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# The Current Status of Information and Communications Technologies in Africa

## An Overview

The use of Information and Communications Technologies (ICTs) has grown relatively rapidly in most urban areas in Africa. Five years ago, only a handful of countries had local Internet access; now it is available in every capital city. In the same period, more mobile cell phones were deployed on the continent than the number of fixed lines laid in the last century. Hundreds of new local and community radio stations have been licensed, and satellite TV is now also widely available.

However, the digital divide is still at its most extreme in Africa, where the use of ICTs is still at a very early stage of development compared to other regions of the world. Of the approximately 816 million people in Africa in 2001, it is estimated that:

- 1 in 4 have a radio (205m),
- 1 in 13 have a TV (62m),
- 1 in 35 have a mobile phone (24m),
- 1 in 40 have a fixed line (20m),
- 1 in 130 have a PC (5.9m),
- 1 in 160 use the Internet (5m), and
- 1 in 400 have pay-TV(2m)<sup>1</sup>

Surveys show that sub-Saharan Africa, along with South Asia, remains at the bottom of the list of developing regions in Internet usage, with South Asian Internet use growing more rapidly (see Table 3–1).

**Table 3–1: Internet Users as a percentage of the Total Population**

Region	1998	2000
United States	26.3	54.3
High-income OECD (excl.US)	6.9	28.2
Latin America and the Caribbean	0.8	3.2
East Asia and the Pacific	0.5	2.3
Eastern Europe and CIS	0.8	3.9
Arab States	0.2	0.6
Sub-Saharan Africa	0.1	0.4
South Asia	0.04	0.4
World	2.4	6.7

Source: NUA Publishing ([www.nua.ie](http://www.nua.ie))

**Table 3–2: African Internet Statistics for 2002**

Country	Dialup Internet Subscribers	International Outgoing Bandwidth in Kbps	Population in Millions 2000	GDP/Capita in USD 1999	Cities with POPs (Points of Presence)
Africa	1492535	1409100	769,66	1207,5	283
Algeria	45000	12000	30,08	1442	1
Angola	16000	5126	12,09	1684	3
Benin	4500	2100	5,78	374	1
Botswana	20000	14000	1,57	3252	11
Burkina Faso	4700	256	11,31	199	1
Burundi	300	512	6,46	159	4
Cameroon	7000	9000	14,31	617	2
Cape Verde	2456	1024	0,41	876	1
Central African Republic	700	64	3,48	276	1
Chad	900	64	7,27	149	2

Country	Dialup Internet Subscribers	International Outgoing Bandwidth in Kbps	Population in Millions 2000	GDP/Capita in USD 1999	Cities with POPs (Points of Presence)
Comoros	491	64	0,66	382	7
Congo	200	128	2,79	833	5
Cote D'ivoire	13000	6000	16,2	767	13
D.R Congo	4500	1024	49,3	400	1
Djibouti	850	2048	0,62	846	6
Egypt	100000	535000	65,98	1195	1
E. Guinea	200	64	0,43	668	1
Eritrea	2500	512	3,58	161	1
Ethiopia	6500	8200	59,65	103	5
Gabon	5000	16384	1,17	5121	7
Gambia	3000	1024	1,23	284	14
Ghana	15000	4096	19,16	372	3
Guinea	4000	128	7,71	677	10
Guinea-Bissau	250	640	1,13	245	4
Kenya	35000	28000	29,01	347	2
Lesotho	750	784	2,06	547	2
Liberia	250	128	2,67	1000	1
Libyan Arab Jamahiriya	4000	2048	5,98	6579	1
Madagascar	10000	2750	16,36	224	1
Malawi	3500	2300	10,75	242	2
Mali	6000	4096	10,69	230	1
Mauritania	960	384	2,53	455	1
Mauritius	35000	4096	1,15	3661	1
Morocco	80000	200000	27,87	1218	1
Mozambique	6000	2048	18,88	86	11
Namibia	15000	6144	1,66	2051	100
Niger	2000	384	10,08	161	1
Nigeria	60000	15000	113,5	551	2
Reunion	47000	576	0,68	9270	4
Rwanda	2700	1300	6,6	317	1
Sao Tome & Principe	378	64	0,14	358	1
Senegal	15000	48000	10	518	4
Seychelles	3000	4098	0,08	6995	3
Sierra Leone	1000	512	4,57	209	1
Somalia	250	768	10,63	169	2
South Africa	750000	342000	44,31	2979	2
Sudan	9000	10000	28,29	364	7
Swaziland	5000	256	0,95	1388	1
Tanzania	30000	12000	32,1	244	4
Togo	1700	1536	4,4	324	9
Tunisia	70000	75000	9,34	2144	1
Uganda	10000	9250	20,55	317	5
Zambia	7000	5120	8,78	463	1
Zimbabwe	25000	11000	12,68	712	4

The divide between urban and rural areas is even greater. Most of the services and users are concentrated in the towns, while the majority of Africans are scattered in small communities spread-out across vast rural areas. Very limited diffusion of the telecommunications networks into rural areas (often over 75 percent of the country's telephone lines are concentrated in the capital city) and irregular or non-existent electricity supplies are a common feature and a major barrier to use of ICTs, especially outside the major towns. Furthermore, most tax regimes still treat computers and cell phones as luxury items, which make these almost exclusively imported items all the more expensive and even less obtainable by the majority. Although there have been notable efforts in some countries to reduce duties on computers, communications equipment and peripherals are still often charged at higher rates.

Another systematic factor is that the road, rail and air transport networks are limited, costly to use and often in poor condition, resulting in barriers to the increased movement of people and goods, needed both to implement and support a pervasive ICT infrastructure, but also for the increased economic and social activity which would be stimulated through greater use of ICTs. Congested border posts and visa requirements add to these difficulties.

Perhaps an even greater problem is that the brain drain and generally low levels of education and literacy amongst the population have created a scarcity of skills and expertise (at all levels, from policy making down to end-user). Rural areas in particular suffer with even more limited human resources. Along with the very low pay scales in the African civil service, this is a chronic problem for governments and NGOs who are continually losing their brightest and most experienced to the private sector. This situation is not unique to Africa or other developing countries, but is also being faced by the developed world where infrastructure demands have outpaced the supply of experienced staff. However, this is simply exacerbating the situation in Africa, because experienced technicians, even from the local private sector, are able to find much higher-paying jobs in Europe and North America.

Finally, the general business climate for increased investment in Africa, acutely needed for the ICT sector, has suffered from the well-known problems of small markets divided by arbitrary borders, non-transparent and time-consuming procedures, limited opportunities (due largely to the historic pattern of monopolies and high levels of state control), scarce local capital, currency instability, exchange controls and inflation.

However, these rather discouraging observations do not give the full picture.

The ICT landscape has changed dramatically over the last few years, and within the continent there are many pockets of significant developments:

- One of the early and still most important impacts has been in the use of e-mail to reduce the cost and to increase the speed and duration of international communications. This has allowed many people and organisations to improve management, obtain resources and generally achieve much better communications with their family, friends, colleagues and partners around the world, especially in neighbouring countries.
- Although the relatively low level of ICT penetration amongst the public in Africa has so far limited the use of ICTs for governance purposes, many administrations are beginning to streamline their operations and improve internal efficiencies by adopting ICTs. For example, the government of Lesotho recently declared that all announcements for cabinet and committee meetings would be made only by e-mail. Administrations, such as those in South Africa, Algeria and Tunisia, now provide immediate global access to tenders via the web. Health and education departments in many countries are beginning to electronically transmit operational MIS statistics such as disease occurrences and pupil registrations. In South Africa, the results of blood tests are being transmitted to remote clinics that are off the telecom grid via mobile telephone text messages. As

greater numbers of public officials are now gaining low-cost access to the web, the vast information resources available via the Internet are becoming increasingly important tools in ensuring informed decision-making.

- Lack of timely information is well known to be the largest constraint on small-scale agricultural production and natural resource exploitation—a sector that provides livelihood for 70–80 percent of Africa’s population. However, thus far the potential for ICTs to impact this sector has not yet received much attention. Local farmers or miners often cannot obtain up-to-date market information so that travelling traders can negotiate most favourable prices. With improved information systems they would be able to obtain much better market-related prices. Also, farmer and fishing organisations would be able to band together to sell their produce directly to distributors, and negotiate for better prices on inputs.
- The scalability of ICTs lends them to adoption by small and medium size enterprises, which can provide much needed local communication services. Furthermore, the ‘death of distance’ provided by the Internet has meant that there are even greater opportunities to be found in exploiting the larger information and communication-based economies of the developed countries. For example:
  - A local Internet service provider in Morocco has a contract to digitise the National Library of France’s paper archives. They are scanned in France, sent over by satellite link where operators in Rabat edit them.
  - In Togo and Mauritius, call centres now provide telephone support services for international companies with customers in Europe and North America. Callers do not realise they are calling Mauritius or Togo; they pick up the phone, dial a local number and are routed through to one of these countries where the operators there provide the support that they require.
  - In Cape Verde, ‘virtual security guards’ have found jobs using the Internet to monitor web cams in office parks on the East Coast of

the US. They notify local rapid response teams there if they see anything amiss.

- Many African craft makers are selling their wares on the World Wide Web, supported by NGOs, such as PeopleLink.

While these developments are encouraging, unfortunately there are rather too few of these examples, largely because of the low level of penetration of the infrastructure and supporting environment necessary to effectively use ICTs in Africa.

## Broadcasting

Radio is still by far the most dominant mass medium in Africa, with ownership of radio sets being far higher than for any other electronic device. In 1997, UNESCO estimated radio ownership in Africa at close to 170 million, with a 4 percent per annum growth rate. This would put 2002 ownership slightly over 200 million radio sets, compared with only 62 million televisions.

It is estimated that over 60 percent of the population of the sub-continent are reached by existing radio transmitter networks, while national television coverage is largely confined to major towns. Some countries still do not have their own national television broadcaster; even a relatively well-developed country, such as Botswana, has only this year launched a national TV broadcaster.

An increasing number of commercial stations are being established following liberalisation of the sector in many countries. However, the news and information output of these commercial stations is often either a re-broadcast of the national (state-controlled) broadcaster's news, or that of an international broadcaster or news agency. Local news and current affairs, especially those focusing on events outside of the capital, is rarely broadcast. Also, community broadcasting has been slow to take off in the region. Genuine community broadcasters are scarce. Nevertheless, Ghana, South Africa and Uganda have seen notable numbers of new community radio licensees.

Satellite-based broadcasting has in particular seen major activity on the continent in the last few years. In 1995, South African company M-Net launched the world's first digital direct-to-home subscriber satellite service, called DSTV. Subscribers have access to over 30 video channels and 40 audio programmes on C-band to the whole of Africa and on lower-cost KU-band to Southern Africa, south of Lusaka. Last year South Africa's public broadcaster, SABC, launched Channel Africa, a new satellite-based news and entertainment channel aimed at the continent.

The US-based company WorldSpace launched a digital radio broadcasting satellite called AfriStar in late 1998. Broadcasters in Europe, the US and in Egypt, Burkina Faso, Kenya, Mali, Senegal and South Africa have so far signed up to provide content. WorldSpace ultimately aims to make a suite of over 80 audio channels available to anyone on the continent who can afford the \$50 for the special digital radio, which is also able to receive data services, including the transmission of web pages.

## Telecommunications

Changes in the telecommunications sector in Africa have perhaps been even more marked than in broadcasting. A substantial increase in the rate of expansion and modernisation of fixed networks is taking place, along with the explosion of mobile networks.

The number of main lines grew about 9 percent a year between 1995 and 2001. This growth, however, is off a very low base. The overall fixed line teledensity, as of 2001, is still only about one per 130 inhabitants in sub-Saharan Africa (excluding South Africa), and taking into account population growth, the effective annual increase in lines is only 6 percent. Also, most of the existing telecom infrastructure cannot reach the bulk of the population—50 percent of the available lines are concentrated in the capital cities, where only about 10 percent of the population live. In over 15 countries in Africa, including Cote d'Ivoire, Ghana and Uganda, over 70 percent of the lines are still located in the largest city.<sup>2</sup>

However, the situation is not quite as bad as it would appear due to the penetration of mobile networks, where subscribers have now surpassed

fixed-line users in most countries, thus underlining the pent-up demand for basic voice services. Due to the low-cost and long range of the cellular base stations, many rural areas have also been covered. On the other hand, the high cost of mobile usage (about USD\$0.50/minute, on average) makes it too expensive for regular local calls or Internet access.

Overall, the number of fixed lines increased from 12.5 million to 21 million across Africa between 1995 and 2001. North Africa had 11.4 million of these and South Africa had another 5 million lines, leaving only 4.6 million for the rest of the continent. Thus, while sub-Saharan Africa contains about 10 percent of the world's population (626 million), it has only 0.2 percent of the world's 1 billion telephone lines. Comparing this to all of the low-income countries (which house 50 percent of the world's population and 10 percent of the telephone lines), the penetration of phone lines on the sub-continent is about 5 times worse than the 'average' low-income country.

Even if telecom infrastructure is beginning to spread, domestic use has, until recently, been largely confined to the small proportion of the population that can afford their own telephone. The cost of renting a connection averages almost 20 percent of GDP per capita, as compared to a world average of 9 percent, and only 1 percent in high-income countries.<sup>3</sup> Despite these high charges relative to income levels, the number of public telephones is still much lower than elsewhere. In 2001, the International Telecommunication Union reported about 350,000 in the whole continent, 75,000 in sub-Saharan Africa, or about 1 for every 8,500 people, compared to a world average of 1 to 500 and a high-income average of 1 to 200.

Public Telephone Operators (PTOs) in countries, such as Botswana and South Africa, now provide a 'virtual phone' alternative. Subscribers are issued their own unique phone number and pay a small rental for a voice mailbox, from which they can retrieve their messages from any telephone. A pager can also be tied to the system to immediately inform the subscriber that a message is waiting.

However, an increasing number of operators in Africa are now passing over the responsibility for maintaining public telephones to the

private sector, which has seen a rapid growth of public ‘phone shops’ and ‘telecentres’ in many countries. The best-known success story is in Senegal, where there are over 10,000 commercially-run public phone bureaus, employing over 15,000 people and generating over 30 percent of the entire network’s revenues. While most of these are in urban areas, a growing number are being established in more remote locations. Some are now also serving needs for providing Internet access and other more advanced ICT services to the public.

### ICT Hardware and Software

Most recent estimates for the number of personal computers in Africa put the total at about 7.5 million for 2001—an average of about 1 per 100 people. But due to limited capacities for industry monitoring and the large numbers of machines smuggled in to avoid duties, these figures are notoriously unreliable. Some studies, such as the ACCT (1995) survey, indicate that official figures may be an overestimate by between 3 and 6 times, making the average closer to 1 per 500 people. Account should also be taken of the number of users sharing a single computer, which is much greater than in the more developed regions of the world.

Under-utilisation of existing computer resources is also common, often caused by the preponderance of many stand-alone computers in the same office with no use of Local Area Networks (LANs). Often an office may have many machines, but only one with a modem connected to the Internet. This usually means that there is competition for the machine and a shared e-mail account, which is not conducive to effective use of the Internet.

More generally, the high cost of computer hardware is a major issue as this is often the largest component of their startup budgets. This situation is likely to become an even more critical bottleneck now that low-cost bandwidth is becoming increasingly available, such as through Ku-Band VSAT and spread spectrum wireless (WiFi) links. As a result, increasing attention is being directed toward the use of recycled PCs,

thin clients, set-top boxes, or other low-cost Internet ‘appliances’, and Open Source (free) software for these situations.

**Table 3–3: Telecommunications Usage 2001**

Country Year 2001	Fixed lines 000s	Penetration % Population	Mobile Users 000s	Penetration % Population	Public phones 000s
Algeria	1880	6.04	100	0.32	5
Angola	80	0.59	86.5	0.64	0.27
Benin	59.3	0.92	125	1.94	0.51
Botswana	150.3	9.27	278	16.65	3
Burkina Faso	57.6	0.47	75	0.61	1.44
Burundi	20	0.29	20	0.29	0.08
Cameroon	101.4	0.67	310	2.04	6.55
Cape Verde	62.3	14.27	31.5	7.21	0.39
Central Africa	10	0.26	11	0.29	0.09
Chad	11	0.14	22	0.27	0.06
Comoros	8.9	1.22	–	–	0.17
Congo	22	0.71	150	4.82	–
Côte d’Ivoire	293.6	1.8	728.5	4.46	1.93
Djibouti	9.9	1.54	150	0.29	0.42
DR Congo	20	0.04	3	0.47	
Egypt	6650	10.3	2793.8	4.33	21.99
Eq. Guinea	6.9	1.47	15	3.19	–
Eritrea	32	0.84	–	–	0.42
Ethiopia	310	0.48	27.5	0.04	1.56
Gabon	37.2	2.95	258.1	20.45	0.83
Gambia	35	2.62	43	3.22	0.68
Ghana	242.1	1.16	193.8	0.93	3.18
Guinea	25.5	0.32	55.7	0.69	0.85
Guinea Bissau	12	0.98	–	–	0.2
Kenya	313.1	1	500	1.6	9.03
Lesotho	22.2	1.03	33	1.53	0.37
Liberia	6.7	–	–	–	–
Libya	610	10.93	50	0.9	0.45
Madagascar	58.4	0.36	147.5	0.9	0.46
Malawi	54.1	0.47	55.7	0.48	0.54
Mali	49.9	0.43	45.3	0.39	2.37
Mauritania	19	0.72	–	–	0.89
Mauritius	306.8	25.56	300	25	2.92
Mayotte	10	6.98	–	–	–
Morocco	1193.3	3.92	4771.7	15.68	46.84
Mozambique	89.4	0.44	169.9	0.84	1.86

Country Year 2001	Fixed lines 000s	Penetration % Population	Mobile Users 000s	Penetration % Population	Public phones 000s
Namibia	117.4	6.57	100	5.59	5.3
Niger	21.7	0.19	1.8	0.02	0.06
Nigeria	500	0.43	330	0.28	1.6
Réunion	268.5	—	—	—	—
Rwanda	21.5	0.27	65	0.82	0.4
SaoTomé	5.4	3.63	—	—	0.08
Senegal	237.2	2.45	390.8	4.04	13.49
Seychelles	21.4	26.73	44.1	55.15	0.22
Sierra Leone	22.7	0.47	26.9	0.55	0.31
Somalia	15	—	—	—	—
South Africa	4969	11.35	9197	21	178.11
Sudan	453	1.42	105	0.33	5.25
Swaziland	32	3.14	66	6.47	0.83
Tanzania	148.5	0.41	427	1.19	0.72
Togo	48.1	1.03	95	2.04	0.16
Tunisia	1056.2	10.89	389.2	4.01	19.31
Uganda	63.7	0.28	322.7	1.43	1.38
Zambia	85.4	0.8	98.3	0.92	0.87
Zimbabwe	253.7	1.86	328.7	2.41	3.23
<b>TOTAL</b>	<b>21210.3</b>	<b>3.52</b>	<b>23545.2</b>	<b>2.95</b>	<b>346.67</b>

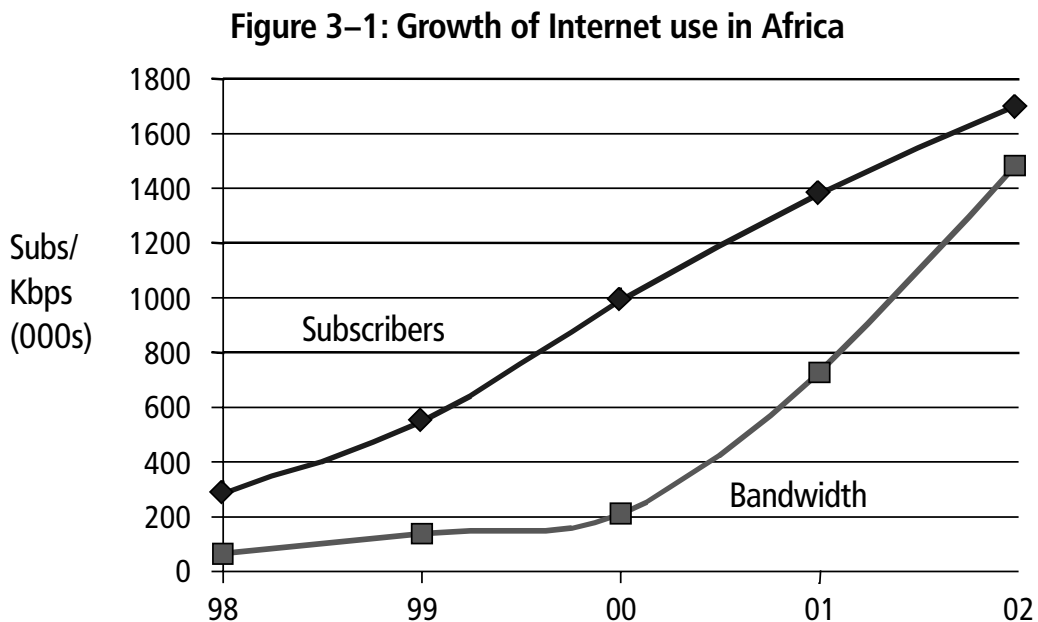
## The Internet

The use of the Internet is a good indicator of the availability of ICTs, as it requires the integration of many individual components of ICTs—computers, telecommunications infrastructure—and the skills to use them. As the graph below shows, both the number of Internet users and the amount of international bandwidth are still growing strongly across the continent.

In Africa, the pattern of Internet diffusion has been similar to that of the mobile telephone networks. Although not quite as widespread, the Internet preceded the mobile phone explosion, having had greatest impact at the top end of business and in wealthy families, primarily in the major urban areas. Ironically, the non-profit sector—the academic institutions and the NGOs—pioneered the use of the Internet in the early 1990s, fueled by their need for low-cost international communications. It

was subsequently taken up by private Internet Service Providers (ISPs) and most of the national telecom operators.

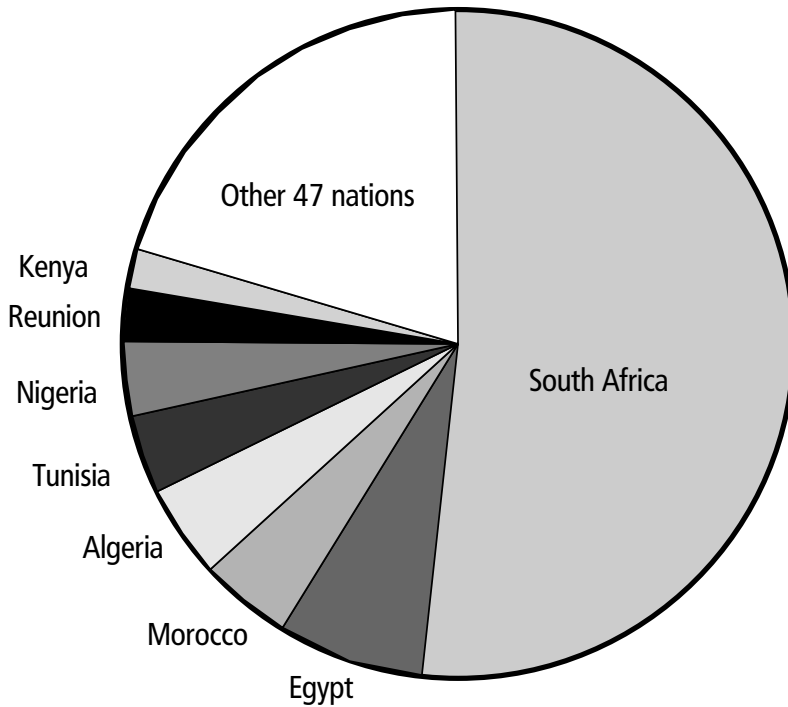
Due to the large number of shared accounts, along with the relatively high and rapidly growing use of public access services, such as telecentres and cyber cafes, it is difficult to measure the total number of Internet users. Although the number of dialup subscriber accounts is readily available, these figures are only a partial gauge of the size of the Internet sector and should be looked at along with other factors, such as the quantity of international traffic each country generates.



The rates of growth seen in the 1990s have slowed in most countries, because the bulk of the users who can afford a computer and telephone have already obtained connections. As of mid-2002, the number of dialup Internet subscribers was close to 1.7 million, 20 percent up from 2001, mainly bolstered by growth in a few countries such as Nigeria. Of these subscribers, North Africa and South Africa are responsible for about 1.2 million, leaving about 500,000 for the remaining 49 sub-Saharan African countries. If we assume that each computer with an Internet or email connection supports a range of three to five users, this puts current estimates of the number of African Internet users at about 5 to 8 million. About 1.5–2.5 million of the users are outside North and

South Africa, or about 1 user for every 250 to 400 people. This compares with a world average of about 1 user for every 15 people, and a North American and European average of about 1 user for every 2 persons.

**Figure 3–2: Countries with more than 10 000 Internet subscribers**



Shared or public access and the use of corporate networks are continuing to grow at greater rates than the number of dialup users. This can be seen in the deployment of international Internet bandwidth, which is still expanding substantially—up over 100 percent, from 700 Mbps of available outgoing bandwidth in 2001 to 1500 Mbps in 2002. However, this is still slower growth than the rest of the world, which averaged 174 percent in 2001. No studies have been made in Africa of the number of rural versus urban users, but it is safe to say that users in the cities and towns vastly outnumber rural users.

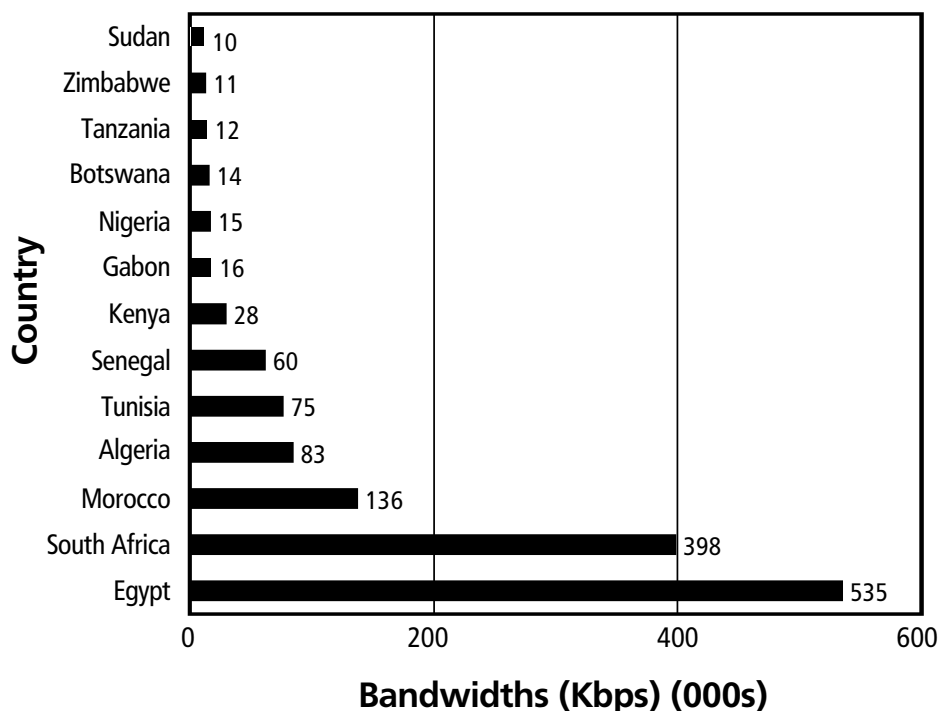
Although many African countries now have points of presence (POPs) in some of the secondary towns (about 280 different locations across the continent), most rural users have to make a costly long distance call to connect to the Internet. However, some countries have now instituted local call charges for all calls to the Internet regardless

of distance, which greatly reduces costs for those in remote areas and greatly increases accessibility and the viability of Internet services provided by rural telecentres in these nations. Thus far, 19 countries have adopted this strategy. They are Benin, Burkina Faso, Cape Verde, Chad, Ethiopia, Gabon, Malawi, Mali, Mauritius, Mauritania, Morocco, Namibia, Niger, Senegal, South Africa, Togo, Tunisia, Uganda, and Zimbabwe. Interestingly, the Seychelles has gone a step further to encourage use, and tariffs for calls to the Internet are charged at a 50 percent lower rate than normal local voice calls.

Currently, the average total cost of using a local dialup Internet account for 20 hours a month in Africa is about USD 60 per month (usage fees and local call telephone time included, but not telephone line rental). ISP subscription charges vary greatly (between USD 10 and USD 80 a month) and largely reflect the different levels of maturity of the markets, the varying tariff policies of the telecom operators, the different regulations on private wireless data services and access to international telecommunications bandwidth.

According to the Organisation for Economic Cooperation and Development (OECD), 20 hours of Internet access in the United States cost USD 22 per month in 2000, including telephone charges. Although European costs were higher (USD 33 in Germany, USD 39 across the European Union), these countries have per capita incomes that are at least 10 times greater than the African average. In fact, USD 60 per month is higher than the average African monthly salary. This limits individual use of the Internet, creating demand for public access facilities—the cost of a single account shared amongst all of the customers who would not otherwise be able to afford access.

Similarly, due to the relatively small number of people who can afford a phone line, let alone a computer, telecentre services are already very much in demand in the urban areas. This is most evident in countries, such as Nigeria and Senegal, where telecom operators have relied on the private sector to provide public phone services. Also, in most other major urban areas across Africa, there is a rapidly growing number of kiosks, cybercafes, and other forms of public Internet access.

**Figure 3–3: Countries with more than 5Mbps International Bandwidth**

In response to the high cost of Internet services and the slow speed of web access, and also because of the overriding importance of electronic mail, lower-cost email-only services are continuing to attract subscribers. Due to the relatively high cost of local electronic mailbox services from African ISPs, a large proportion of African email users use the free Web-based services such as Hotmail, Yahoo, or Excite, most of which are in the United States. These services can be more costly and slower than using standard e-mail software, because extra online time is needed to maintain the connection to the remote site. Unfortunately for the ISPs, these services can also use up scarce international bandwidth. In response to these issues and the growing use of shared accounts, some African ISPs, such as AfricaOnline and MailAfrica, have set up their own low-cost web-based email services.

In the area of Internet-based content and applications, the African web-space continues to expand, albeit at a rather slow rate, and there are still rather too few relevant applications for the average African user. Almost all countries now have some form of local or internationally hosted web server, unofficially or officially representing the country with varying degrees of comprehensiveness.

Although there are a few notable official general government websites, such as those of Angola, Egypt, Gabon, Lesotho, Mauritius, Morocco, Mozambique, Senegal, South Africa, Togo, Tunisia, and Zambia, there is as yet little discernible government use of the Internet for existing administrative purposes. Web presence is higher in some sectors, particularly those involved in tourism and foreign investment, and these often have more mature sites that are aimed at developing an international market presence, although these are of little interest for most potential users.

Outside South Africa, there are generally few organisations that are using the web to deliver significant quantities of information or to carry out transactions with their user-base. Although large numbers of organisations now have a “brochure” website with basic descriptive and contact information, very few actually use the Internet for real business activities. This is explained by the limited number of local people that have access to the Internet (and thus the limited importance of a web presence to the institution), the lack of credit cards, the limited skills available for digitising and coding pages, and the high costs of local web-hosting services.

Perhaps of interest to those in rural areas with little access to timely information, the African news media are now relatively well represented on the web. In 1999, the Columbia University African Studies Department identified over 120 different newspapers and news magazines that were available on the Internet, of which over 60 percent were published in about half of the countries (23) on the subcontinent. Those most well represented in this area are again those with more advanced Internet sectors—Côte d’Ivoire, Egypt, Ghana, Kenya, Senegal, South Africa, Tanzania, Zambia, and Zimbabwe. There are also efforts to develop local content and host daily newspapers by the ISP AfricaOnline, which has offices in eight countries.

Universal smart card and e-commerce policies are also gaining attention in a number of countries. Mauritius and South Africa are looking at a single smart card that will allow the public to hold their driver’s license, small amounts of funds that can be used for small transactions, and their health and other social security information. Harmonisation

of e-commerce policies is also on the agenda in a number of countries, so that, for example, electronic evidence is upheld in court and can be used for ensuring that e-commerce is correctly carried out.

## The Outlook for the Future

Efforts to promote more universal access to ICTs in Africa have been discussed among high-level policymakers since the early 1990s. Official recognition was given to the issue in 1996 when the Conference of African Ministers of Social and Economic Planning requested the UN Economic Commission for Africa to set up a “high-level working group” to chart Africa’s path onto the global information highways. An expert group developed a framework document entitled the African Information Society Initiative (AISI), which was adopted by all of Africa’s Planning Ministers (*see Chapter Eight*).

AISI called for the formulation and development of a National Information and Communication Infrastructure (NICI) plan that would be driven by national development priorities in every African country. AISI also proposed cooperation among African countries to share experiences. Since then, Communications Ministers from over 40 African countries have provided high-level endorsement for AISI, along with specific telecommunications development policies encapsulated in their common vision document, *African Connection*, which was published in 2001 (<http://www.africanconnection.org>). Most countries have begun the process for developing NICI plans, and 16 countries have already finalised their strategies.<sup>4</sup> High in the area of priorities in many of these plans is improvement of access to ICTs in rural areas through the use of telecentres that exploit the convergence of technologies to provide cost-effective services in under-serviced and remote locations.

The impact of much of these efforts will depend largely on the extent of improvements to the telecommunication infrastructure on which use of ICTs depends. Liberalisation of the telecommunication

sector and the introduction of competition are seen as key to driving down prices and increasing the quality of service. However, while some countries have begun to open up their markets, there is a general sense that not enough is being done.

While there is a variety of efforts underway to restructure national telecom operations and build better national and international infrastructures, many of these lack a cohesive approach built on a clear understanding of the dynamics and impact of the fast-paced and constantly changing communications technologies environment. Models of infrastructure provision are likely to be quite different to those employed in developed countries because of the generally low income levels, limited formal business activity and the much greater importance of the rural population, where up to 70–80 percent of the people may live outside urban areas. In addressing the low-income factor, innovative models may be necessary, which focus on shared infrastructure, public access facilities and the use of intermediaries to interact with the public who may not have functional literacy, let alone be computer literate.

The high costs of connectivity in remote areas will hopefully be addressed by the large number of low-cost two-way Ku-band VSAT satellite-based data services that have been launched this year by companies, such as Afsat and Web-Sat. These services will be a major boom to rural users, making use of the new high-powered satellite footprints now covering Africa, similar to services currently available in the United States and Europe. Costs are about USD 1500–3000 for the VSAT equipment and USD 200–400 per month for “better than dialup” speeds (i.e. 56 Kbps outgoing and 200–400 Kbps incoming). These are expected to see rapid uptake wherever regulations allow. Unfortunately, most countries in Africa either charge excessively high license fees or do not allow these services at all, as they compete with the state-run telecom operator.

The African Union and their programme, the New Partnership for African Development (NEPAD), supported by the international

community, are addressing many of the systemic issues. This multi-faceted effort is aimed at accelerating Africa's development and should as a result help to create an environment more conducive to the rapid adoption of ICTs.

**Table 3–4: Continental Connectivity Indicators**

Country	Countries with only one Public Access ISP	Countries with Local Dialup Internet Access Nationwide	Countries with Advanced Data Services
Benin		✗	
Botswana			✗
Burkina Faso	✗	✗	
Cape Verde		✗	
Central African Republic	✗		
Congo	✗		
Djibouti	✗		
Egypt			✗
Ethiopia	✗	✗	
Gabon		✗	
Ghana			✗
Kenya			✗
Malawi		✗	
Mali		✗	
Mauritius	✗	✗	✗
Mauritania		✗	
Morocco		✗	✗
Namibia		✗	
Niger	✗	✗	
Senegal		✗	✗
South Africa			✗
Seychelles			✗
Tchad		✗	
Togo		✗	
Tunisia		✗	✗
Uganda			✗
Zimbabwe		✗	

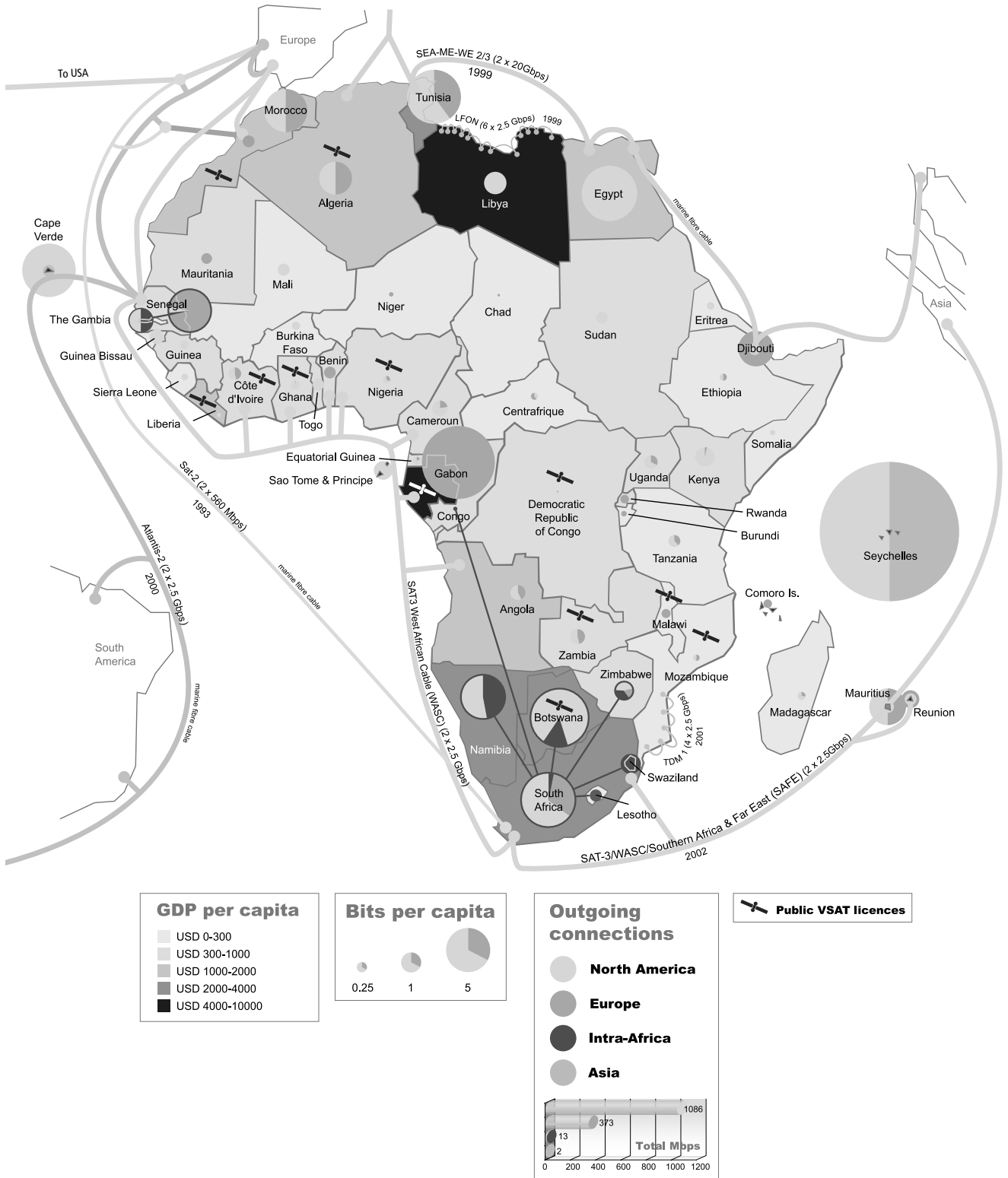
Countries with local Internet Exchange (peering) points (IXs):

1. Egypt–Cairo (IDSC) <http://www.idsc.gov.eg>
2. Kenya–Nairobi (KIXP) <http://www.kixp.net>
3. South Africa–Cape Town (CINX), Johannesburg (JINX) [http://www.ispa.org.za/  
http://www3.frd.ac.za/mrtg/jinx/summary.html](http://www.ispa.org.za/http://www3.frd.ac.za/mrtg/jinx/summary.html)

Figure 3–4: Low cost local dialup



Figure 3–5: African Internet Bandwidth Per Capita and Marine Fibre Cables



## Further References

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15. African Internet Map <http://www.idrc.ca/acacia/divide>

## NOTES

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1. ITU, UNESCO, Jensen.
2. ITU World Telecommunication Development Report 2002.
3. It should be noted that there is a large variation between countries in the charges for installation, line rental and call tariffs. The average business connection in Africa costs over \$100 to install, \$6 a month to rent and \$0.11 per 3-minute local call. But installation charges are above \$200 in some countries (Egypt, Benin, Mauritania, Niger and Togo), line rentals range from \$0.8 to \$20 a month, and call charges vary by a factor of 10—from \$0.60 an hour to over \$5 an hour.
4. Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Egypt, Gambia, Mauritania, Mauritius, Morocco, Mozambique, Rwanda, Senegal, Seychelles, South Africa, Sudan, Tunisia. UNECA, May 2002. ([www.uneca.org](http://www.uneca.org)).