competitive access to the local loop. Licensing of data operators will also provide much needed competitive supply of the local loop options.

Business applications and data services were areas the telecommunication reform failed to address. By offering exclusivities to TKL in key market segments, access to wide band services was limited. This is now changing since 2002 with the new re-classification of market segmentation by the CCK. This will bring a refreshing opportunity for business and manufacturers to access broadband services.

In the fibre optic cable market, only Telkom Kenya has built fibre. Telkom Kenya itself has built fibre rings in Nairobi and Mombasa. More operators and particularly utilities – Kenya Power and Lighting Co Ltd, Kenya Oil Pipeline Ltd are gearing to build fibre in the near future in competition with the other mainstream telecom operators. This will lay a foundation for a resilient national fibre backbone network.



4.3 Quality of services

One of the key objectives to the sector reform was to improve quality of services to the consumers. This was imperative given the high failure rate of the telecommunications services before the advent of the reform. The regulator has imposed quality of service obligation to ensure that consumers get improved services. To date, consumers have reported quality of service problems in all services but with the increased choice of services the impact of service failure has reduced.

4.3 Accessibility of services

The urban areas have reasonable access to all types of services with high rates for penetration. This is also the source of most of revenues. TKL for example generates up to 70% of the revenues from the two major cities of Nairobi and Mombasa. Additionally, 60% of the telephone lines are in Nairobi alone. Outside the urban areas, the revenue generation is low and so is the effort and interest to invest in the rural areas.

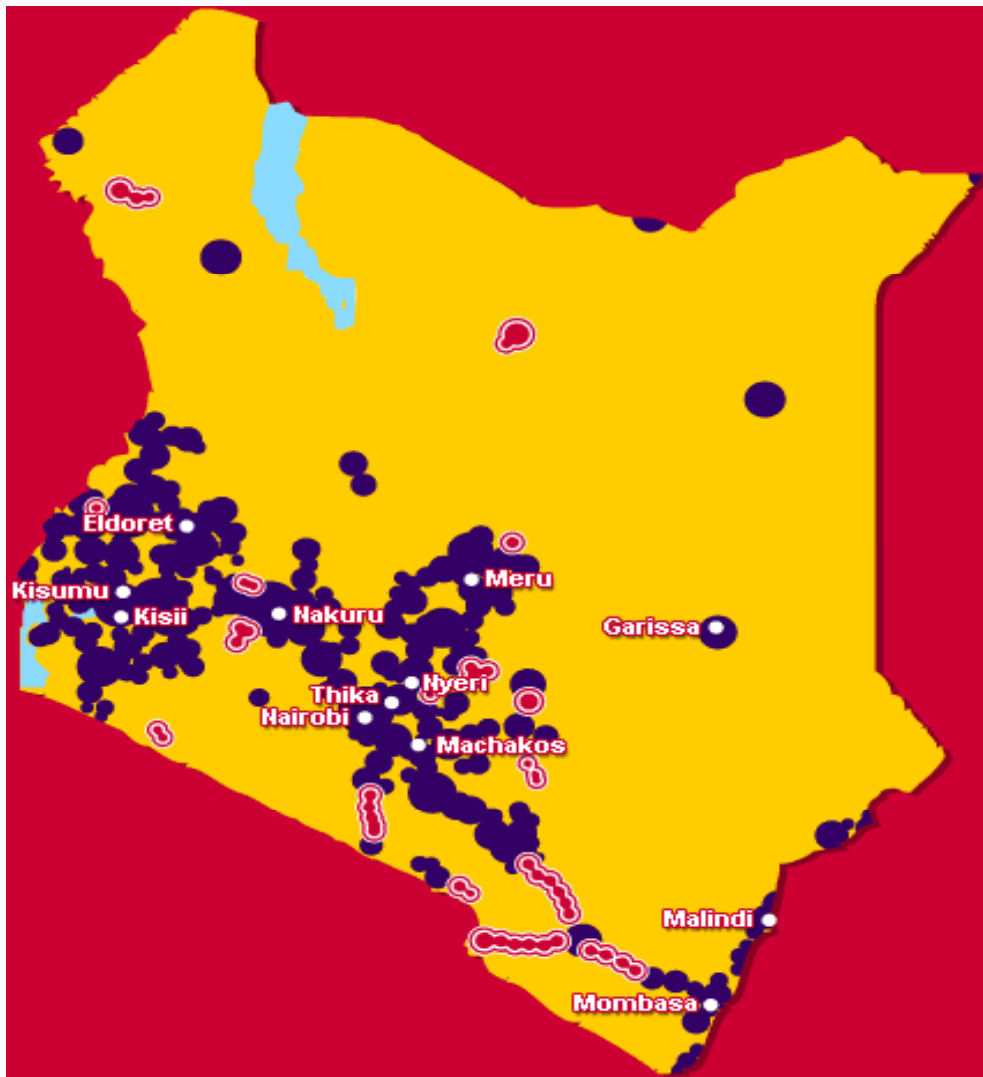
To take services to the rural areas, the government offered Telkom Kenya Ltd a monopoly in key market segments to enable it use resources from monopoly market segment to deliver services to rural areas. This monopoly dividend did not pay off. There is no expansion to the rural areas and the situation is not likely to change. Already, TKL reports under-utilisation of its exchanges in the rural areas by up to 40% resulting from low incomes of the rural population.

TKL has 220 automatic exchanges spread throughout the country. Mombasa and Nairobi accounts for 60% of the total capacity and the rest is shared among the other exchanges. In the rural areas, small manual exchanges are providing service but with the mobile coverage, their usage is gradually reducing. To focus on the rural areas, the regulator announced rural telecommunications operator licences in 2001/2002. One licence has been taken up for North Eastern Province and was expected to be operational in 2004.

Even with the fast growth of cellular lines, only 20% of the land mass is covered by the cellular signal. The mobile operators have extended their services to the commercially viable centres with limited coverage to marginal areas. Access to telephone has improved except for sparsely populated areas. Generally, however, a cellular signal is available within 5 KM especially in densely populated areas.



Map 1: Celtel coverage

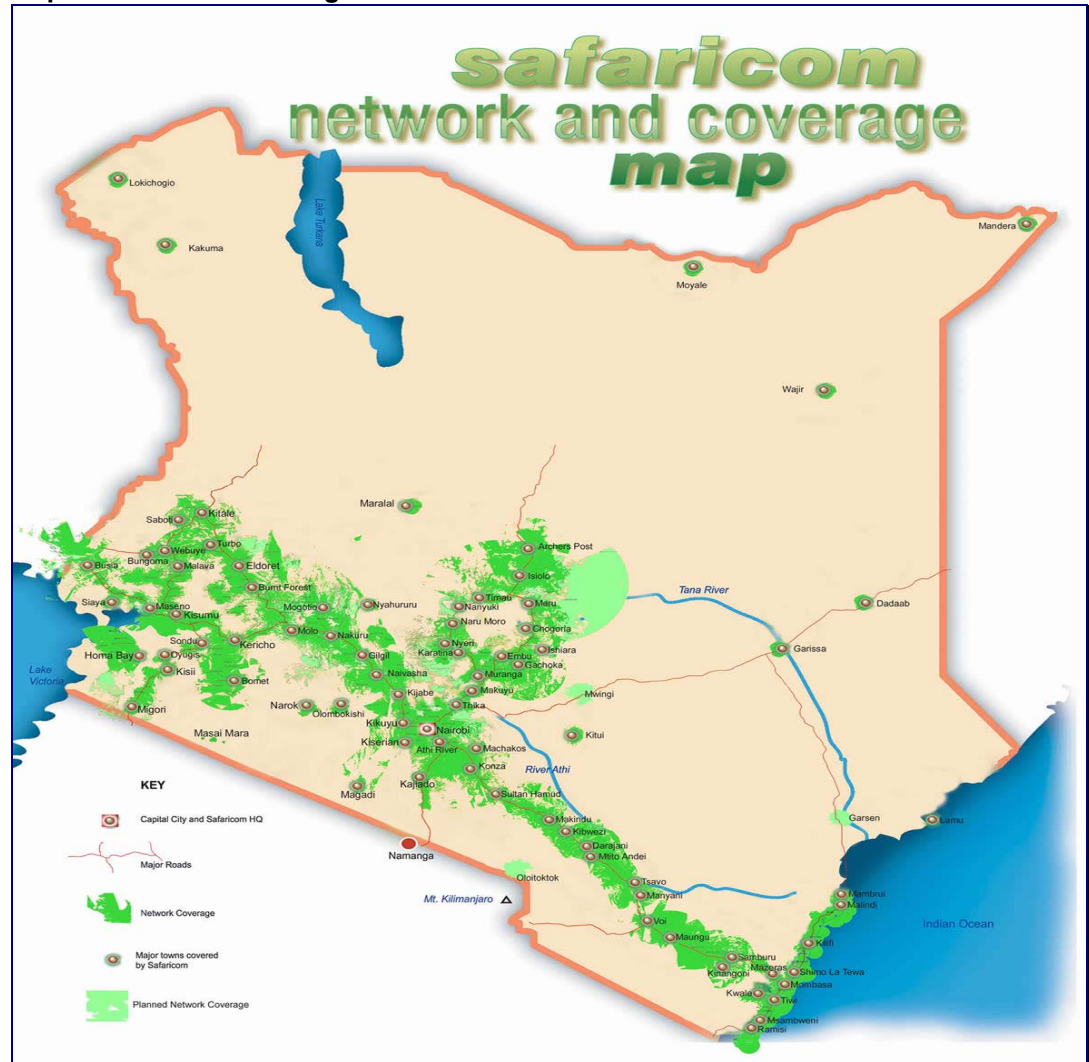


- Celtel coverage
- New coverage areas
- Main towns
- Water areas

Source: www.ke.celtel.com, 2004



Map 2: Safaricom coverage



Source: www.safaricom.co.ke, 2004

5 Internet development

CCK has licensed 73 ISPs to provide Internet services but only half are operational with an estimated 1 million users. The greatest handicap for development of Internet services has been the regulatory restrictions they face. Access to the customer and international bandwidth was through Telkom Kenya Ltd. ISPs had very little leeway on quality of service to the consumer, input costs and therefore limited marketing advantage and limited means for innovation. With increased liberalisation and consequent licensing of data operators, ISPs now have a choice of access to the customers other than through TKL.

The rapid growth of the number of licensed ISPs is partly due to the reduction of entry-level licence requirements. In the past, a start-up fee of KShs 750,000 comprising of 5-year licence of KShs 500,000 and annual fee of KShs 250,000 fee was a major barrier to entry. The fee is now KShs 100,000 (See Appendix 5 for CCK licence application fees). Another reason for the fast growth is the relatively lower capital requirement to commence operations.

The ISP license restricts the use of Internet telephony (VoIP) and must use licensed networks to offer services. Another reason for slow growth of Internet is lack of computers.



ITU estimates that Kenya had 175,000 computers by 2001. The higher cost of the computers in 2001 was 20 times more than the per capita income and was a huge barrier access to Internet. In 2003 the Kenya government eliminated duty on PCs to make them more affordable. There were approximately 520,000 PCs by early 2004.

Table 14: Personal computers

Country	1999	2000	2001
Egypt	750,000	800,000	1,000,000
Ethiopia	45,000	60,000	75,000
Kenya	125,000	150,000	175,000
Mauritius	110,000	120,000	130,000
South Africa	2,400,000	2,700,000	3,000,000
Tanzania	80,000	100,000	120,000
Uganda	55,000	60,000	70,000

Source: International Telecommunication Union indicators 2002

Internet usage

Usage of Internet has increased tremendously, according to ITU, Kenya's Internet users grew from an estimated 35,000 users in 1999 to about 500,000 users by 2001. There are now over 1 million users. This use was however confined to shared services in office LANs and cyber cafes. South Africa with the biggest economy in Africa had over 3 million Internet users while another economic giant in Africa, Egypt had about 600,000 Internet users in 2001.

Domain name registration and hosts

Kenya established a national domain name registration service known as Kenya Network Information Centre (KENIC) to manage the Internet space for the country. The total number of domain names registered under .ke top-level domain by KENIC were 2800 in 2003 with 1500 active domains.

Kenyan Internet hosts grew rapidly and more than Egypt though this was lower than Mauritius and a small fraction of South Africa's. Kenya was also ahead of its East African neighbours, Uganda and Tanzania in terms of Internet hosts.

Supply of national bandwidth

The supply of uplink Internet bandwidth was exclusively provided by TKL on a monopoly basis. Since 1998, the company has increased bandwidth by 700% as indicated in table 15 below. Incoming bandwidth was earlier liberalised with ISPs having their own downlinks with different capacities.

Table 15: International bandwidth supplied by Telkom Kenya Ltd

Description	1999	2000	2001	2002	2003
International Internet Bandwidth (Mbps)	2.5/2.5	4.5/10.5	20.5/26	-	28/34
International outgoing Internet Bandwidth (Mbps)	2.5	4.5	20.5	-	28
International Incoming Internet Bandwidth (Mbps)	2.5	10.5	26	-	34

Source: Telkom Kenya Ltd, 2004



National distribution – Points of Presence

The following towns have Internet services where ISPs have Points of Presence (POPs) and Network Operation Centres (NOCs): Nairobi, Mombasa, Malindi, Diani, Nakuru, Eldoret, Kericho, Kisumu, Nyeri, Nanyuki and Kisii. TKL supplies the bandwidth to ISPs through leased high-speed connections to the Internet backbone known as Jambonet. Jambonet has POPs in Nairobi, Mombasa, Nyeri, Nakuru, Kisumu, Kericho, Kapsabet, Kabarnet, Eldoret, Karuri, Ngong, Garissa and Kahawa. This has reduced the need to make long distance calls to access Internet.

Internet pricing

Internet tariffs have come down tremendously due to competition. This reduction affects all categories of service provision i.e. leased lines, dial-up as well as cyber cafes. Usage tariffs for cyber cafes for example have fallen from KShs 15 per minute in 1998 to KShs 1 per minute in 2003. Similarly dial up accounts for unlimited use is now available at KShs 12,000 per year. These tariffs have now stabilised and are not likely to reduce any further unless bandwidth costs reduce drastically. With the current tariffs, Internet services are affordable to the majority, particularly through the cyber cafes. The cyber cafes are now available in most towns in the country. Cyber Café Owners Association of Kenya (COAK) estimates that there are 1000 cyber cafes in the country. Postal Corporation of Kenya has also started a project to setup Internet points in all its post offices countrywide. This will greatly increase access to Internet in the country, as there are post offices in almost all towns in Kenya including the rural areas.

6 Other upcoming communication technologies

New applications call for new technologies to serve changing customer needs. Consequently, operators are introducing new technologies to serve these needs. The technologies include XDSL, fixed wireless and fibre access etc.

6.1 Broadband services

The introduction of broadband technologies has made it possible to increase the data speeds required by corporate customers from 19.2 kbits/sec on analogue circuits to over 100 Mbits/sec. The liberalization of the telecommunication sector has encouraged the private sector to invest in the provision of broadband services. Three technologies are in use to provide broadband.

- ADSL - XDSL (digital subscriber lines) technology that is being used to convert the analogue copper pair into a digital line capable of carrying up to 8 Mbit/sec. The XDSL family can be either ADSL or HDSL. Both types are in use to connect customers to their ISPs and TKL data networks to access internet or transmission of corporate data
- Fixed wireless access - Wireless broadband service introduced by data operators is now in the market. This technology is used for both data and voice and this is becoming popular with the corporate customers.
- Fibre – At present only TKL has a fibre optic installation. The fibre optic installation provides junction circuits between digital exchanges replacing the old copper pair junction routes. Demand for broadband services is increasing and the TKL plans to install fibre optical cable network to customers countrywide. However, this has not been realised due to funding gaps. TKL has installed fibre in Nairobi and Mombasa where some exchanges are connected on a ring network. Plans are underway to connect more exchanges in Nairobi and some commercial high-rise buildings in parts of Nairobi.
- Submarine cables reduce reliance on satellite connectivity and offer high transiting charges to operators in Europe and America. Kenya is exclusively reliant on satellite connectivity for international connectivity and realise that it will



increasingly be constrained on bandwidth access. Consequently, Kenya is working with neighbouring countries to build a submarine cable. This cable when implemented will link to South Africa and Djibouti with a landing at the Kenyan coastal city of Mombasa.

6.2 *Satellite/VSAT*

CCK has partially opened this market for corporate customers to establish interconnectivity between their corporate offices. This now makes it possible for multinationals to have instant data and voice communication to their international / regional subsidiaries and affiliates. CCK has now licensed two VSAT operators as well as a number of multinationals for international corporate data.

Telkom Kenya has introduced a Ku-band VSAT service – Kensat to enable it compete with Gilat Alldean Satellite Networks. Before the introduction of Ku – band services, TKL operated a C-band VSAT service, for intra-corporate data transmission as well as trunk provision for distance telecommunication services.

Competition has brought down charges. The licensing of a competitor in 2002 has seen the prices falling down especially for monthly access. The new competitor Gilat Alldean Satellite Networks is charging a monthly access of US \$ 300 to US \$400 depending on the number of sites with few sites attracting the higher per site charge. TKL has reviewed tariffs to be competitive. The proposed tariff will be ranging from US \$ 385.3 to 349.3 for 51 sites and above per site on a 64 Kbit/s shared.

7 **Legal & regulatory framework**

7.1 *Government policies affecting ICT*

Government laws

The Ministry of Information & Communications is the overseer of the ICT sector in Kenya. The following laws govern/affect the sector:

- Kenya Communications Act 1998
- Postal Corporation Kenya Act 1998
- Kenya Broadcasting Corporation Act
- The Telegraph Press Message Act 1983
- The Science & Technology Act
- State Corporations Act
- The Education Act

Draft legislation that is expected to be passed soon include:

- Broadcasting Bill
- Freedom of Information
- Electronic Transaction bill
- Mobile Telephone Reprogramming

Fiscal environment

The Government has resolved itself to supporting ICT through fiscal instruments. Import tariffs have been removed for PCs and are a preferential 5% for other instruments, the lowest rate allowable without Parliamentary approval.

Institutional capacity

The Government has resolved that ICT is an important issue to warrant separate institutional attention. The Government has for example established the post of IT Director in the Ministry of Finance, and is supporting the preparation of a cabinet paper towards the formation of a National ICT policy.



R & D Programs

Realizing the importance of Information Technology to the future success of the country, the government has developed an extensive support system for the ICT industry. In 1977 the National Council for Science and Technology was established to co-ordinate the Science & Technology sector, including the ICT sub-sector. The Government also established the Kenya Bureau of Standards, which has standing committees dealing with ICT standards.

Prompt Attention to ICT Issues as they arise

During the Y2K period the Government showed commitment to prompt attention towards ICT evolving issues and concerns. Of particular significance was the support for the formation of a National Y2K Coordination Committee.

E-Commerce

E-Commerce, or trading using the Internet, has not yet taken off in Kenya due to the absence of enabling legislation. There is a bill called the Information Technology Act that will incorporate provisions to support e-commerce though it is still not clear when this bill will be debated in Parliament or its likely date of implementation. The Government is also in the process of developing a system of e-government to improve service delivery.

There is a low utilization of credit cards (less than ½ a percentage point) in the country. The credit card is the foundation for customers to carry out e-commerce transactions.

Kenya's relationships with global information infrastructure.

Kenya is an active member of the International Telecommunications Union, ITU and is also a participant and/or signatory to a number of international conventions and standards relating to ICT.

7.2 Sector regulation

National Communications Secretariat

Telecommunications and information infrastructures are vital for any country's economic productivity, competitiveness and national security. These sectors are experiencing rapid technological advances which make it imperative for the government to maintain an effective and dynamic policy environment that will facilitate sustainable development and advancement of strategic interests.

The Kenya Communications Act, 1998, provides for the establishment of a National Communications Secretariat to serve as the policy advisory arm of the Government on all matters pertaining to the info-communications sector. The functions include:

- Formulation of info-communication policies and recommendations that aim to advance strategic interests.
- Carrying out telecommunications and postal policy, research and analysis.
- Advising Government on the most efficient and effective way of managing the radio frequency spectrum.
- Conducting continuous review of all phases of development in info-communications.
- Assisting in the preparation of country position papers for all international meetings and conferences relating to info-communications.
- Updating sector policy statements, sectional papers and legislation pertaining to info-communications.

The regulation of the sector and granting of licenses will remain the responsibility of the Communications Commission of Kenya.

Communication Commission of Kenya

The Communication Commission of Kenya (CCK) was established in February 1999 by the Kenya Communications Act, to license and regulate telecommunications, radio communication and postal services in Kenya. The following are the functions of CCK:



- Licensing (Telecommunications and Postal / Courier) operators
- Regulating tariffs for monopoly areas
- Establishing interconnection principles
- Type-approving communications equipment
- Managing the radio frequency spectrum
- Formulating telecommunication numbering schemes and assigning them to network operators
- Implementing Universal Service Obligation for both postal and telecommunication services.

CCK issues licenses to vendors, contractors, engineers, resellers, network operators, Internet and paging service providers e.t.c. The operators must meet the following conditions:

- Must be a registered company in Kenya.
- The company must have at least 30% of its shares owned by Kenyan entrepreneurs.
- The applicants are required to have qualified workforce in the field of telecommunication engineering.
- Pay a non-refundable fee for each application.
- For Internet Service Providers, Paging Services Providers (PSP) and Network Operators, applications shall be subject to a 60 days gazette notice followed by CCK board approval.
- Successful applicants shall pay the appropriate registration fee.
- The company must be in a possession of adequate tools, measuring instruments and test gear.
- The company must give two different and independent referees.

See Appendix 5 for CCK licence application fees.

8 Reasons for investing in Kenya's ICT sector

As a regional hub and a financial capital of the East and Central Africa region, Kenya's competitive advantage as an ICT investment destination is supported by various investor friendly factors that include:

Regulatory framework

The establishment of Communications Commission of Kenya (CCK) as the regulatory body provides an investor with a one-stop body for registration and facilitation thus reducing bureaucracy. The regulation of the sector and granting of licences remain the responsibility of CCK.

Availability of a well-trained labour force

Kenya has a well-trained English speaking labour force with skilled personnel trained in ICT and related fields. ICT and computer learning is currently offered at both secondary school level and in universities and tertiary institutions in the country. Wages in Kenya are generally reasonable and this extends to the ICT sector.

Kenya's relation with the global information infrastructure

Kenya is an active member of the International Telecommunications Union, ITU. Kenya is also a participant and a signatory to a number of international conventions and standards relating to ICT.

Diversified experience

Kenyans are involved in virtually all areas of ICT. Whether in telecommunications, hardware components, software, or Internet service provision, Kenya has a well-established group of companies involved in all of these areas.



Local market availability

Telkom Kenya has fewer than 300,000 subscribers in a country of 30 million people and the company says it needs \$5.85 billion to install 3.7 million lines if demand is to be met.

Access to the regional market

Kenya's membership in regional trading bodies such as COMESA, African Union and the East African community provides potential investors with a large potential market for their products and services.

Investor friendly arrangements

The Kenya government can guarantee investor friendly arrangements such as:

- the Export Processing Zones (EPZ) program which offers attractive incentives to export-oriented investors and EPZ Authority to provide one-stop-shop service for facilitation and aftercare
- the Investment Promotion Centre (IPC) to promote all other investment in Kenya including in Manufacturing under Bond (MUB) program
- the Tax Remission for Export Office (TREO), a program for intermittent imports for export production
- Generous investment and capital allowances
- Double taxation, bilateral investment and trade agreements
- The liberalization policy allowing for private sector participation in the ICT sector
- Reduced taxes on computer hardware and software (zero rating of import duties on PCs)
- Removal of licensing requirements on information and broadcasting services

Investment insurance

Kenya as a member of MIGA (Multilateral Investment Guarantee Agency), ATIA (Africa Trade Insurance Agency) and ICSD (International Centre for Settlement of Investment Disputes) provides potential investors with insurance for their investment in Kenya against a wide range of non-commercial risks.

Strategic location

Located on the East African coast and having the port of Mombasa, Kenya is strategically located for investors wanting to access the East and Central African market. Kenya is also a regional hub for airlines allowing for easy access from and to any part of the world.

Good quality of life

Kenya hosts a number of international organizations and foreign embassies and provides very good and up to standard living conditions for foreign investors willing to reside in Kenya. With recognized international hotels, airports and entertainment centres.

Stable political climate

Kenya has been one of the most stable countries in Africa since independence. The country has had three presidents with smooth transition taking place from one government to the next and elections held regularly. This is also manifested in the number of international and regional organizations headquartered in Nairobi including the UN, IGAD etc.

9 Investment opportunities

Kenya provides investment opportunities in the ICT sector targeting both local and export markets. Investors targeting export-oriented activities may invest under the Export Processing Zones program which offers attractive investment incentives including tax holidays, procedural and infrastructural incentives.

The following activities qualify for EPZ licensing:

- back office operations
- call centers



- software development
- Internet services
- software consultancy
- hardware assembly and repairs e.t.c.

Other investment opportunities in the ICT sector include:

- Privatisation of telecommunication providers such as Telkom Kenya Ltd
- Financing of the East Africa submarine cable
- Provision of ICT training for growing market
- Provision of telecommunication to the rural areas not yet reached by the telecommunication network such as provision of internet facilities
- Provision of fixed telephone services as the Second National Operator (SNO) - TKL monopoly expired in July 2004.

10 Key contacts & institutions

National Communications Secretariat
Ministry of Information and
Communications
Telposta Towers
P.O. Box 10756, 00100 Nairobi
Email: ncs@nbnet.co.ke
Web: www.information.go.ke

Communications Commission of Kenya
(CCK)
Longonot Place, Kijabe Street
P.O. Box 14448, 00800 Nairobi, Kenya
Tel: 254-20-4242000/4349111
Fax: 254-20-4451866/4348204
Email: info@cck.go.ke
Website: www.cck.go.ke

Computer Society of Kenya (CSK)
P.O. Box 70180, Nairobi, Kenya
Tel: 254-20-211640, 571848/36/22
Fax: 254-20-2728351
Email: info@csk-online.org
Website: www.csk-online.org

Ministry of Trade & Industry
Telposta Towers, Kenyatta Avenue
P.O. Box 30418, 00100 Nairobi, Kenya
Tel: 254-20-315001-7, 331030
Fax: 254-20-315011, 213508, 219680
Website: www.tradeandindustry.go.ke

Export Processing Zones Authority
(EPZA)
Administration Building
Athi River EPZ, Viwanda Road
Off Nairobi - Namanga Highway
P.O. Box 50563, 00200 Nairobi, Kenya
Tel: 254-45-26421-6
Fax: 254-45-26427
Email: info@epzakenya.com
Website: www.epzakenya.com

Investment Promotion Centre (IPC)
National Bank Building, 8th Floor,
Harambee Avenue
P.O. Box 55704-00200 Nairobi,
Tel: 254-20-221401-4
Fax: 254-20-243862
Email: info@investmentkenya.com
Website: www.investmentkenya.com

Telkom Kenya Ltd (TKL)
Telposta Towers, Kenyatta Ave.
P.O. Box 30301, 00100 Nairobi GPO,
Kenya
Tel: 254-20-3232000
Email: info@telkom.co.ke
Website: www.telkom.co.ke

Postal Corporation of Kenya (POSTA)
Posta Road, Off. Kenyatta Ave.
P.O. Box 34567 Nairobi, Kenya
Tel: 254-20-243434
Email: customercare@posta.co.ke
Website: www.posta.co.ke

Telecommunications Service Providers
Association of Kenya (TESPOK)
14th Floor, Bruce House
P.O. Box 27589, Nairobi, Kenya
Tel: 254-20-245036
Email: tespok@tespok.co.ke
Web: www.tespok.co.ke

Safaricom Ltd
Safaricom House, Waiyaki Way,
P.O. Box 46350, Nairobi
Tel: 254-20-4273272
Email: customercare@safaricom.co.ke
Web: www.safaricom.co.ke



Celtel International
Parkside Towers, Mombasa Road
P.O. Box 73146, 00200 Nairobi
Tel: 254 20 69010000
Email: customercare@ke.celtel.com
Web: www.ke.celtel.com

Kenya Bureau of Standards
Bellevue Area, Off Mombasa Rd
P.O Box 54974 City Square
Fax: 254-20-503293
Tel: 254-20-502210/502211
Email: info@kebs.org
Website: www.kebs.org

11 Sources of information & references

- Ministry of Information & Communication – www.information.go.ke
- Communications Commission of Kenya (CCK) - www.cck.go.ke
- Computer Society of Kenya (CSK) - www.csk-online.org
- Ministry of Trade & Industry – www.tradeandindustry.go.ke
- Export Processing Zones Authority (EPZA) – www.epzakenya.com
- Investment Promotion Centre (IPC) – www.ipckkenya.org
- International Telecommunications Union (ITU) - www.itu.int
- Telkom Kenya Ltd (TKL) - www.telkom.co.ke
- Postal Corporation of Kenya (POSTA) - www.posta.co.ke
- Telecommunication Service providers Association of Kenya (TESPOK) - www.tespok.co.ke
- Summit Strategies Ltd – ICT and Telecommunications consulting based in Nairobi – mureithi@summitstrategies.co.ke

References

The following publications and references were used in developing this report

- *Kenya Information & Communications Technology (ICT) sector profile by EPZA*
- *National Information & Communications Technology (ICT) Policy by Ministry of Information & Communications (October 2004)*
- *ICT in Africa – Status Report by Mike Jensen*
- *Kenya telecommunications sector performance review report 1999-2003 prepared by Muriuki Mureithi of Summit Strategies Ltd – Nairobi – Kenya*
- *International Telecommunication Union indicators 2002*



Appendices

Appendix 1- Approved market structure

SERVICE	LICENSE REQUIRED	COMPETITION POLICY	EXCLUSIVITY PERIOD
Local	Yes	Telkom Kenya and Local Network Operators covering geographic service areas based on provincial administrative boundaries except Nairobi which will be exclusively Telkom Kenya	Up to 2004 for Nairobi only
National Long Distance	Yes	Restricted to Telkom Kenya initially and later other long distance operators after period of exclusivity.	Up to 2004
International Gateway and Services	Yes	Restricted to Telkom Kenya initially and later other international gateway operators after exclusivity period.	Up to 2004
Global Mobile Personal Communications by Satellite (GMPCS)	Yes	<ul style="list-style-type: none"> Telkom Kenya and other licensed network operators to provide GMPCS service. Full competition in the provision of GMPCS user terminals under class license. 	Up to 2004 Nil
GSM/ETACS	Yes	Initially duopoly between Safaricom and Celtel (Kencell).	Nil
Other mobile services (e.g. PCS, Trunked Radio System)	Yes	Limited competition based on spectrum availability and demand for mobile services.	None
Paging	Yes	Full competition depending on radio spectrum availability	None
VSAT	Yes	Restricted to private networks and services for intra-corporate data communications. International Commercial VSAT networks and services to be restricted to Telkom Kenya. Other infrastructure providers to be licensed in line with market growth.	Nil Up to 2004
Internet Node and Backbone	Yes	Initially to be provided by Telkom Kenya. Other infrastructure providers to be licensed in line with market growth.	Up to 2004
Value Added Services e.g. <ul style="list-style-type: none"> Electronic Mail 	Generic/Class Licenses	Full competition	Nil



SERVICE	LICENSE REQUIRED	COMPETITION POLICY	EXCLUSIVITY PERIOD
<ul style="list-style-type: none"> Voice Mail Store and Forward Fax Internet Service Provision Video Conferencing EDI 			
Public Telephone Service Resale	Yes	Full competition	Nil
<ul style="list-style-type: none"> Customer Telephone Service Resale Internal/External Wiring 	Certificate and Type Approve of Equipment	Full competition	Nil

Appendix 2 - Telecommunications and value added service providers

GMPCS Service Providers

1.	Thuraya Satellite Telecommunications Co.	Abu Dhabi	Satellite Operator
2.	Telemedia Communication Ltd	Nairobi	Service Provider

Internet Exchange Point Service Providers

1.	Alma Limited	Nairobi
2.	Kenya Internet Exchange Point Ltd	Nairobi

Leased Circuit Resale Licensees

1.	S.I.T.A	Nairobi
2.	Communications Carriers Ltd	Nairobi

Local Loop Operators

1.	Soliton Systems House Limited	Nairobi
2.	Em Communications	Nairobi
3.	Next Generation Limited	Nairobi
4.	Pace Systems Limited	Nairobi
5.	African Link Agency Ltd	Mombasa



National Payphone Service Providers

1.	Sasanet Limited	Nairobi
2.	Dial Africa Ltd	Nairobi

Public Data Operators

1.	Kenya Data Network Ltd	Nairobi
2.	Open Systems Limited	Nairobi
3.	Simbanet Com Ltd	Nairobi
4.	Telkom Kenya Limited	Nairobi
5.	Broadband Access Limited	Nairobi
6.	Azicon Engineering Ltd	Nairobi
7.	Pegrume Limited	Nairobi
8.	Telkom Kenya Limited	Nairobi
9.	Teldata Communication Ltd	Nairobi
10.	Satellite Data Networks Ltd	Nairobi

Value Added Service Providers

1.	Call Handling Interactive Ltd	Nairobi
2.	Satellite Tracking (Kenya) Ltd	Nairobi
3.	Vts Fonework Ltd	Nairobi
4.	Interactive Media Services	Nairobi
5.	Atech Limited	Nairobi
6.	Cellulant Kenya Limited	Nairobi
7.	Sasanet Limited	Nairobi
8.	Touchtone Media Kenya Ltd	Nairobi
9.	Cellucom Kenya Limited	Nairobi
10.	Envision Multimedia	Nairobi
11.	Adtel Phone Company Ltd	Nairobi
12.	Vts Fonework Ltd	Nairobi

Satellite Monitoring Service Providers

1.	Frise Satellite Telemetry Systems Ltd	Nairobi
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Commercial VSAT Operators

1.	Gilat Alldean (Africa) Limited	Nairobi
2.	Telkom Kenya Limited	Nairobi

Call Centre Service Providers

1.	Kencall (EPZ) Ltd	Nairobi
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Internet Service Providers

1.	Kenyaweb Dot com Ltd.	Nairobi
2.	Net two thousand Ltd/Bidii Dot Com	Nairobi
3.	Swift Global (K) Ltd.	Nairobi



4.	Communication Solution Ltd/Access Kenya	Nairobi
5.	Liam Telecommunications Ltd.	Nairobi
6.	SkyWeb Technologies Ltd.	Nairobi
7.	Global Telecomms Ltd.	Nairobi
8.	Pwani Telecomms Ltd/IKenya Dot Com	Mombasa
9.	Simbanet Com Ltd.	Nairobi
10.	African Regional Centre For Computing	Nairobi
11.	Todays Online Ltd.	Nairobi
12.	Wananchi Online Ltd.	Nairobi
13.	Flexible Bandwidth Services Ltd.	Nairobi
14.	ISP Kenya	Nairobi
16.	Karibu Networks Ltd.	Nairobi
17.	Karibu Dot Com Ltd (Former Family Web-Link Africa Ltd)	Nairobi
18.	Finnet Communications Ltd.	Nairobi
19.	Geo-Net Communications Ltd.	Nairobi
20.	Net Force (K) Ltd.	Nairobi
21.	Telecom Solutions Ltd.	Nairobi
22.	System Intergration Ltd.	Nairobi
23.	UUNET Kenya Ltd.	Nairobi
24.	Trans-Business Machines Ltd.	Nairobi
25.	Postal Corporation of Kenya Ltd.	Nairobi
26.	Sahannet Ltd.	Nairobi
27.	Safaricom Limited	Nairobi

Paging Services Providers

1.	Royal Media Services Ltd.	Nairobi
2.	EP Communications Ltd.	Nairobi
3.	Comm-link Africa	Nairobi
4.	Paging Services Ltd.	Nairobi
5.	Capital Pagers Ltd.	Nairobi
6.	Kiun Communications Ltd.	Mombasa
7.	Beeper Communications Ltd.	Nairobi
8.	Neptune Telecoms (K) Ltd.	Nairobi
9.	Absolute Paging Services Ltd.	Nairobi
10.	Emtel (K) Ltd.	Nairobi
11.	Alphanet Communications Ltd.	Nairobi
12.	Pepe Ltd.	Nairobi
13.	Electronics & Info Services Ltd.	Nairobi



Appendix 3 – Radio & TV stations

Below are tables indicating the licensed TV and FM broadcasting stations. The tables also depict the status of the stations (all are on air except those with *).

FM stations

	Identity	FM Frequency (MHz)
1	Stangy Boyz	88.0000, 89.9000, 90.0000*, 92.5000*, 99.9000*
2	Kenya Episcopal Conference	88.5000
3	Biblia Husema Studios	90.9000, 96.9000, 101.5000
4	Kenya Broadcasting Corporation	87.6000, 88.6000*, 89.1000, 89.9000, 90.1000, 90.3000, 90.4000, 90.5000*, 90.6000*, 91.5000, 91.7000*, 91.9000, 92.9000*, 92.9000, 93.4000, 93.7000*, 94.4000, 95.1000, 96.1000*, 96.2000, 96.6000, 96.8000*, 97.0000, 98.0000, 98.2000*, 99.5000, 100.2000*, 100.7000, 100.9000, 101.9000, 102.3000, 103.5000, 103.6000*, 104.4000,
5	British Broadcasting Corporation	88.2000, 93.7000, 93.9000
6	EATN* *	87.7000, 88.6000, 90.7000, 94.2000, 103.2000, 107.1000
7	Radio One IPP	94.7000
8	IQRA	95.1000
9	Nation Media Group	96.4000, 97.6000, 101.3000, 102.1000, 102.9000*, 104.8000,
10	Capital Group	93.0000*, 98.4000
11	Royal Media Services	89.8000, 89.9000, 90.4000, 91.8000*, 92.2000*, 94.3000, 94.5000*, 95.1000, 95.4000*, 95.5000*, 95.7000*, 95.9000*, 96.0000*, 96.4000*, 97.3000*, 97.4000*, 97.6000*, 98.6000*, 98.9000*, 100.5000, 104.3000, 106.7000*, 107.0000*, 107.6000*
12	Radio Africa	88.5000, 89.2000, 92.6000, 98.1000, 100.000, 100.3000
13	Regional Reach	88.4000, 92.3000, 101.1000
14	Toads Media Group	102.7000*, 104.5000*, 105.1000*, 105.7000*
15	Future Tech Electronics	97.9000*, 102.1000, 103.9000
16	Nairobi Pentecostal Church	93.3000
17	Kitambo Communications	105.2000
18	Lingam Enterprises	92.2000*, 99.4000*, 106.0000
19	International Broadcasting Bureau (VOA)	107.5000
20	Universal Broadcasting Ltd	91.5000, 104.5000,
21	Feba Radio	95.5000
22	Radio France International	105.5000
23	Tony Msalame Productions	106.6000
24	International Children's Mission	105.3000, 105.8000
25	Sayare	98.8000
26	Daystar University	103.1000
27	Immanuel	101.5000



TV stations

	Identity	TV Channel
1	Kenya Broadcasting Corporation	2, 4, 5*, 6, 9, 10, 11, 12*, 22, 23, 25, 26, 28, 29, 31, 41*, 43*, 44*, 47*, 49*, 52*, 55*, 56*
2	EATN**	7, 12, 22, 40, 50
3	Royal Media Services	21*, 25*, 31*, 32*, 39, 46*, 50*, 56*, 58*
4	Nation Media Group	33, 40, 42, 47*, 51
5	Kitambo Communications	45
6	Stellavision	30, 37, 43, 53, 54, 55, 56
7	KTN Baraza Ltd	12, 54, 57, 58, 59, 61
8	Radio One IPP	62
9	Future Tech Electronics	9, 46
10	Sayare	27
11	Biblia Husema Studios	48
12	African Gospel Church	42

* - **Not on Air**

** - **Court case ongoing**

Appendix 4 – Postal/courier operators

Categories of postal operators:

i) Public Postal Operators

Responsible for USO and has the widest International and domestic coverage(networks).

ii) International In-bound only

One-way operator; receiving items from overseas for local delivery.

iii) International Operators

Operates only internationally with a worldwide network

iv) Regional operators

A major operator within Kenya has an East African Network.

v) Intracountry Operators

As for (v) above but with less volume and limited network.

vi) Intracity operators

Operates only within a city/town boundary.

vii) Document Exchange Operator

Operates exchange of articles/documents between members.



(b) Telecom operators

SCHEDULE OF LICENCE FEES PAYABLE BY VARIOUS TYPES OF TELECOM-MUNICATIONS NETWORK OPERATORS AND SERVICE PROVIDERS IN KENYA

1. FACILITY-BASED PUBLIC FIXED TELECOMMUNICATIONS PROVIDERS (TYPE I CARRIERS)		
CATEGORY OF LICENCE	APPLICATION FEE	ANNUAL OPERATING LICENCE FEE
Local access/regional Telecom Operators (Regional Carrier)	Nil for the incumbent operator and Kshs 10,000 per License for the new entrants	0.5% of the Annual gross turnover of the business
Long-distance telecom operators (Inter-Regional Carriers)	Nil for the incumbent operator and Kshs 10,000 per License for the new entrants	0.5% of the Annual gross turnover of the business
International Telecom Operators (International Carriers)	Nil for the incumbent operator and Kshs 10,000 per License for the new entrants	0.5% of the Annual gross turnover of the business
End Office /Concentrator/Local Loop providers (Local Carriers/Aggregators)	Kshs 10,000 for new Entrants	0.5% of the Annual gross turnover of the business
2. LAND MOBILE RADIO-COMMUNICATION SERVICES (TYPE II CARRIERS)		
CATEGORY OF LICENCE	APPLICATION FEE	ANNUAL OPERATING LICENCE FEE
Cellular Mobile Telephone Services Providers (Mobile Operators)	Kshs 10,000	0.5% of the Annual gross turnover of the business
Public Radio Paging Service Providers (Paging service providers)	Kshs 10,000	Kshs 10,000
Commercial Trunked Radio Communications Network Operators (CTROs)	Kshs 10,000	Kshs. 1.5M or 0.5% of the turnover of the business Whichever is higher
Private radio paging networks	Kshs 1,000	Nil
Private radio trunking networks	Kshs 1,000	Nil
Private two way networks	Kshs 1,000	Nil



3. FIXED AND MOBILE SATELLITE SERVICES

CATEGORY OF LICENCE		ANNUAL OPERATING LICENCE FEE
Public Commercial Satellite Uplink/Downlink Gateway Services (Gateway Services)	Kshs. 10,000	0.5% of the annual gross turnover of the business
Private VSAT network Operator	Kshs..1,000	Kshs 100,000 per VSAT
National Commercial VSAT Network Operators	Kshs. 10,000	0.5% of the annual gross turnover of the business plus Kshs. 12,000 per VSAT
Internal Commercial VSAT Network Operators	Kshs. 10,000	0.5% of the annual gross turnover of the business plus Kshs. 12,000 per VSAT
Global Mobile Personal Communications Via Satellite (GMPCS) GMPCS Service Providers	Kshs. 10,000	0.5% of the annual gross turnover of the business
Global Mobile Personal Communications Via Satellite (GMPCS) Gateway Services Operator	Kshs. 10,000	0.5% of the annual gross turnover of the business
Satellite-based Paging Network and services	Kshs. 10,000	Kshs 100,000
GMPCS Terminals (Station License)	Kshs 1,000	Not Applicable
Interactive VSAT Terminal (VSAT station License)	Kshs 1,000	Kshs 100,000 per VSAT
Receive Only VSAT Terminal (Excludes TV-Receive-Only VSAT terminals TVROs)	Not Applicable	Not Applicable
VSAT Terminal for Radio Determination & Related Services	Kshs. 1,000	Kshs 5,000 Per VSAT
VSAT terminal for space research and related services	Kshs. 1,000	Kshs 500,000 Per VSAT



VSAT for Amateur satellite Services	Kshs. 1,000	Kshs 5,000 Per VSAT
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4. FACILITY-BASED DATA COMMUNICATIONS NETWORKS AND SERVICES

CATEGORY OF LICENCE	APPLICATION FEE	ANNUAL OPERATING LICENCE FEE
Public Data Com Network Operators (Non voice band)	Kshs 10,000	0.5% of the Annual gross turnover of the business
Private Fixed Telecom Networks	Kshs 10,000	Kshs. 100,000

5. INTERNET FACILITIES AND SERVICES

CATEGORY OF LICENCE	APPLICATION FEE	ANNUAL OPERATING LICENCE FEE
Public Internet Access services (ISP)	Kshs 10,000	Kshs 100,000
Internet backbone Services (IBS)	Kshs 10,000	0.5% of the Annual gross turnover of the business
Internet Exchange Point Services (IXP)	Kshs 10,000	Kshs. 100,000

6. VALUE ADDED SERVICES (VAS). NOTE THAT ONE LICENCE MAY BE ISSUED TO COVER ALL OF THE LISTED VAS AT THE SAME COST

CATEGORY OF LICENCE	APPLICATION FEE	ANNUAL OPERATING LICENCE FEE
Premium Rate Service Providers	Kshs. 10,000	Kshs. 100,000
Auto-text Service Providers	Kshs. 10,000	Kshs. 100,000
Store and forward Service providers	Kshs. 10,000	Kshs. 100,000
Electronic Data Interchange (EDI) Service Providers	Kshs. 10,000	Kshs. 100,000
Credit Card validation Platform Service Providers	Kshs. 10,000	Kshs. 100,000
Number Portability Platform Service Providers	Kshs. 10,000	Kshs. 100,000
Other new Types of Value Added Service(VAS) Providers	Kshs. 10,000	Kshs. 100,000

7. RESALE SERVICES

CATEGORY OF LICENCE	APPLICATION FEE	ANNUAL OPERATING LICENCE FEE
Bandwidth/ Leased Circuit Resale Service Providers(including ADSL/XDSL)	Kshs. 10,000	Kshs. 100,000
National payphone service providers	Kshs. 10,000	Kshs. 100,000



National Telecom Access bureau Service Providers (Including cyber-cafes Telephone bureaus, Multipurpose Community Telecenteres (MCTs)etc	Kshs. 10,000	Not Applicable
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8. TELECOMMUNICATIONS DEALERS LICENSES

CATEGORY OF LICENCE	APPLICATION FEE	REGISTRATION FEE	ANNUAL OPERATING LICENCE FEE
Telecommunications Terminal Equipment Vendor's License (V)	Not Applicable	Not Applicable	Not Applicable
Telecommunications Terminal Equipment Installers's License (I)	Kshs. 1,000	Kshs. 5,000	Kshs. 2,000
Telecommunications Terminal Equipment maintainer's License (M)	Kshs. 1,000	Kshs. 5,000	Kshs. 2,000
Telecommunications Internal Wiring license (W)	Kshs. 1,000	Kshs. 5,000	Kshs. 2,000
Telecommunications External Wiring license (E)	Kshs. 10,000	Kshs. 5,000	Kshs. 2,000

9. TELECOMMUNICATIONS PERSONS'S LICENSE (TECHNICAL PERSONNEL)

CATEGORY OF LICENCE	APPLICATION FEE	REGISTRATION FEE	ANNUAL OPERATING LICENCE FEE
Telecommunications Terminal Equipment individual Installer's (I) License. (Classes A,B, & C)	Not Applicable	Not Applicable	Not Applicable
Telecommunications Internal wiring (W) Individual License (I)	Kshs. 1,000	Kshs. 5,000	Kshs. 2,000
Telecommunications Individual's External (E) Wiring License Class A Only	Kshs. 1,000	Kshs. 5,000	Kshs. 2,000

(c) Frequency spectrum fee schedule for the year 2002

	SERVICE	DESCRIPTION	ANNUAL FEES PER STATION PER FREQUENCY IN Kshs.	
			MF/HF	VHF/UHF
1	AERONAUTICAL STATION LICENCE	A licence to establish a radio station for carrying radiocommunication with aircraft station.	Kshs. 4,800	Kshs. 4,800
2	AIRCRAFT STATION LICENCE	A licence to establish a mobile station aboard an aircraft, to operate in the aeronautical mobile service.	Kshs. 4,800	Kshs.4,800



3	LICENCE FOR FIXED STATION OPERATING IN MOBILE SERVICE	A licence to establish a radiocommunication station at a fixed location for carrying on a Mobile Radiocommunication Service.	Kshs.18,700.	Kshs. 5,000
4	MOBILE STATION LICENCE	A licence to install and use radio apparatus for transmitting and receiving aboard a vehicle, aircraft, or a ship.	Kshs. 5,610	Kshs. 2,900
5	PORTABLE STATION LICENCE	A licence to a portable radio communication apparatus to operate in the mobile service.	Kshs. 5,610	Kshs. 2,900
6	COAST STATION LICENCE	A licence to establish a station and land for carrying on a service with ship stations.	Kshs. 5,610	Kshs. 2,900
7	SHIP STATION LICENCE	A licence to install and use radio apparatus aboard ships.	Kshs. 5,610	Kshs. 2,900
8	RADIO AMATEUR LICENCE	A licence to install and operate an amateur radio station.	Kshs. 2,000	Kshs. 2,000
9	CITIZEN BAND RADIO LICENCE	A licence to operate a low power radio apparatus operating in the frequency bands 26925 kHz to 27403 kHz.	Kshs. 1,000	Not applicable.
10	PRIVATE PAGING SERVICE	A licence to operate a radio paging service for private use.	N/A	Kshs. 25,000
11	PUBLIC PAGING SERVICE	A licence to operate a radio paging service for public use (base station)	N/A	Kshs. 140,000
12	RADIO PRESS RECEPTION LICENCE	A licence to a radio station to receive press messages from stations transmitting multi-destination radio press messages.	Kshs. 10,000.	Kshs. 10,000.

13. Alarm Systems

The basic charge for each alarm unit is Kshs 1250, but the specific charges for each particular customer will be determined by the applicable charge grouping

14. Broadcasting Stations & fixed satellite earth stations

The fee payable for broadcasting stations and fixed satellite earth stations is commensurate with the power and the occupied bandwidth, and calculated on the basis of these parameters using the following formula:-

Fees per transmitter or carrier in Kenya shillings is :

$$= K1 \log_{10} [(P_{nom} \text{ (watts)}/25 \text{ watts}) + (K2 \log_{10} (P_{tot} - 1000)/25 \text{ watts})] \times [BW(\text{kHz})/8.5 \text{ kHz}] \times 574.10$$

Where:

- K1 = 1 for the first 1 kW of radiated carrier power
- K2 = 0.2 for additional power above 1 kW.
- 25 watts is the maximum power allowable for VHF base stations.
- 8.5 kHz is maximum allowable RF bandwidth for VHF base stations.
- P_{nom} is the nominal transmitter power.



- f) P_{tot} is the effective isotropically radiated power
- g) Bandwidth is the width, of frequency band that is just sufficient to ensure the transmission of information at a rate and with the quality acceptable under specific conditions

15. Terrestrial Links (Fixed Station Licence)

A licence to establish a radiocommunication station at a fixed location for carrying on a Fixed Radiocommunication Service to provide a public service.

This category of license is drawn for radio stations used to interconnect two specified fixed points. The fee payable for this licence is based on the occupied bandwidth, and is calculated using the following formula:-

The fee, F, per transmitter per location is:

$$F \text{ (Kshs)} = [\text{RF Bandwidth(kHz)} / 8.5 \text{ kHz}] \times [\text{Number of RF channels}] \times \text{Unit fee}$$

Where:

Unit fee = 574.10, as Kshs.574.10 is the unit spectrum fee for a 8.5 kHz band.

RF means Radio Frequency, and other parameters are as defined above. Transmitter shall include terminal and repeater stations. The formula is applicable to point-to-point links, microwave radio relay equipment, studio-to-transmitter links etc.

16. Cellular Networks and Fixed Wireless Access networks

Licence to establish a fixed radio station to operate a Mobile Cellular Radio service and Fixed Wireless Access.

16.1 Nationwide Spectrum Allocation Bandwidth

This is applicable to Cellular Mobile Operators that need exclusive use of a bandwidth countrywide. A standing fee is to be paid annually for exclusive use of the bandwidth, regardless of whether it is put into use in any part of the country or not. Annual Fee for Nationwide Spectrum Bandwidth Allocation:

$$F_n \text{ (KShs)} = [\text{Allocated bandwidth(kHz)} \times \text{Weighting factor} \times 1043.65] / 8.5 \text{ kHz}$$

Where:

Weighting factor to be used for Cellular Mobiles = 6

Unit fee = Kshs. 1043.65

16.2 Spectrum usage fees

This is based on actual usage of the spectrum and is applicable to all Public Telecommunications Operators.

Q 6 This is based on number of TRXs in the network.

$$\text{Fee } F_u \text{ (KShs.)} = 43,000 \times n$$

Where:

(i) n is the actual or equivalent number of 200 kHz duplex TRXs estimated to be in use at the end of the year in review

(ii) Annual Spectrum Management cost of one TRX is Kshs. 43,000

17. Trunked Network (Mobile Trunked Radio Licence)

A licence to operate a private trunked radio network. The fee, F per transmitter per location is:

$$F \text{ (Ksh)} = [\text{RF Bandwidth(kHz)} / 8.5 \text{ kHz}] \times (\text{number of cell sites}) \times 574.10$$



The parameters are as defined above.

18. Single channel radios

The fee, F per transmitter per location is:

$$F \text{ (Ksh)} = [\text{RF Bandwidth (kHz)} / 8.5 \text{ kHz}] \times 1043.65$$

19. The Commission is not bound to use any or all of the above formulas if in its opinion the service involved require technical or other considerations. Spectrum fees for radio equipment not covered in the above schedule shall be determined at the time of application.