Chapter 2

The context of ICTs in Africa: The cases of Kenya, Senegal, South Africa, and Uganda

New ICTs are now found on the development agenda of African countries, and strategies have been gradually implemented to integrate them into the development process. Many countries have initiated significant reforms in the telecommunications sector: privatizing companies, liberalizing and ending national monopolies in the sector. However, most countries do not appear to have an integrated vision of the policies implemented in this sector. The reforms introduced are still sectoral in nature, and the corollary of this vision is that an integrated approach, which would be more holistic in terms of policies designed to introduce and to appropriate ICTs for development, has not yet been adopted.

This chapter gives an overview of the institutional context of ICTs in four countries: Kenya, Senegal, South Africa, and Uganda. The findings presented in this study were obtained from projects executed in these countries. The analysis of the institutional framework revealed that these countries have been gradually developing regulatory frameworks and structures designed to promote new ICTs. However, the situations appear to vary from one country to another depending on the state of infrastructure, level of information that decision-makers have on ICTs, and the capacity of the country to attract foreign investments.

South Africa

South Africa is described as a leading country in telecommunications in Africa because it possesses 40% of all telephone lines on the continent. Like in most African countries, the level of growth in its telecommunications sector is linked to the significant changes in the institutional environment governing the sector. Since the enforcement of the Communication Act in 1996, there has been rapid growth in the telecom sector, which is still dominated by the State. Telkom Ltd., the once completely state-owned company, holds a *de facto* monopoly on fixed line telephone services. This monopoly was scheduled to end in May 2002. Continued development of this sector poses numerous challenges in South Africa, particularly for its fixed line operator, Telkom Ltd. Moreover, the sector is under growing pressure to meet the demand of the millions of South Africans who still do not have access to basic telecommunication services.

In March 1997, the State sold 30% of its shares to strategic partners most of whom are foreigners (United States Department of Commerce 1999). The sale yielded USD1.2 billion, which constituted the largest direct foreign investment ever in infrastructure development in South Africa. Partnership with the private sector enabled the country to extend coverage of its telephone network to new areas, to modernize the network, and to provide consumers with state-of-the-art services. Telkom's ambition with this strategy was to prepare for the inevitable competition and to meet the needs of an increasingly demanding customer. In this connection, Telkom launched a far-reaching network extension program with the creation of over 3 million additional lines (a 75% increase) between 1997 and 1999. In 2001, the number of fixed lines was estimated at 5,860,000 (Table 1).

In early 2000, the South African Telecommunications Regulation Agency (SATRA) and the Independent Broadcasting Authority (IBA) were merged into an independent entity called the Independent Communications Authority of South Africa (ICASA). ICASA was charged with regulating communications (structures and technologies) at the national level. The purpose of this merger was to clarify the situation in the telecommunications sector, which had been characterized by confusion due to the decentralization of decision-making centres.

Table 1: A few telecommunications indicators (South Africa)

Indicator	2000	2001
Fixed telephone lines	5,492,838	5,860,000*
Cellular subscribers	6,000,000	9,000,000
Teledensity (%)	11.2	12.2
Public telephones	173,064	—
Fixed telephone operators	1	1
Cellular telephone operators	2	3
Internet subscribers	370,000	2,853,453

Source: BMI-TechKnowledge, *Communications Technologies Handbook 2001* (2001).

Note: *Estimate.

This had caused a lack of clarity in the responsibilities of each agency (SATRA and IBA). The new agency reflected the desire for more consistency in the evolution of the telecommunications sector (technology convergence and higher number of operators). With the continuing evolution in the telecommunications sector, a second fixed line telephone operator is expected to arrive on the market when Telkom's monopoly ends in May 2002.

The cellular phone industry also recorded unprecedented growth in the country. Up to October 1997, there were 1.4 million cellular phone subscribers. One of the conditions imposed on cellular phone license holders then (Vodacom and MTN) was to invest also in community projects aimed at promoting universal access to telecommunication services at the national level. For example, Vodacom was to allocate, over a 4-year period, 22,000 lines in underprivileged areas; whereas, MTN was to create 7,500 points of access across the country. In addition, a third operating license was granted to a consortium of private cellular phone operators made up of groups of local business traders and a foreign partner. The number of subscribers to cellular telephony was estimated at 9 million in 2001 (Table 1). Typical costs for fixed line and cellular telephones are given in Table 2.

Table 2: Telecommunication service rates in South Africa (in ZAR per minute)

Operator	Services	Costs (Tax Included)
Telkom (fixed)	Local Calls	0.02
	0–50 km	0.13
	50–100 km	0.50
	>100 km	1.02
Vodacom (Cellular)	Access to network	95.00 per year
	From a cellular phone to another (within the Vodacom Network)	1.60 peak 0.75 off-peak
MTN (Cellular)	Local and national	1.60 peak 0.75 off-peak
	From a cellular phone to another (within the MTN Network)	1.66 peak 0.75 off-peak
	Cell phone call (from MTN Network to another)	1.87 peak 0.75 off-peak

Source: BMI-TechKnowledge (2001).

The information technology economy also witnessed considerable growth. Between 1997 and 1999, the share of information technologies increased by almost 12.5% annually. Between high value-added and high-yield sectors (such as network development and service and data integration systems), and low-yield sectors (such as computer manufacturing and distributing outfits), there are real opportunities in the information technology market.

Therefore, small- and medium-sized enterprises are gradually becoming the levers of this information economy. These enterprises are putting in place strategies to exploit the potential that exists in the telecommunications sector through the convergence of technology that favours both direct and indirect employment generation. The main trends in the information economy in South Africa are: the emergence of an economy increasingly based on the Internet; the development of e-commerce; and technologies of media convergence.

Kenya

In Kenya, the institutional framework of the telecommunications sector is still dominated by the State. However, the situation changed considerably with the promulgation of the 1998 Telecommunications Law, which became effective on 1 July 1999 and replaced the law governing the Kenya Post and Telecommunications Company. It provided for the institution of an independent organization, the Communications Commission of Kenya (CCK) to regulate all aspects of the sector, including: licensing, price regulation, defining equipment standards, managing radio frequencies and inter-connections, and ensuring compliance with general service obligations. The 1998 law also provided for the establishment of a National Communications Secretariat (NCS), lodged with the Ministry of Information and Telecommunication. The role of NCS is to advise the State on policies in the information and telecommunications sector.

Telkom Kenya Limited (TKL), which used to be part of the Kenya Post and Telecommunications Company (KPTC), is now one of the many structures set up to manage the networks. It was established in 1999 when KPTC was split into three distinct legal entities: TKL, PCK (Postal Corporation of Kenya), and CCK. TKL manages all activities related to telecommunications and PCK controls the licenses and runs the services previously provided by KPTC. Although TKL is now facing competition from newcomers in other sectors where it holds no monopoly, following market liberalization, it still seems to have some advantage over the others as a public telecommunications operator.

Following liberalization of the non-strategic telecommunications subsectors and the opening of value-added services in 1991, the number of private providers of telecommunication services increased considerably. There are now over 350 enterprises specializing in the sale, installation,

maintenance, and wiring of telephone hardware. Recent statistics available (June 2001) indicate that there are about 60 Internet and other related services providers in the country.

The development of the telecommunications infrastructure in Kenya was relatively fast. The country's telephone capacity has increased from 112,861 lines in 1981 to almost 400,000 lines in 2000. The average annual growth rate of telephone communications rose from 16.6% in 1981 to 24.3% in 1990, but fell to 15% later in 1997. Public telephone services recorded a spectacular development over this period, with public telephone boxes rising from 588 in 1981 to about 7,500 in 2001. The cellular phone market is now distributed between two private providers: Safaricom and Kencell Communications Limited (KCL). These two cellular operators had a total of about 200,000 subscribers in 2001 (Table 3).

Teledensity is about 0.16 fixed lines per hundred inhabitants in the rural area and 4 fixed lines per hundred inhabitants in the urban area. In terms of market penetration, about 4.2% of country households own a telephone line. However, this rate varies considerably: it is 0.1% in remote areas compared with 27.7% for the city of Nairobi. Most of the telephones available in urban areas belong to offices and not households. Typical costs for fixed and cellular telephones are given in Table 4.

Table 3: A few telecommunication indicators (Kenya)

Indicator	2000	2001
Fixed telephone lines	310,000	400,000*
Cellular subscribers	60,000	200,000
Teledensity (%)	1.0	1.2
Public telephones	7,084	7,500
Fixed telephone operators	1	1
Cellular telephone operators	2	2
Internet subscribers	55,000	75,000

Source: BMI-TechKnowledge (2001).

Note: *Estimate.

Table 4: Telecommunication service rates in Kenya (2002)

Operator	Service	Costs (USD)
Telkom Kenya Ltd (fixed)	Access to network	39.00
	Monthly fixed charge	3.28
	Local call/3 minutes	0.06
	National inter-urban calls (150 km)/minute	0.21
	International calls to USA/minute	2.20
	International link at 64kbps/month	8200.00
Safaricom Kenya Ltd (Pre-paid phone card)	Access to network	32.00
	From a cellular phone to another (within Safaricom Network)/minute	0.19
	Cellular phone (from Safaricom Network to another) /minute	0.31
	From a cellular phone to a fixed phone/minute	0.31
Kencell Commun. Ltd (Pre-paid phone card)	Access to network	37.00
	From a cellular phone to another (within Kencell Network)/minute	0.19
	Cellular phone (from Kencell Network to another)/minute	0.51
	From a cellular phone to a fixed phone/minute	0.32

Source: BMI-TechKnowledge (2001).

Uganda

In Uganda, the technological environment has also witnessed considerable growth as a result of changes at the global level – advances in information and communication technologies – and especially by local dynamics – such as the liberalization of the communication sector, which attracted private investments. Since the 1990s, there are more than 20 private FM radio stations in Uganda. Most of them can be received in and around Kampala, the capital, and in other big cities like Mbarara, Gulu, Kabale, and Soroti. According to the World Bank (1999) there were 126 radio receivers for every 1,000 inhabitants in 1996. With the opening of many FM radio stations, the number of radio receivers increased considerably. The area covered by all these stations is often very limited. Although the National Radio Broadcast (Radio Uganda) covers in principle the entire country, reception quality is poor. According to Achia (2000), Radio Uganda covers only 50% of the country. Other media such as television cover an even more limited area.

With Uganda Telecom Limited (UTL), most of the big cities in the country are connected to telephone networks. According to Kibombo and Kayambwe (2000), Uganda Post and Telecommunications, the single telephone operator in the country until 1997, had only 50,829 subscribers at the end of 2002. As Achia (2000) pointed out, the number of subscribers increased considerably as three new cellular phone operators arrived on the market (Celtel, MTN Uganda, and Mango, an affiliate of UTL). In July 2000, the country had over 60,000 fixed telephone lines and 122,000 subscribers to cellular phone services. Teledensity is estimated at about 0.85% Achia (2000), reflecting roughly a 300% increase over the past four years (Table 5).

Despite the fact that the area covered by the telephone network is expanding and that there is a considerable increase in the number of subscribers, the use of new ICTs such as the Internet and email is still very limited. As Achia (2000) observed, Internet and email started late in Uganda, the first batch of connections to the Internet was made during the Great Lakes crisis (1994–1996). In 2001, there was more than ten Internet service providers (ISPs) for a total of over 25,000 users, mainly through cybercafés in Kampala and some other cities of the country. Typical costs for telephones and cellular telephones are given in Table 6.

Table 5: A few telecommunications indicators (Uganda)

Indicator	2000	2001
Fixed telephone lines	60,000	100,000*
Cellular subscribers	120,000	-
Teledensity (%)	0.85	1
Public telephones	3,600	5,000
Fixed telephone operators	1	1
Cellular telephone operators	3	3
Internet subscribers	15,000	25,000

Source: BMI-TechKnowledge (2001).
Note: * Estimate

The few television stations found in the country (about six) are all based in Kampala. Not all of them are operational, and those that are functional only cover Kampala and its outskirts. The World Bank (1999) estimates that there were 26 television sets per 1,000 inhabitants in 1997.

Senegal

In Senegal, like in most African countries, the telecommunications environment has evolved considerably. Thanks to the existence of a relatively modern infrastructure that covers a large part of the country, the technological environment is favourable to the introduction of ICTs. Senegal quickly implemented a strategy for introducing ICTs in the country through the national telephone company, SONATEL. The network for data transmission (Senpac), launched in 1988, gave enterprises access to data banks and allowed them to make connect to foreign networks at a speed of up to 19,200 bps. Since 1997, the speed has increased to 64 kbps on the national and international lines, and the network is entirely digital.

The 30 departments (administrative subdivisions) of the country are connected to the central network through a digital transmission link, and all administrative centres in rural communities have access to telephones.

Table 6: Telecommunications service rates in Uganda (2000)

Operator	Services	Costs (USD)
Uganda Telecom Ltd (fixed line)	Access to network	11.33
	Monthly fixed charge	0.66
	Local calls/ 3 minutes	0.50
	National inter-urban calls (150 km)/minute	1.33
	International calls (to USA)/minute	1.53
MTN Uganda Ltd (Pre-paid phone card)	Access to network	25.57
	Monthly fixed charge	19.77
	Local calls/3 minutes	0.12
	National inter-urban calls/minute	0.14
	International calls to USA/minute	0.85
Celtel (Pre-paid phone card)	Access to network	28.00
	Monthly fixed charge	10.00
	From a cellular phone to another (within Celtel Network) /minute	0.23
	From a cell phone (from Kencell Network to another) /minute	0.23
	From a cell phone to a fixed phone/minute	0.32
	International calls (to USA)/minute	1.70

Source: BMI-TechKnowledge (2001).

Twenty-two of the thirty departments are connected to the central network by fibre optic cables. SONATEL has laid 2000 km of fibre optic cables across the country. In addition, 24 departments have access to an Integrated Services Digital Network (ISDN), and specialized international digital links at 64 kbps through satellite are possible. A digital cellular network (GSM standard) implemented by SONATEL (Alizé) and its competitor SENTEL, covers the country's main cities and road network, and is interconnected with foreign networks (e.g., Spain, Great Britain, and Italy).

The country has fourteen Internet service providers (ISPs). Twelve of these are based in Dakar and the other two in Saint-Louis and Ziguinchor. About 50 organizations are connected to the Internet through a specialized link to SONATEL, and the Senegal National Internet Centre (NIC) has registered 400 domain names. Since April 1999, an Internet Protocol network (IP), Sentranet, which is based on 155 mbps, 34 mbps and 2 mbps links, connects all the country's main cities and towns and allows the implementation of intranet and extranet services. A first license for satellite communication was delivered to Iridium, a US-based company which officially launched its activities in Senegal in early October 1999.

The number of telephone lines increased from 81,000 in 1998 to 200,000 in December 2000 (more than 100% between 1998 and 2000), then to 230,000 in May 2001. This corresponds to an urban teledensity of about 2.54% and a rural teledensity of 0.05%. The number of fixed telephone lines rose to 280,000 in July 2002 (OSIRIS 2002) (Table 7). However, telephone lines are not evenly distributed across the country. About 64% of the lines are concentrated in Dakar. The region of Thiès has 14,043 telephone lines, or 5% of the national network. Telephone service covers the entire region of Saint-Louis down to the rural districts and to few rural communities with 14,539 lines.

In November 2000, statistics provided by SONATEL indicated that 12,492 telephone centres were operating in Senegal. The 1999 census reported that about 20 cyber-cafés and 80 telephone centres were connected to the Internet. OSIRIS (2002) reported that there were 11,000 Internet subscribers in February 2001. In May 2001, there were 48 private and 104 public ISPs, with 56% of these in Dakar (Table 8). When the international bandwidth speed increases to 54 mbps (May 2002), Internet use is expected to grow.

Table 7: A few telecommunication Indicators (Senegal)

Fixed telephone lines	280,000 (April 2002)
Cellular subscribers	550,000 (July 2002)
Fixed telephone operators	1
Cellular telephone operators	2
International bandwidth	54 mbps
ISPs	14
Internet subscribers	About 11,000 (February 2001)
.sn registered domains	672 (May 2001)
Sites actually online	160 (May 2001)
Internet access points	>150
Customs duties payable on computers	Customs duties 0+ 5% customs stamp
VAT payable on computers	18%
VAT payable on communications	18%

Source: OSIRIS (2002).

Following the application of law number 98-36 (17 April 1998), computer hardware and telematic equipment were exempted from customs duties. However, peripherals (e.g., printers, scanners, and CD-ROM drives) and electric equipment were liable to a 55% tax. In addition, locally manufactured capital goods for data processing and telematic equipment were subject to a 25% tax.

The sector benefited from heavy investments from the 1980s onward. The annual average investment amounted to 18 billion FCFA. The sector contributed directly, in 1996, to raising the GDP by 2.6%, and as a support to production, it had a positive effect on all other national economic activities. It also contributed to employment generation: 10,000 jobs were created between 1992 and 1998, especially within telecentres.

For its Internet related services, SONATEL applies "all taxes included" (ATI) rates to its customers:

- Connecting to the network costs 30,000 FCFA.
- Monthly subscription with unlimited Internet connection is 10,000 FCFA.
- Telephone connection (local rate) is set at 60 FCFA for every 2 minutes at peak periods and every 4 minutes at off-peak periods.

SONATEL is gradually developing products targeted at specific users. This is how the flat rate Internet service charge was launched in May 2002. It allows a customer to benefit from 10 hours of connection per month regardless of connection time at a monthly subscription cost of 10,000 FCFA (ATI). The fixed charge per hour is therefore 1,000 FCFA (ATI). With this service, SONATEL plans to attract more Internet users, while allowing them more surfing time. This service is targeted at Internet users who surf during daytime, professionals wishing to download large documents, and students.

Not everyone has access to telecommunication services due to the underdeveloped infrastructure in rural areas and to the low-purchasing power of some segments of the populations. It is important to note, however, that in almost all village communities, there is a communal use of the telephone even when it is privately owned. Family linkages and community life are such that an individual who cannot afford a household telephone line can receive telephone calls elsewhere in the communal. SONATEL is the major operator in the telecommunication sector. It has the monopoly in the fixed lines network. SONATEL is also the first operator, followed by SENTEL, in the GSM network. Apart from these two major Internet service providers, namely SONATEL (Telecomplus) and SENTEL, there are about ten other service providers.

Despite some progress in infrastructure development and rates, Senegal has not yet developed a systematic policy on ICTs. Only a few initiatives by the State, SONATEL, NGOs, and some development institutions have been reported. The State has not yet put in place a consistent policy framework to integrate new ICTs into the overall macro-economic framework.

Table 8: Private and public Internet Service Providers in Senegal

Private	Public
Métissacana	UCAD
AFRICANET	AUPELF-UREF
ENDA	Prime Minister's Office
Arc Informatique	Gaston Berger University
Cyber Business Centre	Trade Point Senegal (TPS)
Point Net	
WAIT	
Zentel	
Sud Informatique	

Source: OSIRIS (2002).

Conclusion

It appears that the contexts and institutional frameworks within these countries are changing rapidly, which reflects their commitment to the information society. Many reforms have been introduced and measures have been taken by policy makers and telecommunication operators. Despite these reforms, telecommunication costs are still relatively high, particularly in the provinces; whereas, international communications costs are relatively cheaper. This is evidence that telecommunication policies still favour international rather than national communications. Furthermore, although the foundations of integration into the information society have been laid, integration into the information economy remains the responsibility of the policy makers and the different development actors. In fact, in these countries, a systematic and consistent policy to integrate ICTs into all aspects of economic and social life is yet to be formulated. The development of the telecommunication sector is far from being integrated into the overall macroeconomic framework. The economic fabric of these countries continues to reflect a sectoral approach to telecommunication policy.