International Telecommunication Union

# AFRICAN TELECOMMUNICATION INDICATORS 2004

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**May**
**2004**

**Telecommunication Development Bureau**
**INTERNATIONAL TELECOMMUNICATION UNION**

International Telecommunication Union
Place des Nations
CH-1211 Geneva Switzerland

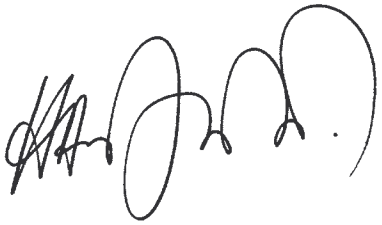
# Foreword

I am pleased to present *African Telecommunication Indicators 2004*, our seventh indicator publication on the region. The report has been specially prepared for Africa TELECOM taking place in Cairo, Egypt from 4 to 8 May 2004.

This report contains the latest available data and it documents the tremendous changes that have taken place within the space of a few years since the last edition in 2001. We hope that it will provide a contribution over ways and means to bridge the digital divide.

The growth in telephone access in Africa has been largely fuelled by mobile cellular communications. The change has been so rapid that it has caught many by surprise. From just two countries in 1999, there were 43 African countries that had more mobile than fixed-line telephone subscribers by the end of 2003, more than any other region. The wireless boom has been caused by the combination of sector liberalization—which has seen the licensing of multiple cellular operators in most African markets—*and* service innovation in the form of pre-paid cards. Africa's challenge is to sustain this high mobile growth and extend it to other sectors such as the Internet.

The views expressed in the publication are those of the authors and do not necessarily reflect the opinions of the ITU or its Membership.



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The report would not have been possible without the collaboration of the many telecommunication organizations, regulatory agencies and other data suppliers throughout the region, to whom we owe our thanks.

# CONTENTS

# 1. Mobile Africa

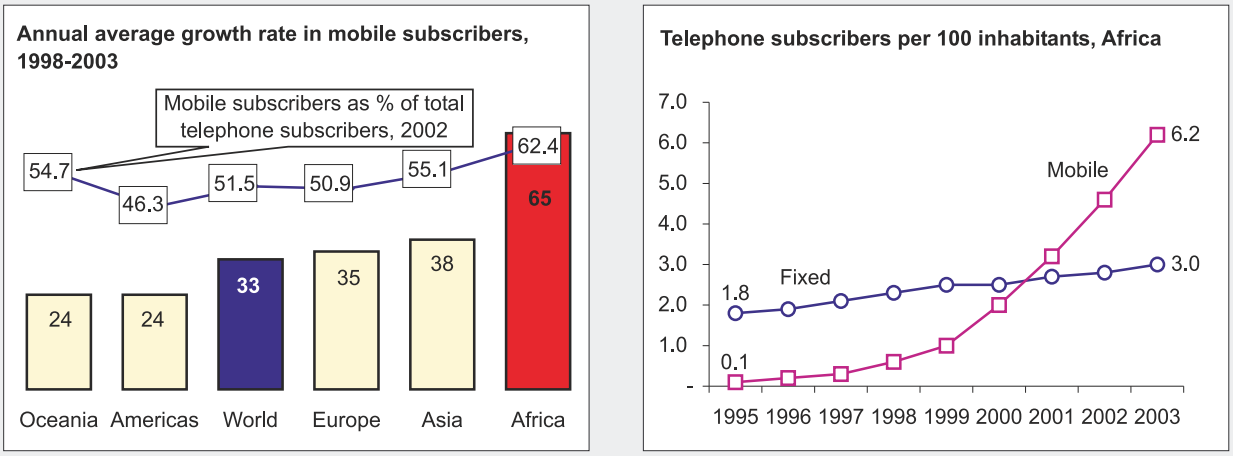
The mobile telecommunication sector has to qualify as one of Africa's success stories. In 2003 alone, over 13 million new mobile subscribers were added on the continent, a figure equivalent to the total number of telephone (fixed and mobile) subscribers in 1995. Africa's mobile market has been the fastest growing of any region over the last five years (Figure 1.1, left). The total number of mobile subscribers at the end of 2003 was just short of 52 million and mobile penetration stood at 6.2 per 100 inhabitants, twice the fixed rate (Figure 1.1, right). The African mobile communications sector is also performing well financially. In 2003 it broke the US$ ten billion barrier in revenues with profits estimated at over US$ one billion. This wealth has spread to other stakeholders such as governments, who have collected over US$ four billion in license fees, and to equipment manufacturers, who have earned over US$ five billion in contracts in Africa since 2000.

Mobile has been critical for enhancing access to telecommunications in Africa where fixed lines are limited. In Nigeria, Africa's most populated country, for example, mobile telephony has increased total telephone penetration from 0.5 to 3.3 per cent in just three years (Box 1.1). The number of mobile subscribers passed the number of fixed lines in Africa in 2001. By 2003 almost 70 per cent of all African telephone subscribers used mobile; the figure was even higher in Sub-Sahara, where three out of four telephone subscribers use a mobile. This is the highest ratio of mobile to total telephone subscribers of any region in the world.

Data on the number of African households with a mobile phone is sketchy but for those countries that compile this statistic, the results are impressive. In South Africa, 32 per cent of households have a mobile compared to only 24 per cent for fixed (Figure 1.2, left). In Morocco, the corresponding figures are 31 and 19 per cent. Analysis also show that mobile has been particularly beneficial in providing access to underserved areas. In Moroccan rural households, mobile phones outnumber fixed by six to one. Thus

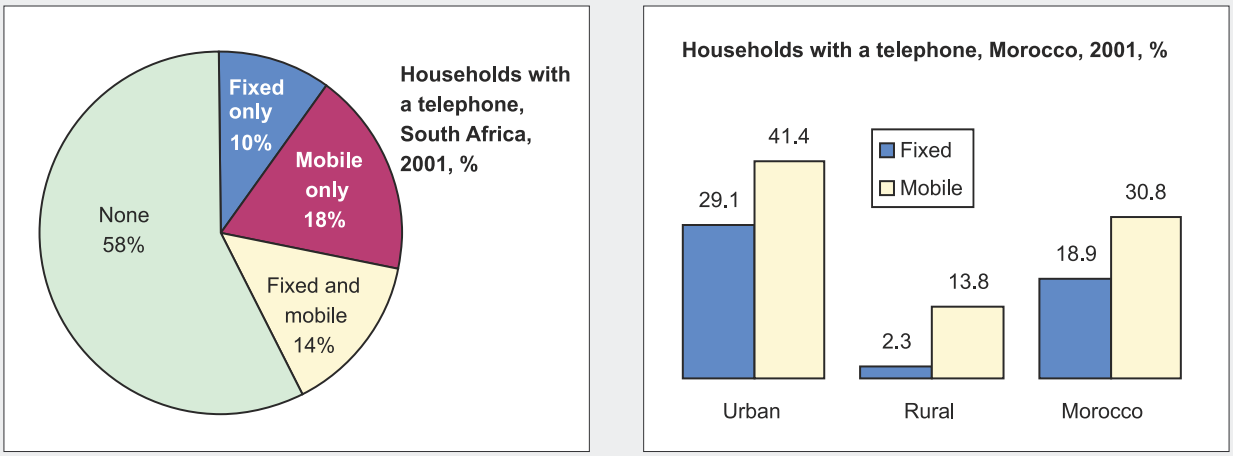
**Figure 1.1: Mobile in Africa**

*Annual average percentage growth in mobile network subscribers, 1998-2003, world regions (left) and mobile and fixed telephone subscribers per 100 inhabitants in Africa, 1995-2003 (right)*




*Source*: ITU World Telecommunication Indicators Database.

**Figure 1.2: The "mobile-only" generation**
*Percentage of households with a telephone, 2001, South Africa (left) and Morocco (right)*

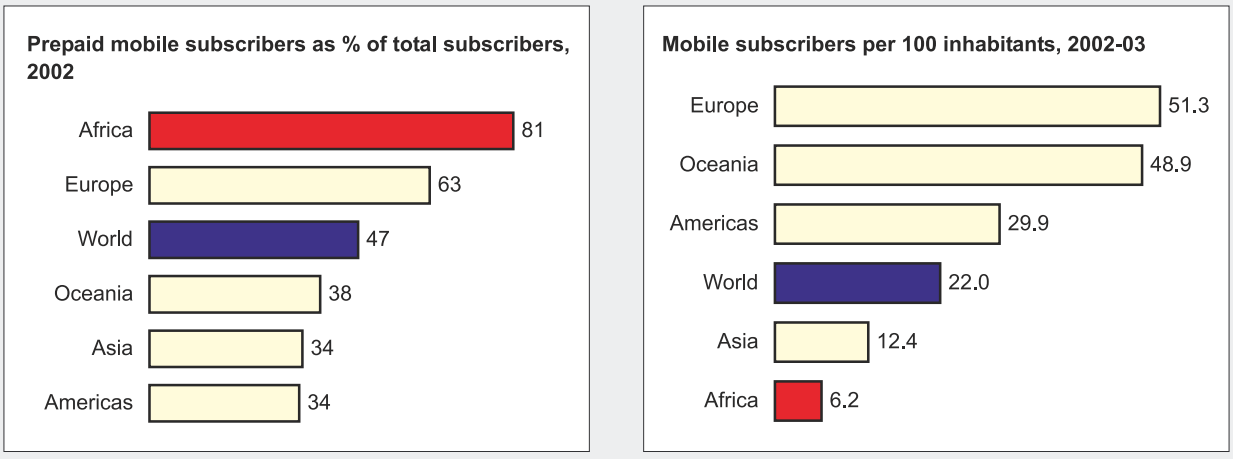



*Source*: ITU adapted from Statistics South Africa and the Morocco Direction de la Statistique.

for most Africans mobile is the only form of telephone communications they know and may ever know.

The African mobile market is different in other ways too. Africa has ended up as the world's most GSM-oriented market outside Europe where that technology was mandated. Africa is also the most pre-paid market in the world (Figure 1.3, left). At the same time, the continent leads in a couple of not so desirable categories. Overall mobile penetration is the lowest of any region at six per cent in 2003 compared to the global figure of 22 (Figure 1.3, right). The percentage of the African population within range of a mobile signal is estimated at only 60 per cent, the lowest in the world. At the end of 2003 less than half the population in Sub-Saharan Africa was covered by a mobile signal.

**Figure 1.3: Characteristics of the African mobile market**
*Percentage of pre-paid mobile subscribers, world regions, 2002 (left) and mobile subscribers per 100 inhabitants, world regions, 2002-03 (right)*




*Note:* Right chart: Data for Africa and world refer to 2003 while for all other regions, data refer to 2002.
*Source*: ITU World Telecommunication Indicators Database.

## Box 1.1: Africa's giant striding ahead

One of Africa's biggest mobile success stories is taking place in Nigeria, the continent's most populated nation. With an estimated 130 million inhabitants, Nigerians represent no less than 15 per cent of the continent's population. Despite large oil reserves, several decades of mismanagement and military rule left the country's economy in ruins. With democratic elections in 1999 came a strong commitment to good governance and economic reform, particularly through market liberalization across all sectors.

This reform has had a dramatic impact in the telecommunication sector through the licensing of four mobile operators (three in 2001 and a fourth in 2002). Mobile subscribers increased from a mere 25'000 in 1999 to 3.1 million in 2003 (Box Figure 1.1, left) and Nigeria's mobile network has been the fastest growing on the African continent over the last three years. This boosted total telephone penetration (mobile and fixed) from 0.5 to 3.3 per cent over the same period. Not enough, if you ask Nigerians. The demand for mobile has been so strong, that the operators have not been able to keep up. In late 2002, all operators were forced to suspend the sale of new pre-paid packages for about six months because their networks were overloaded. Start-up packages continue to be highly popular and potential subscribers stand in line whenever they are available. The excess demand has given rise to a black market, with start-up packs being resold to those willing to pay a higher price.

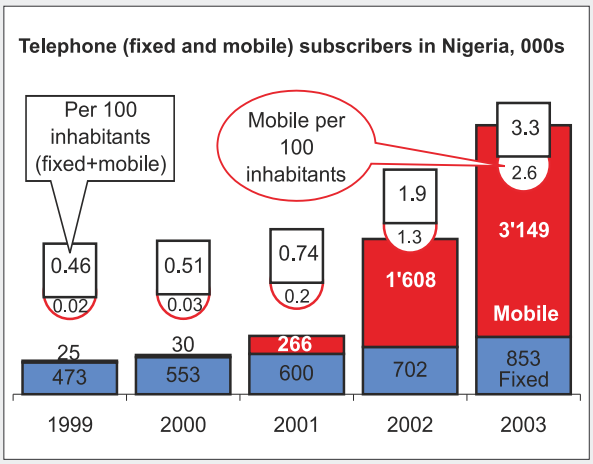
When Globacom, the fourth licensed operator joined the *Big Three* — MTN, M-Tel (the mobile arm of the incumbent NITEL), and Econet[1] — in August 2003, the additional competition brought greater innovation, lower tariffs and better services. To distinguish itself from the existing operators, Globacom introduced per-second-billing and data services and proposed a new pre-paid tariff scheme reducing connection charges allowing more Nigerians to go mobile. Its "Talk Now" package allows subscribers to get connected with a down payment of 2'999 Naira (US$ 23) while the balance of 4'000 Naira (US$ 31) is deducted from subscribers' airtime account in three monthly instalments. Shortly after Globacom entered the market Econet and MTN lowered their tariffs by about 20 per cent and also started offering per second billing. In April 2004, some seven months after it entered the market, Globacom has reached some 700'000 subscribers and taken roughly one fifth of the increasingly aggressive mobile market.

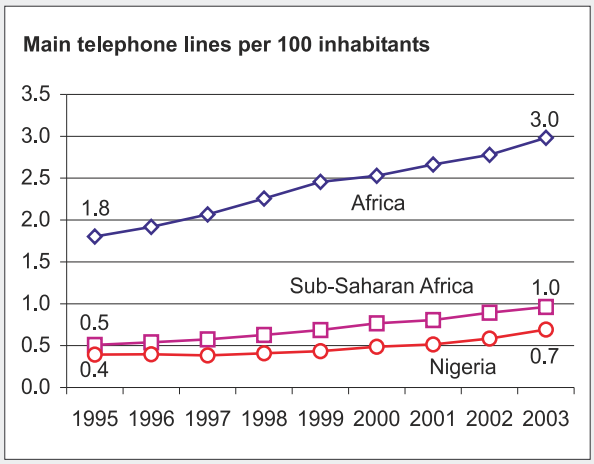
One of the reasons for this success is the failure of the incumbent operator (NITEL) to extend service. With a limited fixed line infrastructure — penetration rates are low even for Sub Saharan Africa — and service basically limited to urban centres, most Nigerians have long been deprived of telecommunications (Box Figure 1.1, right). The licensing of Private Telecom Operators (PTOs), part of the complete opening of national and international telecommunication services, has helped bring fixed lines and Internet services, including broadband to Nigerians. The PTOs have focussed on Fixed Wireless Access (FWA) for rapidly rolling out infrastructure. Within just five years, they have captured almost 25 per cent of the fixed line market. NITEL is having a hard time keeping up, particularly since government plans to privatise the enterprise collapsed in March 2001.

Liberalization in the sector is overseen by the Nigerian Communication Commission (NCC), a financially and operationally independent body whose approach to better services for more users is primarily market driven. Its emphasis is on creating the right competitive environment to foster universal access.

### Box Figure 1.1: Nigeria's mobile boom

*Mobile subscriber growth (left) and Fixed line penetration in Nigeria compared to Africa and Sub-Sahara Africa (right)*




*Source*: ITU World Telecommunication Indicators Database.

[1] Vodacom South Africa signed a management agreement with Econet in April 2004 stating "Econet Wireless Nigeria Limited will start trading under the Vodacom brand with immediate effect." See "Vodacom and Econet Wireless Nigeria sign management agreement." *Press Release*. 1 April 2004. http://www.vodacom.co.za/about/press_article.asp?article=224. [Accessed 23 April 2004].

# 2. Mobile Business

Private operators, often controlled by strategic investors, characterize the African mobile landscape. There are less than a dozen countries where purely state-owned operators have mobile operations. The top six strategic investors in the African mobile services industry accounted for 33 million subscribers in 2003 or two-thirds of the total (Table 2.1).

Unlike other regions—where mobile operators are often saddled with debt from third generation (3G) mobile license fees or with slower growth as second generation markets approach saturation—the African mobile industry is profitable. The five leading strategic investors in the region that publish financial information, reported US$ 695 million of net income in 2003, based on turnover of US$ 6'120 million. These are based on proportionate subscriber numbers, so the figures for the entire continent are probably much higher.

The region's strategic investors are unique in that they tend to be focused on Africa. For example MTN and Vodacom have leveraged their South African success and experience to expand into the rest of Africa. CelTel tends to invest in Sub-Saharan Africa whereas Orascom is concentrated on the North African region. Although Millicom is active in other parts of the world, its attention is on developing markets. Econet, which started as the first private mobile operator in Zimbabwe now has investments in Botswana, Lesotho and Nigeria and a recent license award in Kenya. Only Orange has a strategy focused more on developed countries with most of its African investments arising out of former France Telecom holdings in incumbent operators.

**Table 2.1: Africa's mobile strategic investors**
*Top mobile groups in Africa by number of proportionate subscribers, December 2003*

| | | *Subscribers 000s, 2003* | | | | | |
|---|---|---|---|---|---|---|---|
| *Strategic investor* | *Number of countries* | *Total* | *Pro-portionate** | *Revenue, US$ m, 2003* | *Profit, US$ m, 2003* | *Profit as % revenue* | *Countries* |
| Vodacom** | 5 | 10'184 | 9'666 | 2'482 | 278 | 11.2% | South Africa, DR Congo, Lesotho, Mozambique, Tanzania |
| MTN** | 6 | 8'928 | 8'050 | 2'434 | 258 | 10.6% | South Africa, Cameroon, Nigeria, Rwanda, Swaziland, Uganda |
| Orange | 8 | 5'560 | 3'672 | NA | NA | NA | Botswana, Cameroon, Cote d'Ivoire, Egypt, Madagascar, Mali, Mauritius, Senegal |
| Orascom | 7 | 5'645 | 2'291 | 1'119 | 123 | 11.0% | Egypt, Algeria, Chad, Congo, DR Congo, Tunisia, Zimbabwe |
| Celtel | 10 | 2'500 | 1'700 | 446 | 74 | 16.6% | Burkina Faso, Chad, DR Congo, Gabon, Malawi, Niger, Sierra Leone, Tanzania, Uganda, Zambia |
| Millicom | 5 | 661 | 459 | 85 | 36 | NA | Ghana, Mauritius, Senegal, Sierra Leone, Tanzania |
| **Total** | **32** | **33'478** | **24'138** | **6'120** | **695** | **11.4%** | |

*Note:* NA = Not Available. * The number of subscribers based on the investor's ownership share. ** Subscriber data refer to year end; financial data to year ending 31 March.
*Source:* ITU adapted from company reports.

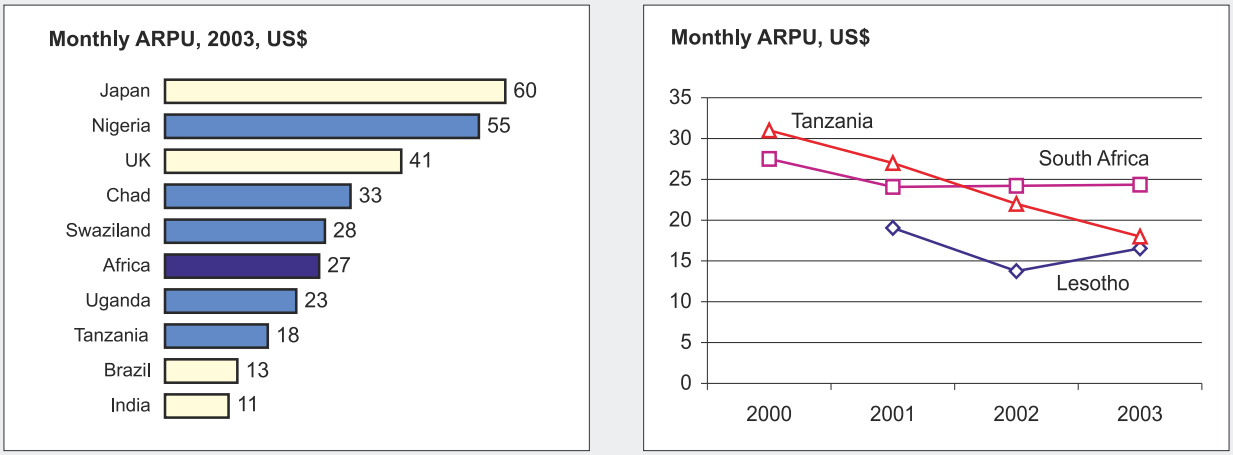
**Table 2.2: Top ten mobile operators in Africa**
*Ranked by number of subscribers, 2003*

| | | Mobile subscribers | | Mobile revenue | | |
|---|---|---|---|---|---|---|
| | | (000s) | Δ % | US$ m | ARPU, US$ | Δ % |
| | Operator | 2003 | 2002-03 | 2002 | 2002 | 2001-02 |
| 1 | Vodacom (South Africa) | 8'910 | 19% | 1'877 | 22 | 0.0% |
| 2 | MTN (South Africa) | 6'050 | 34% | 1'167 | 23 | 0.8% |
| 3 | Maroc Telecom | 5'214 | 13% | 533 | 11 | 10.5% |
| 4 | MobiNil (Egypt) | 2'991 | 31% | 572 | 22 | -2.0% |
| 5 | Vodafone Egypt | 2'740 | 29% | 487 | 22 | 2.9% |
| 6 | Méditel (Morocco) | 2'060 | 29% | 210 | 13 | 45.0% |
| 7 | Cell C (South Africa) | 1'900 | 114% | 175 | 23 | 232.6% |
| 8 | MTN Nigeria | 1'650 | 82% | 509 | 69 | 232.6% |
| 9 | Safaricom (Kenya) | 1'376 | 112% | 125 | 23 | 25.0% |
| 10 | Tunisie Telecom | 1'346 | 134% | 212 | 62 | 75.6% |
| | **Top 10** | **34'237** | **34%** | **5'867** | **19** | **14.0%** |

*Source:* ITU adapted from company reports.

There has been a new impetus since MTN, Orascom and Vodacom have adopted a strategic interest in the African market. They are major investors with the experience and resources to tackle large markets such as Algeria, DR Congo, Nigeria and Tunisia. Though the region has had strategic investors for years in the likes of Millicom and *Telecel* (Box 2.1), the market did not grow rapidly as these early investors were typically interested in high-end subscribers, had limited capacity analogue networks and constrained financial resources.

**Figure 2.1: African ARPU**
*Average revenue per user (ARPU) per month, US$, 2003, selected countries (left) and 2002-2003 (right), selected African countries*




*Note:* Left chart: For the African countries data refers to MTN, Vodacom or Orascom. For UK and Japan, data refers to Vodafone. For Brazil, data refers to VIVO. For India, data refers to Bharti. The Africa average is based on 13 countries for which ARPU is published.
*Source:* ITU adapted from operator reports.

**Box 2.1: What happened to Telecel?**

Telecel was Africa's first mobile strategic investor. Its roots date back to 1987 when Miko Rwaitare, a Congolese of Rwandan descent, and Joseph Gatt of the United States launched the continent's first mobile network in DR Congo. They formed Telecel International in 1993 with a focus on launching mobile networks in other African countries. By 1998 Telecel had operations in around a half dozen countries made all the more lucrative by satellite facilities for carrying international traffic. That same year, Rwaitare and Gatt separated with the latter keeping operations in DR Congo, Guinea and Madagascar and the former keeping other operations as well as the Telecel name. In 2000, Orascom Telecom purchased 80 per cent of Telecel for US $413 million in what was the largest acquisition ever by an Egyptian company. Just a year later, Orascom announced it would divest Telecel with its some dozen Sub-Saharan African mobile companies due to large losses and debt. A first batch of West African Telecel operations in Benin, Burkina Faso, Gabon and Niger were sold in 2003 to Atlantique Telecom, a subsidiary of an Ivoirian bank. That same year, Telecel operations in Zambia, Uganda, Burundi and the Central African Republic were sold to the Gloria Trust. In 2004, Loteny Telecom in the Cote d'Ivoire was sold, leaving Orascom with just three Telecel subsidiaries (Chad, Congo and Zimbabwe). Although all of the sold operations can retain the Telecel brand, there is no longer any single strategic holding in them as a group.

The region's smaller and often-riskier markets tend to attract less known investors. For example, the Lebanese holding company *Investcom* has investments in mobile operators in Burundi, Congo, Ghana, Guinea and Liberia. East Asian companies are also active with *Telkom Malaysia* leading the way through participation as an investor in the privatization of several telecom operators (South Africa, Ghana, Guinea). More recently Chinese equipment manufacturers have been entering the region and getting involved in services, as exemplified by the purchase of Niger's incumbent operator by China's ZTE.

The region's largest mobile operators are, for the most part, from the more developed South African and North African markets. The top ten operators (by subscribers) in the region had some 34 million subscribers amongst them and generated US$ 5.9 billion of revenues in 2003 (Table 2.2). One concern among some of the largest mobile operators is the decline of Average Revenue Per User (ARPU). As markets grow, pre-paid subscribers, with lower disposable income, come to dominate the user base. Though there is a significant variation in ARPU in the region, the overall trend is down (Figure 2.1). The challenge for the region's operators will be to sustain profits while permeating less wealthy market segments.

# 3. Wireless Internet

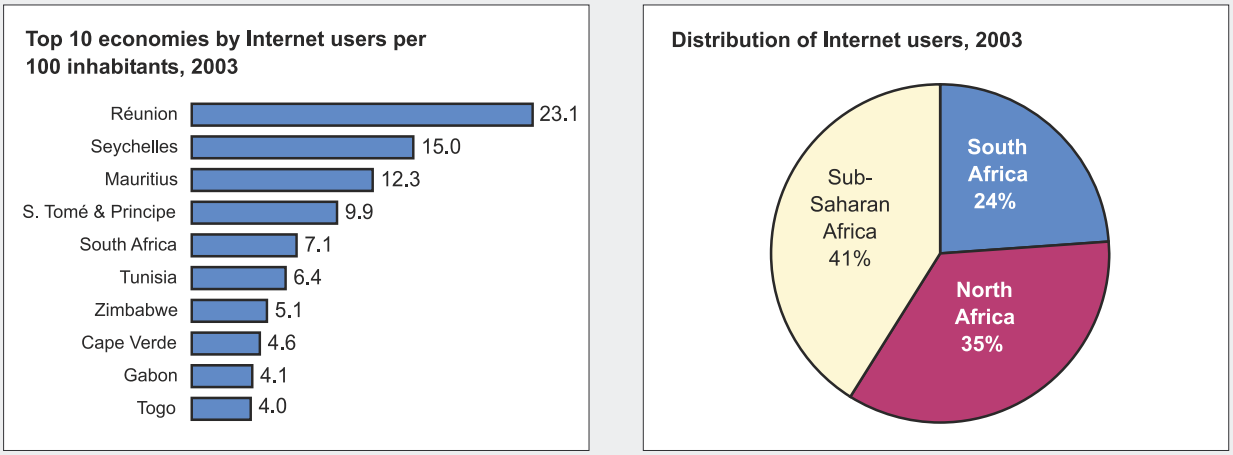
Given the dramatic way in which wireless communications have overtaken fixed-line communications in terms of the primary way in which Africans make and receive telephone calls, what are the implications for Internet penetration rates? How far can wireless platforms help provide more Africans with access to the Internet? At the end of 2003, there were around 14 million Internet users in Africa, up from just 4.5 million in 2000. Although this level of growth is less than that achieved by mobile communications, it is nevertheless clear that the number of Internet users in Africa is growing at as fast a rate as any world region.

At the start of the new millennium, South Africa accounted for over half that total number of African Internet users, but now that figure has fallen to one quarter. While Sub-Saharan and North Africa have overtaken South Africa, North Africa, with only five countries, now accounts for 35 per cent of the total, which is more than twice its share of population (Figure 3.1, right). Interestingly, five of the top ten African economies with the highest Internet penetration are island states (Figure 3.1, left). Two of these (Mauritius and Cape Verde) are studied in more detail in recent ITU Internet case studies.[1]

What is important is not so much the current level of access to the Internet from a wireless platform, which is relatively modest in Africa. Rather what are the *future possibilities* for advanced wireless technologies. Four wireless technologies are discussed in this chapter:

- Data services offered over today's 2nd generation (2G) networks, such as SMS and WAP. While not strictly offering Internet access, these services certainly substitute for certain Internet-based services, notably email (section 3.1);
- Data services offered over 2.5G networks, such as GPRS (General Packet Radio Services), which are already available in parts of Africa (section 3.2);

**Figure 3.1: The Internet in Africa**
*Top 10 African economies by Internet penetration (left) and distribution of Internet users by sub-region (right) 2003*




*Source:* ITU World Telecommunication Indicators Database.

- IP-based services that could be offered over tomorrow's 3G mobile networks, which are not yet available in Africa (section 3.3);

- High-speed Internet access available over non-cellular systems. Although these can provide service to "portable" terminals, and can therefore be used by mobiles, they are primarily intended to provide service to Internet users in a fixed location. Wireless Local Area Network (LAN) services are already available in conference centres, airports and universities in Africa, and fixed-wireless access is available in a few locations, but a much wider range of wireless-enabled services are on their way (section 3.4).

## 3.1 Mobile data (2G)

The most widespread platform for access to non-voice services on a wireless platform is from today's second-generation mobile phones. There are already signs of emerging mobile data usage in Africa. Though most African operators do not publish data on Short Message Service (SMS) usage, among those that do, it is growing rapidly. According to the available data, SMS usage for some African countries is not far off the world average and in more mature markets, such as Mauritius and South Africa, usage is significantly above the world average (Figure 3.2, left). One factor working against higher levels of SMS in Africa is the prevalence of pre-paid users who tend to be less intensive "texters" (Figure 3.2, right). Nevertheless, if African users are choosing the pre-paid option because it is cheaper than subscription, they may also choose to send SMS if they are cheaper than voice calls.

While the majority of SMS traffic tends to be the mundane person-to-person type, there are other interesting applications:

- In Uganda, FoodNet, a non-governmental organization working to get better prices for farmers, collects wholesale and retail price information for some 25 agricultural products that are updated daily into a database. Farmers can then send an SMS to obtain prices. Users of the service generate several thousand SMS per month.

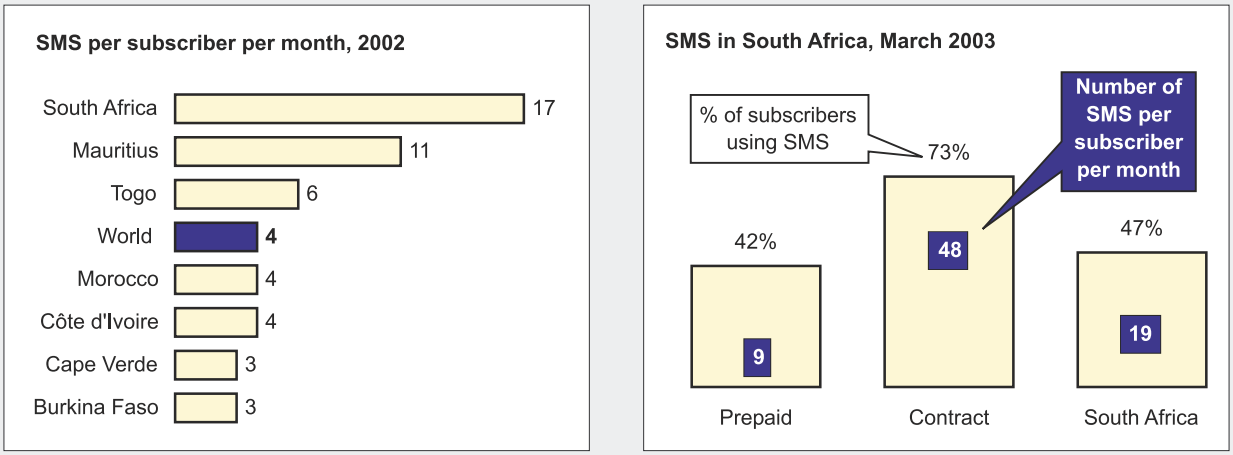
- In Kenya, where mobile operator Safaricom reported some 750'000 SMS per day over its network in December 2002, election results were delivered via SMS. Supporters also used SMS during the election to remind friends to vote and to relay the SMS to other people.

- In South Africa, SMS is sent to tuberculosis patients, reminding them to take their medication.

- In the Côte d'Ivoire, Orange processes some 7'000 SMS requests a day to a 711 short number that delivers sports results, film listings and news to subscribers.

**Figure 3.2: SMS in Africa**

*Short Message Service (SMS) per subscriber per month, 2002, selected African countries (left) and SMS users by type of subscription, March 2003, South Africa (right)*




*Note*: World average for SMS per subscriber per month derived from February 2004 figure reported by the GSM Association. Figures in right chart refer to Vodacom for percentage of subscribers using SMS and MTN for number of SMS per subscriber per month.
*Source*: ITU World Telecommunication Indicators Database, MTN, Vodacom.

- In Zambia, mobile operator CelTel has launched the mobile payment system CelPay. After depositing money in a bank account, users can make payments via their mobile phone by sending an SMS with a code identifying the payee. This type of application could have a major impact in Africa where much of the continent is "unbanked" and few possess credit cards. CelPay charges a few per cent per transaction and unlike credit card companies does not charge a monthly fee or minimum amount. Some 2'000 users are making use of the service that CelTel hopes to introduce to other countries where it operates.

- Mobile banking has taken off in Nigeria where users can send SMS to check account balances, transfer funds and carry out other transactions.[2]

- In Morocco, where pre-paid customers constitute 95 per cent of the total number of mobile users, popular SMS InfoServices include cinema schedules, railway timetables and daily prayer timings. Another poplar service offered by some banks is the provision of real-time SMS alerts to inform customers when credit transfers are made. SMS revenues account for around four per cent of the total revenue of operators Méditel and Maroc Telecom.[3]

Internet access using the mobile phone as a browser is supported through Wireless Application Protocol (WAP). The first WAP system in Africa was launched in July 2000 by CelTel in Congo, where online currency conversion proved an instant hit with traders. Some four years later, as in other parts of the world, WAP take-up has been slow on the continent outside of South Africa due to slow speed, lack of content and shortage of WAP-enabled handsets. Another reason is awareness. In Morocco a survey found that only three per cent of mobile users were aware of WAP and of those, only 0.3 per cent used it, amounting to around 600 users as of the start of 2004.

WAP has had some success in South Africa where MTN reported almost one million users in March 2003 or around 20 per cent of its subscribers. In Kenya, a local ISP has teamed up with mobile operator KenCell to develop a WAP portal and encourage local developers to provide content. Some 5'000 users were accessing the service at the end of 2002.

One of the most publicized WAP applications in Africa is that of Manobi in Senegal. The operator has launched a service allowing farmers to query databases on pricing information using WAP. Some 1'000 users access the database and more than 45'000 items are updated daily by surveyors using PDAs with a wireless communications link.

## 3.2 High-speed mobile (2.5G)

Though there are few hard statistics, a shortage of fixed lines in Africa would suggest that mobile phones are used to access the Internet via a PDA or laptop. Certainly one barrier to using mobile phones as an access device, is the slow speed (9.6 kbps) available on GSM networks that is prevalent throughout most of the region. It would appear that the continent is ripe for higher speed mobile services. Indeed, if many pundits are correct, and the cause of low Internet penetration in Africa (only 1.6 per cent at the end of 2003) is due to a lack of infrastructure, then high speed mobile could be a major improvement.

**Table 3.1: GPRS in Africa**
*Operators with commercial GPRS networks, December 2003*

| | | | | *Subscribers* | | | |
|---|---|---|---|---|---|---|---|
| *Country* | *Operator* | *Launch* | *Service name* | *Total* | *Date* | *% total subs.* | *Web site* |
| South Africa | MTN | Jul.02 | dataLIVE | 30'000 | Jun.03 | 0.6% | www.mtn.co.za/services/dataLIVE |
| South Africa | Vodacom | Oct-02 | MyLife | 35'642 | Sep.03 | 0.4% | www.vodacom.co.za/my_life |
| Egypt | Vodafone | Apr.03 | live! | 25'000 | Dec.03 | 0.9% | www.vodafone.com.eg/live/what/index.jsp |
| Egypt | Mobinil | Sep.03 | Life | 70'000 | Sep. 03 | 2.3% | www.mobinil.com/products_services/mobinil_life |

*Note:* Marcoc Telecom launched a trial in 2003 with commercial service available from 2004.
*Source*: ITU, adapted from operator reports.

Higher data transmission speed (up to a theoretical 171.2 kbps) is available for GSM networks through General Packet Radio Service (GPRS) on so-called 2.5 Generation mobile networks. By the end of 2003, operators in two African countries had commercially launched GPRS (Table 3.1). Between them the operators had around 160'000 subscribers. A number of other networks on the continent are GPRS-ready but have not gone into commercial deployment. One barrier is lack of GPRS enabled handsets. Another barrier is that the service is typically only available for post-paid subscribers.

## 3.3 3G in Africa

The few GPRS launches show how far Africa is behind in mobile Internet. Yet according to the UMTS Forum, 3G will be "vital in bridging Africa's digital divide" by offering a cost effective means of providing Internet access.[4] Despite the potential of 3G, no African country had announced a formal licensing procedure by the end of 2003 (though some mobile operators on the continent contend that they already have a license). Africa is the only region where there have not yet been any commercial launches of *mobile* 3G networks.

Indeed the sentiment seems to be against the launch of 3G in Africa anytime soon. As the Uganda Communications Commission notes, Africa is different from other regions in that mobile voice predominates, the majority of subscribers are pre-paid, and 3G handsets would be relatively expensive (Figure 3.3).[5]

**Figure 3.3: The 3G challenge**
*The case of Uganda*


*Source*: Uganda Communications Commission.

Therefore it may come as a surprise that wireless 3G technologies already exist in Africa. So-called "Private Telecommunication Operators" in Nigeria have spent over US$ 200 million installing the ITU recognized 3G standard CDMA 2000 1x networks for fixed wireless access (FWA) (Table 3.2). A number of equipment manufacturers are keen to claim that they were the *first* to deploy 3G technology in Africa. Nortel Networks, the Canadian equipment manufacturer announced in March 2003 the launching of "Africa's first next generation wireless network."[6] In July 2003, Motorola announced its "first 3G network in Africa."[7]

These new FWA networks are starting to help quench the thirst for high-speed Internet access. For example, Starcomms, one of the Nigerian FWA operators, offers Internet access at speeds up to 144 kbps. CDMA 2000 1x can offer broadband performance when upgraded to EV-DO (Evolution Data Only) mode providing speeds close to two Mbps. The networks can also provide mobility within a certain range. The limited mobility possibility of FWA has been a bone of contention for mobile cellular operators who argue that they paid large amounts for their licenses and that FWA operators effectively provide (limited) mobile services without a license. Limited mobility is particularly attractive to users from a financial point of view. Since it is an extension of the user's home telephone service it is priced at fixed line rates, which are almost always significantly lower than mobile cellular prices.

It appears that the first *mobile 3G* network will not be launched in one of the region's more advanced markets but rather Angola. Movicel, a subsidiary of the fixed-line incumbent Angola Telecom, is one of the few CDMA mobile operators in Africa. In September 2003, it signed a contract with Nortel Networks to supply a CDMA 2000 1x network.[8]

## 3.4 The portable Internet

The success of the FWA operators in Nigeria may be a portent of things to come. Fixed-line operators are largely failing their Internet customers in Africa. For instance, as recently as 2002, eleven African countries had less international IP connectivity than a single ADSL subscriber might enjoy (512 kbit/s).[9] Even where upstream bandwidth is more widely available, downstream broadband connections are not. Even in South Africa, where DSL service

**Table 3.2: Nigeria's CDMA FWAs**
*Nigerian Fixed Wireless Access operators deploying CDMA 2000 1x fixed wireless networks, December 2003*

| *Operator* | *Frequency* | *Infrastructure Vendor* | *Date announced* | *Coverage* |
|---|---|---|---|---|
| Intercellular | 800 MHz | Motorola | July-03 | Lagos |
| Multi-Links | 1900 MHz | Nortel Networks | March-03 | Lagos |
| Reliance | 1900 MHz | Ericsson | April-03 | Nationwide |
| Starcomms | 1900 MHz | Ericsson | March-03 | Lagos |
| Starcomms | 1900 MHz | Huawei | August-03 | Kano, Lagos |

*Source:* ITU adapted from CDMA Development Group, manufacturer press releases.

was launched in August 2002, there are still fewer than 15'000 broadband users, or just one in every 220 Internet users. This is forcing African users to look for other solutions.

Although Africa's existing GSM and GPRS networks provide a platform for slow-speed and medium-speed Internet access, other technologies will be needed to provide higher speeds. There is a cluster of advanced technologies emerging that offer higher-speed access to what might be termed *portable* Internet users: not necessarily needing to be fully mobile (using the Internet in fast-moving vehicles) but nevertheless wanting to use wireless technologies because fixed alternatives are too expensive or simply not available. While these technologies are still to make much impact, even in developed country markets, simply because they are so new, there are good reasons for believing they will do even better in Africa, where a clear market gap exists.

The term *Portable Internet*[10] is used here to describe a new generation of advanced wireless technologies and techniques that provide a platform for high-speed data access using Internet Protocol (IP), many of which are being standardized under the aegis of the Institute of Electrical and Electronic Engineers (IEEE). The best known of these standards is the so-called "Wi-Fi" (wireless fidelity) standard (IEEE 802.11a and b), which offers connectivity at eleven or 22 Mbit/s over a range of up to 150 metres, using license-exempt spectrum in the 2.4 GHz band.[11] But coming up quickly are other radio-based standards, including WiMAX (IEEE 802.16) which offers high-speed connectivity over a range of up to 50 kilometres, operating in bands that stretch from 10-66 GHz and from 2-11 GHz (802.16a), without a requirement for line of sight.[12]

Africa ISPs are already creating home-grown wireless access networks. In April 2004, the Nigerian Communications Commission gave notice to spectrum users to vacate the 2.4 and 5.8 GHz spectrum bands, by December 2003, in advance of the development of a licensing process to use these bands. In October 2003, ICASA, the South African regulator specifically permitted ISPs and cyber-cafés to offer Wireless Local Area Network (WLAN) services, but only within their premises. In both cases, the regulators were pushed into action by existing GSM license holders that were seeing potential markets erode. Elsewhere in Africa, the legal position of ISPs offering WLAN services is less clear.

The main advantage of WLAN is the growing installed base of WiFi receivers, which are now fitted as standard in many new laptop PCs. The main disadvantage is the limited range, which means that the technology is mainly useful for providing shared access (for instance, across a university campus) to a common Internet connection.

An alternative to WLAN is fixed wireless access, as offered in Nigeria (see Table 3.2). This may be combined with Very Small Aperture Terminals (VSATs) to provide wireless access over a wider area. For instance, Simbanet, a Kenyan wholesale ISP with franchisees in Tanzania (Table 3.3) and Nigeria, is providing a "wireless DSL" service within a range of 3-10 km from VSATs. Several satellite service providers are serving the continent, including New Skies, Intelsat and SES Global.

Another promising technology is WiMAX, which has a range of up to 50 kilometres and uses parts of the spectrum that are currently little used. The

**Box 3.1: Uganda Wi-fi project**

The ITU has approved a project to extend Multipurpose Community Telecentres in Uganda into rural and remote areas by testing the use of packet-based wireless IP technology. The project is being undertaken in conjunction with the Ugandan Communications Commission that is testing the use of Voice over IP (VoIP) as a precursor to possible regulatory reform. Uganda Telecommunications Limited (UTL), the executing agency, is using this project to test this technology for cost effective telephone services.

technology is being field tested in Brazil, China and India as it is perceived to have the most to offer in developing country environments. So why not Africa? The quick answer is that it might be difficult, at present, to find an operator willing to take the risk given the impact that this technology will have on existing revenue streams. However, once the technology is proven, it is likely to be adopted quickly in the region by those ISPs that eager to reduce their dependence on incumbent telecommunication operators (both mobile and fixed). Perhaps then broadband access could really bloom in Africa.

**Table 3.3: 'Classic' vs. 'Unorthodox' Broadband Deployments**
*East Africa, 2004*

| *Country* | *Operator* | *Vendor/System* | *Notes* |
|---|---|---|---|
| Kenya | **Telkom Kenya** | **ISDN**<br>**HDSL/RAD Data Comms**<br>**ADSL**<br>**VSAT (DVB Hub)** | - |
| | Africa Online | ISDN | - |
| | Kenya Data Networks | Alvarion FWA, BreezeACCESS, OFDM, WALKair (3.5GHz) | - |
| | Gilat Alldean | Domestic VSAT | Delivered over Telkom Kenya's network |
| | Simbanet | Wireless DSL<br>VSAT | (3Mbps within 3-10Km radius of base station) |
| | Swift Global | GSM (circuit-switched data) | 'Access350' service, Kencell |
| | Wananchi Online | GSM (circuit-switched data) | 'Safaricom Online', Safaricom |
| | **Other ISPs** | *Dial-up access only* | - |
| Tanzania | TTCL | WLL<br>VSAT | - |
| | Africa Online | Alvarion BWA, OFDM* (3.5GHz & 10.5GHz). | Dar es Salaam by year-end 2003, followed by Arusha, Mwanza |
| | Afsat | Domestic VSAT | - |
| | Benson Informatics | NLOS | Arusha |
| | CATS-NET | Cisco/Aironet 340 | - |
| | Cybernet | 2.4GHz | Arusha |
| | Datel | Domestic VSAT<br>Broadband WLL | - |
| | Internet Africa | - | - |
| | Simbanet | WLAN<br>Domestic VSAT | - |
| | Other ISPs | *Dial-up access only* | - |
| Uganda | **UTL** | **ISDN**<br>**HDSL**<br>Broadband WLL | Kampala Central, Nsambya (Kabalagala), Makerere (Wandegeya), Kawempe, Mbuya, Kyambogo (Ntinda), Lubowa, Mengo, Entebbe, Mukono, Jinja, Mbale and Mbarara.<br>Kampala |
| | **MTN** | **ISDN**<br>AS4000 wireless DSL | Kampala, Entebbe, Jinja and Mbarara |
| | Bushnet | 'HSDN' | - |
| | Infocom | ISDN<br>Breezecom | - |
| | Wilken Afsat | Domestic VSAT | - |
| | **Other ISPs** | *Dial-up access only* | - |

*Note*: **Bold text:** 'classic' deployments; regular text: 'unorthodox' deployments; *italic text:* dial-up access only.
*Source*: World Markets Research Centre.

[1] See "The Fifth Pillar: Republic of Mauritius ICT Case Study" (2004) and "The Internet in a Lusophone LDC: Cape Verde Country Case Study", available at: http://www.itu.int/ITU-D/ict/cs/. [Accessed 1 April 2004].

[2] For example see the mobile banking web page of First Select Bank, a pioneer in SMS financial transactions in Nigeria. http://www.firstatlanticbank.com/mobile.html. [Accessed 1 April 2004].

[3] See, for example, the ITU country case study: "Shaping the future mobile information society: The case of Morocco." March 2004. Available at: http://www.itu.int/osg/spu/casestudies/#africa. [Accessed 1 April 2004].

[4] "3G Will Help Bridge Africa's Digital Divide Says UMTS Forum." 3G Newsroom. 9 November 2001. http://www.3gnewsroom.com/3g_news/nov_01/news_1437.shtml. [Accessed 1 April 2004].

[5] See the case studies for Uganda and Cameroon from the Regional Seminar on IMT-2000 for Africa Region, Abidjan (Côte d'Ivoire), 9-12 September 2002. http://www.itu.int/ITU-D/imt-2000/casestudies_imt.html. [Accessed 1 April 2004].

[6] Nortel Networks. "Multi-Links, Nortel Networks Launch Africa's First CDMA 2000 IX Wireless Network". *News Release*. 26 March 2003. http://www.nortelnetworks.com/corporate/news/newsreleases/2003a/03_26_03_multi_links.html. [Accessed 1 April 2004].

[7] "Motorola Wins 3G Deal with Intercellular Nigeria." *News Release*. 16 July 2003. http://www.motorola.com/mediacenter/news/detail/0,,3032_2486_23,00.html. [Accessed 1 April 2004]

[8] Nortel Networks. "Movicel Approves Nortel Networks for CDMA Wireless Data Network in Angola." News Release. 22 September 2003. http://www.nortelnetworks.com/corporate/news/newsreleases/2003c/09_22_03_movicel_angola.html. [Accessed 31 March 2004].

[9] Figures date from September 2002; see the African Internet Connectivity website at: http://www3.sn.apc.org/africa/. [Accessed 1 April 2004].

[10] "The Portable Internet" is the title of the new edition of ITU Internet Reports, due out in September 2004.

[11] See: http://www.oreillynet.com/pub/a/wireless/2001/03/02/802.11b_facts.html. [Accessed 1 April 2004].

[12] See: http://www.intel.com/ebusiness/pdf/wireless/intel/80216_wimax.pdf. [Accessed 1 April 2004]. WiMAX stands for Wireless Interoperability for Microwave Access, a standards forum that currently has around 80 members.

# 4. Mobile Policy

Mobile policy issues have gone beyond the question of competition since the majority of African countries now have more than one mobile operator (Figure 4.1, left). Today's concern is how to make competition work better through improved interconnection arrangements and by licensing additional operators. Policy focus also needs to be placed on how mobile telephony can contribute more to universal access.

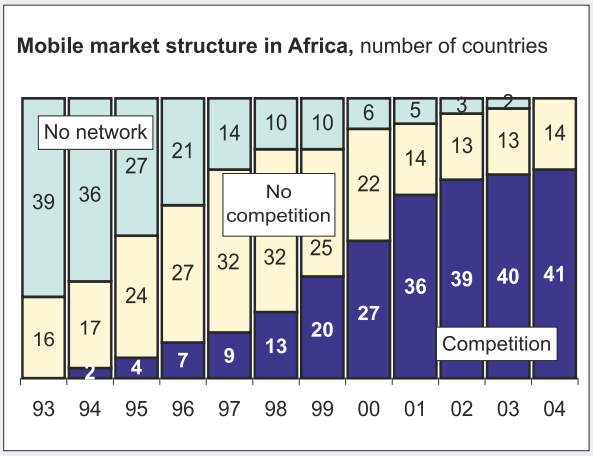
## 4.1 Competition

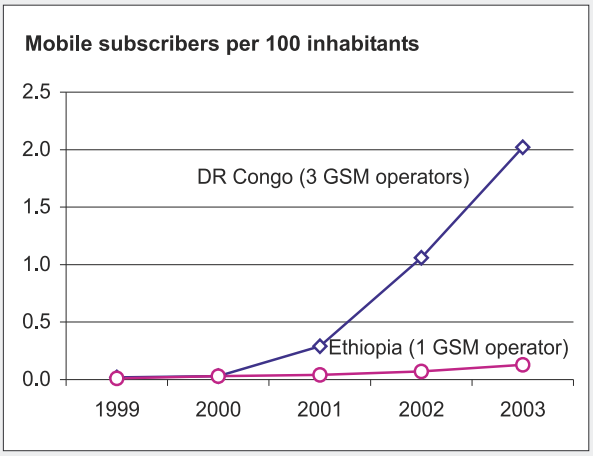
Three quarters of African nations now permit competition in mobile cellular networks. The benefits of competition are statistically obvious in the African context. The only countries with fewer mobile than fixed telephone subscribers in Sub-Saharan Africa at the end of 2003 either did not have a mobile network or did not allow mobile competition. One example at the low end of the per capita income scale dramatically illustrates the benefit of competition. The two poorest countries in Africa are the Democratic Republic of Congo and Ethiopia with per capita incomes of around US$ 100. Yet at two users for every 100 inhabitants, DR Congo has a mobile penetration that is 15 times greater than Ethiopia (0.14) (Figure 4.1, right). The difference? DR Congo has three private GSM operators[1] and Ethiopia only one, operated by the state-run fixed line operator. If the two countries had the same market structure one would expect that Ethiopia would be easier to serve with mobile communications. While Ethiopia's land area is roughly half the size of DR Congo's it has a larger potential market size (69 million inhabitants in Ethiopia compared to 52 million in D.R. Congo). The message is clear. The remaining dozen or so African countries with mobile monopolies must introduce competition as soon as possible to grow their networks more rapidly.

Given that some competition is better than none, do countries perform better with an even higher level of competition? In other words, are three or more operators better than two? At the end of 2003 Africa had 23 countries with a mobile duopoly and

**Figure 4.1: Mobile competition**

*Distribution of countries in Africa by whether no mobile network, monopoly mobile market or competitive mobile market, 1993-2004 (left) and mobile subscribers per 100 inhabitants in DR Congo and Ethiopia, 1999-2003 (right)*

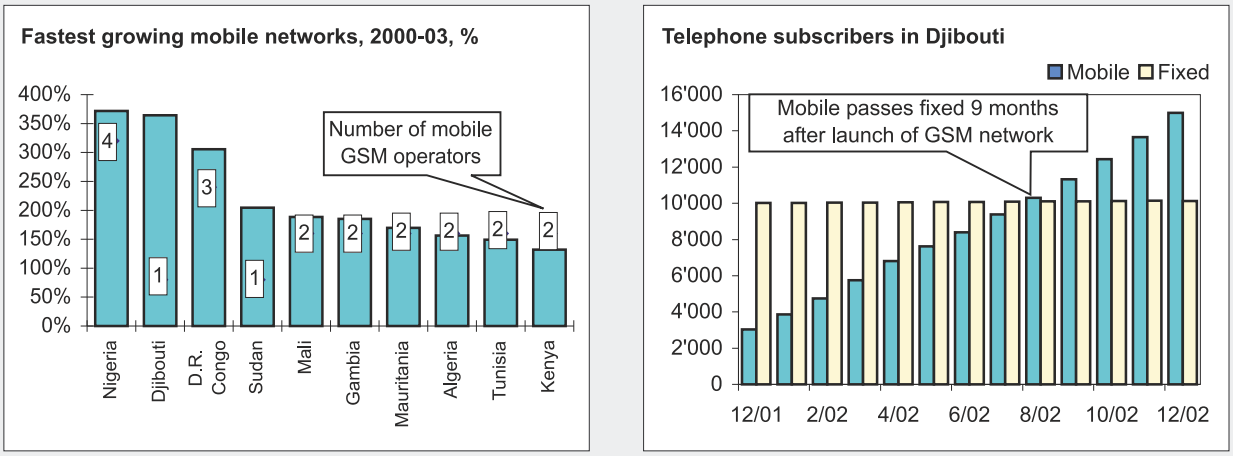



*Source*: ITU.

**Figure 4.2: Is three better than two?**

*Top ten countries in Africa by percentage mobile subscriber growth, 2000-2003 (left) and telephone subscribers in Djibouti, December 2001- December 2002 (right)*




*Source*: ITU.

17 countries with more than two mobile operators. Interestingly, of the top ten fastest growing African networks from 2000 to 2003, the first four positions are held by countries that either had a monopoly or had three or more operators whereas the other six were duopolies (Figure 4.2, left). The explanation for rapid growth rates seems to include looming competition, the investment capabilities of the new market entrants and the number of competitors. In the case of the monopolies the explanation is a recently installed GSM network (Djibouti) or a desire to capture market share prior to the introduction of competition (Sudan). In Djibouti, just nine months after the installation of a GSM network, there were already more mobile than fixed telephone subscribers (Figure 4.2, right). In the case of Sudan, the incumbent lowered tariffs and expanded network coverage and capacity before a second mobile license was awarded in November 2003. The quality of the competitor also appears to play a role with strategic investors such as Orascom, Vodacom and MTN involved in seven of the fastest growing networks.

Third or fourth operators make a difference in improving and expanding services. For example, when Globacom launched as the fourth mobile operator in Nigeria it introduced per second billing to the market as well as a new tariff scheme, allowing more Nigerians to go mobile (Box 1.1). In South Africa, Cell C introduced a number of price innovations when it launched as the third operator. In The Gambia, the press has called for a third operator to end backlogs for mobile phones and to increase coverage.

## 4.2 Interconnection

Almost every African country has had a mobile interconnection dispute. A partial selection follows:

- In Botswana, which never had mobile interconnect rates but rather uses a revenue sharing system, one mobile operator appealed to change the system claiming it was receiving much more traffic than its competitor. The regulator established a maximum interconnect rate based on European Union benchmarks.[2]

- In Burkina Faso, the incumbent fixed line operator attempted to charge a lower fixed-to-mobile call price to its mobile network than to competitors before it was overturned by the regulator.

- In Kenya, the incumbent fixed line operator claims it is not able to cover costs from the interconnect rates it pays to the mobile operators. One mobile operator refuses to lower its interconnect tariff to the level rate charged by the other mobile operator. The matter is now before a tribunal.

- In Mozambique, a license was issued to a new mobile operator introducing competition to the country. The new operator delayed launching its network

**Table 4.1: Calculating interconnect rates in Nigeria**
*US$, December 2003*

| | *PARAMETERS* | *Fixed* | *Mobile* |
|---|---|---|---|
| A | Amount of investment per subscriber | $ 812.50 | $ 350.00 |
| B | No. of minutes initiated on average by a subscriber (per year) | 6'000 | 1'800 |
| C | Average length of economic life of investment (years) | 10 | 8 |
| D | Required return on investment capital | 25% | 25% |
| E | Relation of Operation & Management (O&M) cost relative to amount of investment | 20% | 30% |
| F | Mark-up for common cost | 10% | 10% |
| G | Relation of cost of call termination to the average cost of a call from anywhere to anywhere in the network | 32% | 71% |
| H | --Single | 51% | |
| I | --Double | 96% | |
| J | Amortization (Capital recovery [A] over [C] years) | $ 227.56 | $ 105.14 |
| K | O&M ([E] * [A]) | $ 162.50 | $ 105.00 |
| L | Average cost per subscriber ([J] + [K]) | $ 390.06 | $ 210.14 |
| M | Average cost per minute before common cost ([L] / [B]) | US¢ 6.50 | US¢ 11.67 |
| N | Average cost per minute after adding common cost ([M] * (1+[F])) | US¢ 7.15 | US¢ 12.84 |
| O | Cost per minute of terminating incoming call ([G]*[N]) | US¢ 2.29 | US¢ 9.12 |
| P | Cost per minute of terminating incoming call ([H]*[N]) | US¢ 3.65 | |
| Q | Cost per minute of terminating incoming call ([I]*[N]) | US¢ 6.87 | |
| R | Average cost per minute of terminating incoming call ([0]+[P]+[Q])/3 | US¢ 4.27 | US¢ 9.12 |

*Note:* The formulas for calculating the results are shown with the letter in [brackets] referring to the parameter used. Note that * represents the multiplication operator. For example, the O&M costs shown on line K are calculated by multiplying line E by line A.
*Source*: ITU, adapted from Nigerian Communications Commission.

for more than a year because of inability to reach an interconnect agreement with the incumbent.

- In Tanzania, a mobile operator contests that it is owed US$ 13 million by the fixed line incumbent following conversion to a calling party pays system. The dispute has been going on for five years and gone to the High Court.

Interconnect agreements are never simple. The common practice is to try to let operators work out their own arrangements but as the examples above show this has not always been successful. Regulatory oversight can help get things moving along. In that regards, transparency is important for understanding how rates are determined to ensure fairness. Regulators are increasingly stepping in to resolve disputes by adopting interconnect rates based on clear analytical frameworks. For example the Nigerian Communications Commission has recently issued new interconnect guidelines based on a simple but logical framework (Table 4.1).[3] This reduced the existing interconnect rates from N18 (US¢ 14.3) to N11.52 (US¢ 9.1) for mobile termination and from N12 (US¢ 9.3) to N5.52 (US¢ 4.3) for fixed termination rates.

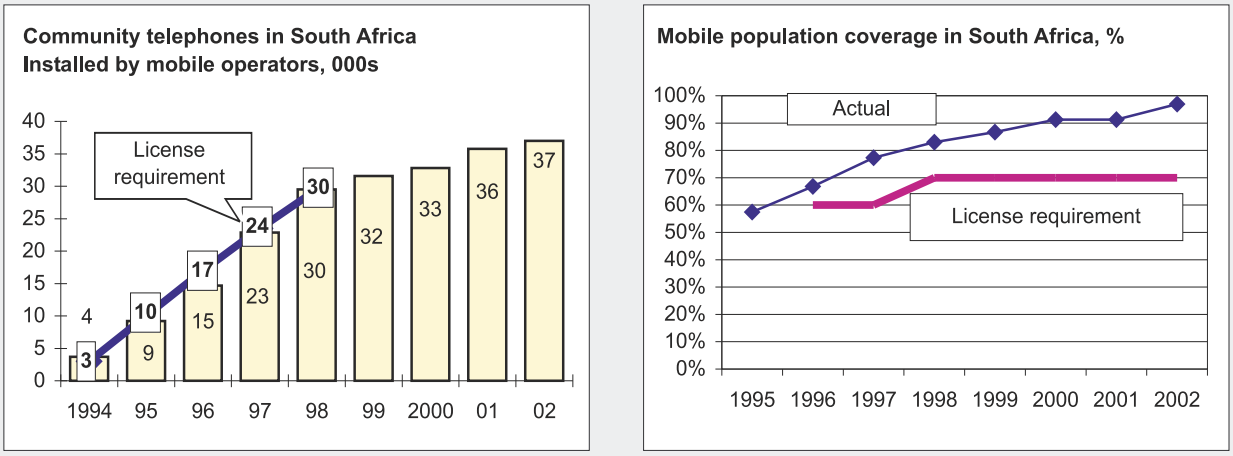
## 4.3 Universal access

Given that mobile operators are typically the largest telecom operators in most African countries, it is only logical that they play a bigger role in extending telephone availability. Not withstanding the fact that mobile operators have vastly extended access to telecommunications in Africa over the last decade, there is still need to provide access to those who thus far have not been part of the mobile miracle, such as many rural dwellers and lower income citizens.

South Africa, Kenya and Uganda provide examples of ways mobile operators can contribute to achieving universal access:

- *Installing community access centres*. In South Africa, mobile operators were required to install

**Figure 4.3: Mobile operators and universal access in South Africa**
*Community telephones installed by South African mobile operators, 1994-2002 (left) and mobile population coverage, MTN South Africa, 1995-2002 (right)*




*Note:* Left chart, years beginning April 1.
*Source:* ITU, adapted from MTN, Vodacom, ICASA.

community service telephones as part of their license conditions. They met the target of 29'500 within five years of launching and have since added almost another 10'000 community service telephones (Figure 4.3, left). This practice has since extended to other countries such as Kenya and Uganda. In Kenya, mobile telephone booths are sent to remote areas of the country where low-income citizens can make calls at cheaper rates. In Uganda, MTN was required to install 2'000 payphones in five years; it installed 2'500 in 24 months. Uganda has also recently launched a programme modelled after the successful Grameen Village Phone in Bangladesh. The idea is to provide village operators with micro credit loans to allow them to purchase phones in order to provide service in their communities. One unique aspect is that electricity need not be available as the package comes with a solar panel or car battery for recharging the phone.

- *Expanding coverage*. In South Africa, mobile operators were obliged to provide 70 per cent population coverage within four years of launching service as part of their license conditions. Today 96 per cent of the population in South Africa is covered by a mobile signal, a higher percentage than terrestrial based television (Figure 4.3, right).

- *Subsidizing low-income users*. In an innovative policy, the South African government recently awarded 1800 MHz frequency to mobile operators in exchange for them providing four million free SIM cards over the next five years. The logistics of the programme are being developed.

Regulators and governments should devise more creative ways for allowing less fortunate citizens to use mobile by for example subsidizing handsets or pre-paid cards for the needy. This may be a more effective and cheaper solution than a universal access fund. By the same token governments must realize that high taxes on mobile service or mobile handsets and high license fees will be passed on to consumers and affect affordability.

[1] According to the GSM Association, there were three GSM networks in operation by the end of 2003. In addition there are other non-GSM cellular networks operating in DR Congo. http://www.gsmworld.com/roaming/gsminfo/cou_cd.shtml. [Accessed 1 April 2004].

[2] ITU. *Botswana Mini Case Study: Recent Experience in Interconnection Disputes*. 2003. http://www.itu.int/ITU-D/treg/Case_Studies/Disp-Resolution/Botswana.pdf. [Accessed 1 April 2004].

[3] Nigerian Communications Commission. *Interconnection Rate Determination*. 2 December 2003. Available at http://www.ncc.gov.ng/interconnection.htm. [Accessed 1 April 2004]. The World Bank has also created a model for determining interconnection rates based on the African environment. See Paul Noumba Um. *A model for calculating interconnections costs in telecommunications*. The World Bank. December 2003. Available at http://www1.worldbank.org/publications/pdfs/15671frontmat.pdf. [Accessed 1 April 2004].

# 5. Mobile future

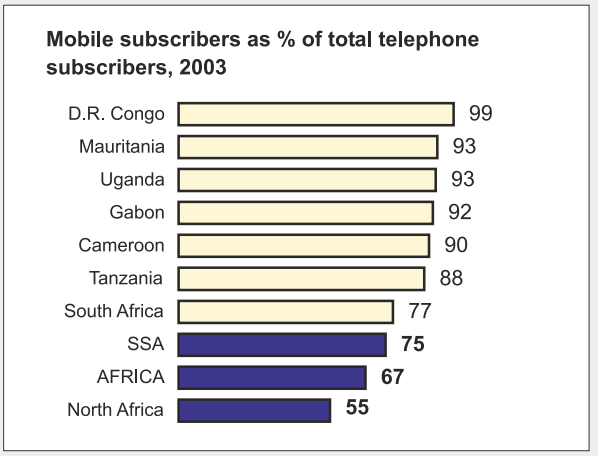
## 5.1 The death of the fixed line?

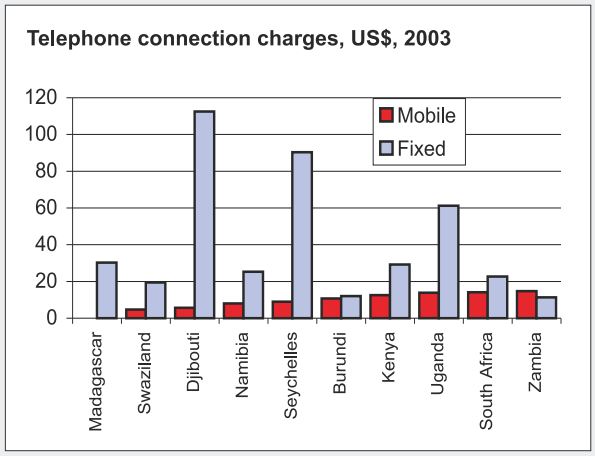
With mobile users accounting for an ever rising proportion of telephone users, Africa's present and likely future telecommunication world is wireless (Figure 5.1, left). The reasons for the success of mobile in Africa, particularly when contrasted with the limitations of fixed lines, are readily apparent. Pre-paid mobile lowers the threshold of telephone ownership by making services available to those who would not normally qualify for a subscription-based package. True, pre-paid can and has been applied to fixed lines but not on a widespread scale in Africa. Furthermore, that presupposes the existence of a base of fixed lines to cater to demand that simply does not exist in many African countries. The costs of getting connected are also cheaper for mobile than fixed, often just the cost of a SIM card and increasingly a subsidized or inexpensive used handset. Indeed it is surprising, given the popularity of mobile, why many of the continent's fixed line operators persist in charging high connection fees (Figure 5.1, right). For investors, mobile is cheaper, faster and more flexible to install, operate and manage than conventional fixed lines making wireless a logical business decision. Pre-paid mobile is not marred by billing problems faced by fixed line operators in almost all African countries. Mobile is also more suited to the significant informal African economy where labour is often temporary and one needs to be on the move to find new job opportunities. Finally, mobile meshes well with Africa's large agricultural sector where farmers often travel from rural areas to markets.

Some mourn the demise of fixed line telephony in Africa. However this is more emotional than logical. After all mobile networks are today practically as good as fixed in terms of quality, and in the case of Africa, perhaps even better than most fixed line networks. The success of mobile is also a question of timing. Africa has been late to telecommunications and because of that has benefited from the tremendous technological and economic advantages that today's mobile networks offer. Had the same mobile features been available in

**Figure 5.1: The mobile advantage**

*Mobile subscribers as percentage of total telephone subscribers, selected African countries, 2003 (left) and fixed versus mobile connection charges (right)*




*Source:* ITU World Telecommunication Indicators Database.

developed nations two or three decades ago, they too would probably have far fewer fixed lines.

Perhaps the most compelling reasons today to have a fixed telephone line are lower fixed line usage charges and higher data transmission speeds. But even here the advantages are fast disappearing. Since mobile has overtaken fixed lines in Africa, many calls from the fixed network are destined to mobiles, where the pricing is higher anyway, suggesting that fixed line customers are willing to pay a higher price to communicate. And with growing competition in Africa, mobile prices are falling each day. In terms of data transmission, 2.5G mobile networks, where they are available, already offer speeds equivalent to dial-up Internet access. 3G mobile networks can offer speeds as fast as typical broadband offerings. Like pre-paid, African fixed line operators have been slow to leverage the temporary advantage fixed lines have for faster Internet access with only few offering broadband service.

One reason why some lament the sorry state of African fixed line networks is that the traditional incumbent operators are often majority owned by the state. Having been slow to take advantage of the privatization wave that spread throughout other regions in the early 1990s, most African governments today find it difficult, if not impossible, to sell off their fixed line operators especially if they do not come with a mobile license. More than a dozen potential privatizations have been stalled. Ironically, mobile operators are now buying or attempting to buy the fixed networks they have eclipsed. For example, in Madagascar, Distacom, a strategic investor in one of the country's mobile operators, recently purchased the fixed line operator.

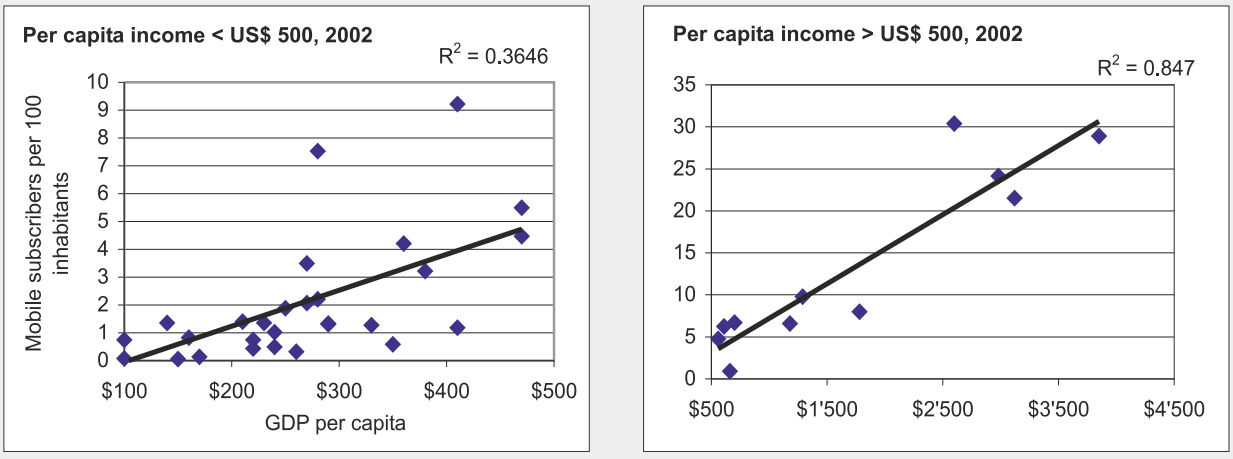
If there is a future for fixed lines it will be wireless. Fixed wireless access offers the advantages of mobile in that they are cheaper to install than conventional copper wire networks. They are also attractive in their ability to provide high data speeds and limited mobility. In Nigeria, new fixed wireless networks accounted for 30 per cent of all fixed lines by June 2003. If the Nigerian experience can be transferred to other countries on the continent, there still might be hope for the fixed line network.

## 5.2 The US$ 20 question

The challenge the African mobile market faces will be to sustain growth in the face of affordability constraints. How much people can and are willing to actually spend on communications is difficult to analyze because of informal markets and the unreliability of existing income data. For example, according to the World Bank, Africa's GDP per capita stood at US$ 450 in 2002 and has been in decline each year since 1998. The average African expenditure of US$ 27 per month for mobile service is more than half the official average African per capita income. Clearly this sort of top-level income analysis is not of much help in explaining demand for mobile services since it is difficult to imagine a subscriber

**Figure 5.2: Wealth and mobile subscription**

*Africa, 2002, Mobile subscribers per 100 inhabitants and GDP per capita above US$ 500 (left) and below US$ 500 (right)*




*Note:* Each dot represents a country.
*Source:* ITU World Telecommunication Indicators Database.

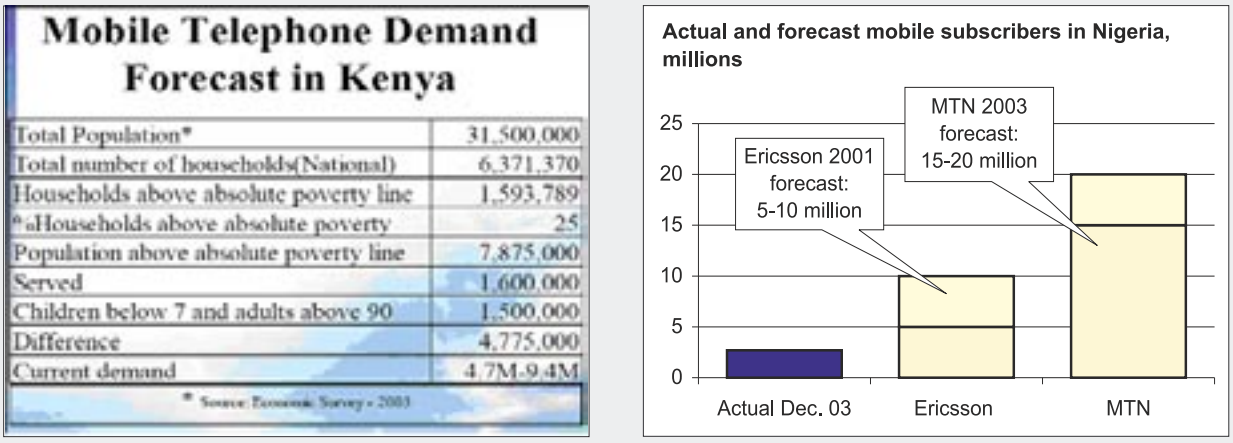
spending such a large portion of their income on mobile services. The average expenditure and average income also do not account for wide differences in mobile spending and wealth nor does it account for unreported income. For example post-paid subscribers in South Africa spend more than five times more on mobile service than pre-paid subscribers. In Swaziland, ten per cent of the population account for 50 per cent of income.

The difficulty of predicting mobile demand at low-income levels is confirmed by regression analysis. The link between income and mobile density for incomes less than US$ 500 a year is much weaker than for incomes greater than US$ 500 per year (Figure 5.2). Another issue is determining how low mobile prices can go for operators to be profitable. Equipment manufacturers have announced gear that can be profitable at an ARPU of US$ 5 while operators are issuing pre-paid cards with a value just over US$ 1.[1]

National analyses of mobile demand reveal much higher levels than would be expected by income. In Kenya, the regulator estimates that the mobile market potential is up to 9.4 million compared to some 1.6 million subscribers at the end of 2003 (Figure 5.3, left). In Nigeria, one of the mobile operators recently increased its estimate of the potential market from 15 to 20 million compared to 2.7 million subscribers in Nigeria at the end of 2003. This is double what was estimated just two years previously (Figure 5.3, right). The challenge will be how quickly these potential subscribers can be reached. Continent-wide estimates of the demand for mobile phones range from between 143 – 200 million subscribers by the close of the decade or between three to four times the levels at the end of 2003.[2] Can Africa meet this challenge and perhaps even raise it?

Perhaps a greater barrier than affordability is population coverage. At the end of 2003, it was estimated that less than half the Sub-Saharan region was covered by a mobile cellular signal. Reaching out to potential new subscribers will require extending coverage to rural areas where installation costs are higher due to lack of underlying infrastructure such as roads and electricity. Furthermore there is less incentive to invest since rural incomes are lower and demand uncertain. One problem with mobile coverage in Africa is that so few countries publish this statistic. If they do, sometimes data is presented in a misleading way (e.g., percentage of urban population covered, etc.). For countries where data is available, surprisingly there appears to be little relationship between urban population and mobile cellular coverage (Figure 5.4, right). Even other factors such as the number of operators or the population density do not seem to explain why some countries have a higher coverage than others (Figure 5.4, left). The main factor appears to be high coverage requirements that are stated in license obligations and that are enforced and, to a lesser degree, the extent and quality of competition. In view of this observation one of the most feasible and realistic methods for regulators to increase coverage is to include (and enforce) coverage as part of the

**Figure 5.3: Forecast demand**
*Forecast mobile subscribers in Kenya (left) and Nigeria (right)*



**Mobile Telephone Demand Forecast in Kenya**

| | |
|---|---|
| Total Population* | 31,500,000 |
| Total number of households(National) | 6,371,370 |
| Households above absolute poverty line | 1,593,789 |
| *aHouseholds above absolute poverty | 25 |
| Population above absolute poverty line | 7,875,000 |
| Served | 1,600,000 |
| Children below 7 and adults above 90 | 1,500,000 |
| Difference | 4,775,000 |
| Current demand | 4.7M-9.4M |

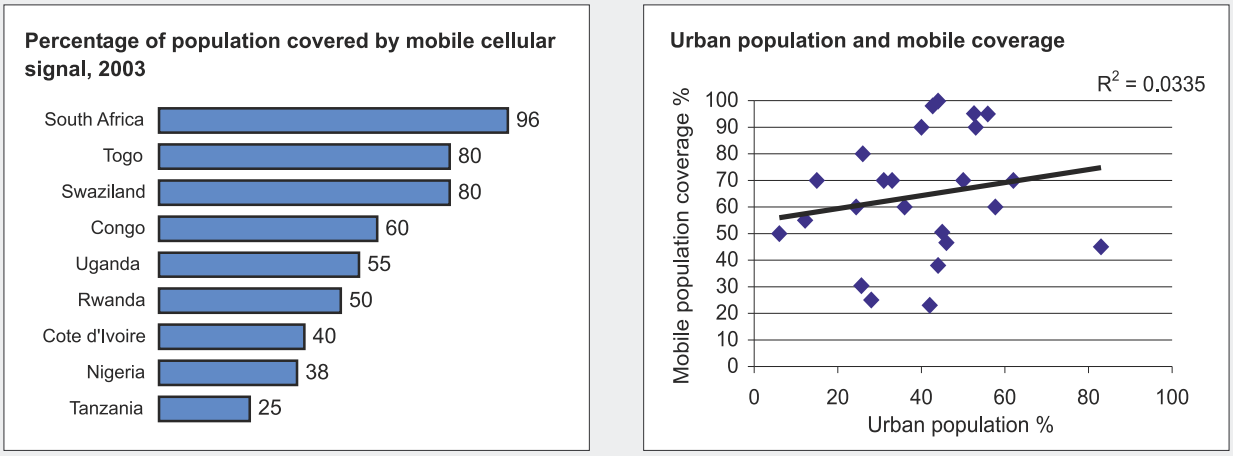
* Source: Economic Survey - 2003



*Source:* ITU, adapted from Communications Commission of Kenya, Ericsson, MTN.

**Figure 5.4: Mobile coverage**

*Percentage of population covered by a mobile cellular signal, 2003 (left) and compared to urban population, 2003 (right)*




*Note:* Mobile population coverage refers the percentage of the population within range of a cellular signal from where they live. It is not the same as mobile subscribers per 100 inhabitants that refers the number of people that have actually taken up a subscription to mobile cellular service.

*Source:* ITU World Telecommunication Indicators Database.

license conditions as well as to encourage a higher degree of competition. Of course, this is no longer possible for licenses that have already been issued without such conditions. However, other incentives could be provided to encourage roll-out into under- and un-served areas (e.g., by lowering universal access contributions, asymmetric interconnect rates, and enabling infrastructure sharing, etc.).

## 5.3 Expanding African mobile

Mobile communications has had a tremendous impact on enhancing access to telecommunications in Africa. The big question is whether its rapid growth can be sustained through the end of the decade. The annual growth rate has been declining since 2000 and in 2003 just slightly more new subscribers were added than the year before. At current trends it is forecast that the African mobile market will only have around twice the number of subscribers in 2010 (100 million) as it had in 2003. Acceleration can probably be achieved if the various stakeholders in Africa's mobile sector adopt pro-growth policies:

- There are a number of steps *regulators and policy makers* can take to lower costs and hence spread the usage of mobile networks in Africa. This includes minimizing or eliminating taxes on mobile equipment and services and keeping license fees to a minimum and encouraging infrastructure sharing. Allowing higher levels of competition in the mobile sector will drive down prices and widen coverage. Mobile operators should further be granted full service licenses that allow them to provide international and Internet (including new wireless broadband technologies) services which can lower mobile prices for end users. Policy makers also need to tackle inefficiencies that drive up the cost of mobile investment in Africa such as the lack of transparency and shortage of electricity and they need to become more proficient in solving interconnection disputes. Besides keeping abreast of world-wide developments in the mobile sector, regulators might also provide incentives such as lowered spectrum charges for operators that agree to provide services in rural and under-served areas.

  - Policy makers need to be inventive about developing rural access policies using mobile communications. This includes policies on mobile payphones and strategies to increase the number of village phone resellers. Postal workers could be equipped with mobile phones to resell the service. It is also important for regulators to be aware of the costs and the benefits of providing services to rural areas.

  - To be able to track the developments in the mobile sector, regulators need to have the right

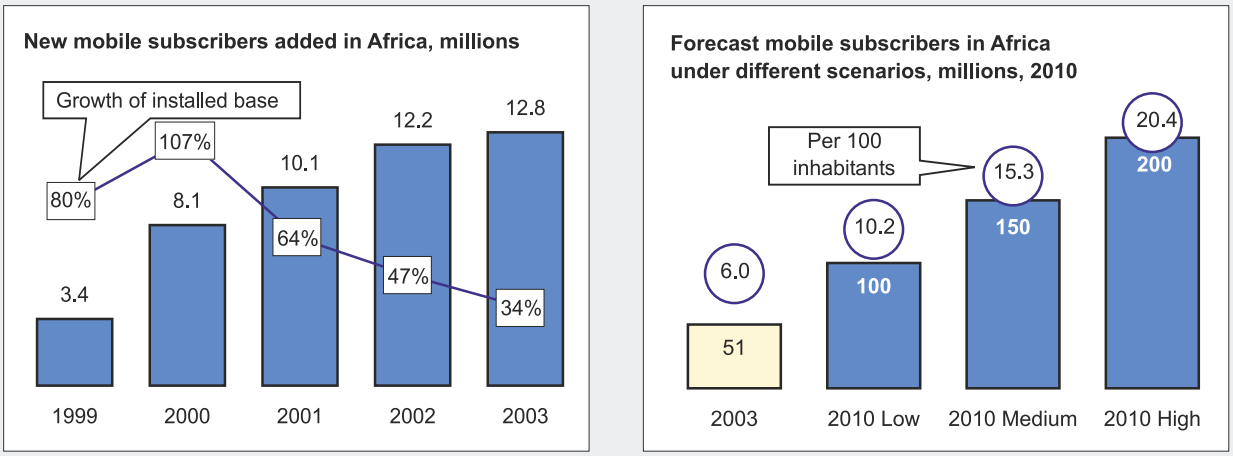
market statistics and be aware of trends. On the one hand this would allow them to make informed policy decisions, as well as to evaluate the impact of their policies on the market. Internationally comparable statistics help countries monitor and benchmark their progress and see whether they are doing comparatively good or bad. Collecting and disseminating this data would provide potential investors with an incentive to enter areas with unsatisfied demand. Data transparency is in itself likely to reassure investors.

- *Manufacturers* need to find solutions to reduce equipment costs for lower income regions such as Africa. They should be more innovative about the type of products and services including tailoring them to the African context. They should become more involved in poverty reduction initiatives by donating equipment for worthwhile causes such as SMS rural health centres and schools, needy farmers, etc.

- *Operators* need to reduce costs and increase coverage and quality of service. Obviously privately-run operators will be striving to do the former. However they have not always matched cost reductions with lower interconnect rates or consumer prices. Operators may have little incentive to increase coverage unless mandated to do so by license conditions (and unless these conditions are enforced). Operators should enhance incoming roaming by increasing agreements in order to generate higher revenues and off-set lower national prices. At the same time they should strive to innovate for example by introducing lower denominated pre-paid cards or launching mobile data services.

- *Donors* can help by enhancing universal service solutions for mobile by providing resources for capacity building of regulators to empower them to act more effectively in areas such as licensing and interconnection. Another area where the international community could help lower mobile access costs is through an initiative that would recycle used handsets from developed nations to Africa. Donors could contribute to national universal access programmes by for example providing financial resources for subsidizing handsets, SIM cards and pre-paid cards for low-income users. Donors might also support programmes to put in place national and regional backbone infrastructures that are either non-existent or grossly inadequate in most African countries and a reason for limited network coverage as many rural areas remain inaccessible by terrestrial networks or uneconomic for access by satellite.

**Figure 5.5: How much will the African mobile market grow?**
*Number of new mobile subscribers added, Africa, 1999-2003 and different forecasts of total number of mobile subscribers, 2010*




*Note:* Right chart: Low scenario assumes annual average growth of 10 per cent, medium assumes 16 per cent and high 21 per cent.
*Source*: ITU.

[1] "Nokia launches Mobile Entry Solutions to pave the way for the next one billion mobile users." *Press Release*. 27 August 2003. http://press.nokia.com/PR/200308/915314_5.html. [Accessed 1 April 2004]. In October 2003, Safaricom, a Kenyan mobile operator launched a 100 shilling (US$ 1.27) pre-paid card. See http://www.safaricom.co.ke/Article.asp?id=80. [Accessed 1 April 2004].

[2] The lower forecast is from the UMTS forum (www.umts-forum.org), the higher forecast from GSM Association (www.gsmworld.com).

# AFRICAN TELECOMMUNICATION INDICATORS

# CONTENTS

# INTRODUCTION

This document provides data for 55 African countries and territories classified by the United Nations as being in the African region. Regional totals and averages are provided for *Sub-Saharan Africa* and *North Africa* (see *List of Countries*).

Substantial effort has been made to collect and harmonise the data. Telecommunications data are from the ITU/BDT's World Telecommunication Indicators database. The data are obtained by questionnaires sent to telecommunication ministries, regulators and operators as well as from annual reports issued by telecommunication entities and reports prepared by ITU staff. Because of differences in national statistical practices, strict comparability is not always possible. Additional explanations and definitions are provided in the *Technical Notes*.

Data generally refer to the end of the calendar year indicated. For exceptions see the individual country pages where the fiscal year period is shown.
The following signs and symbols are used in the document:

| | |
|---|---|
| italic | Estimate |
| k | Thousands (e.g., 1’000) |
| M | Millions (e.g., 1’000’000) |
| B | Billions (e.g., 1’000’000’000) |
| US$ | United States dollars. See the Technical notes for how US$ figures are obtained. |
| % | Per cent |
| - | Zero or a quantity less than half the unit shown. Also used for data items that are not applicable. |
| ... | Data not available |
| CAGR | Compound Annual Growth Rate. See the Technical notes for how this is computed. |

The absence of any sign or symbol indicates that data are in units.

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## List of economies

| *English designation /* | *Designation in document* |
|---|---|
| Algeria (People's Democratic Republic of) | Algeria |
| Egypt (Arab Republic of) | Egypt |
| Libya (Socialist People's Libyan Arab Jamahiriya) | Libya |
| Morocco (Kingdom of) | Morocco |
| Tunisia | Tunisia |
| **North Africa** | **North Africa** |
| South Africa (Republic of) | South Africa |
| **South Africa** | **South Africa** |
| Angola (People's Republic of) | Angola |
| Benin (Republic of) | Benin |
| Botswana (Republic of) | Botswana |
| Burkina Faso | Burkina Faso |
| Burundi (Republic of) | Burundi |
| Cameroon (Republic of) | Cameroon |
| Cape Verde (Republic of) | Cape Verde |
| Central African Republic | Central African Rep. |
| Chad (Republic of) | Chad |
| Comoros (Islamic Federal Republic of the) | Comoros |
| Congo (Republic of the) | Congo |
| Côte d'Ivoire (Republic of) | Côte d'Ivoire |
| Democratic Republic of Congo | Dem. Rep. Of the Congo |
| Djibouti (Republic of) | Djibouti |
| Equatorial Guinea (Republic of) | Equatorial Guinea |
| Eritrea | Eritrea |
| Ethiopia | Ethiopia |
| Gabonese Republic | Gabon |
| Gambia (Republic of the) | Gambia |
| Ghana | Ghana |
| Guinea (Republic of) | Guinea |
| Guinea-Bissau (Republic of) | Guinea-Bissau |
| Kenya (Republic of) | Kenya |
| Lesotho (Kingdom of) | Lesotho |
| Liberia (Republic of) | Liberia |
| Madagascar (Democratic Republic of) | Madagascar |
| Malawi | Malawi |
| Mali (Republic of) | Mali |
| Mauritania (Islamic Republic of) | Mauritania |
| Mauritius (Republic of) | Mauritius |
| Mayotte | Mayotte |
| Mozambique (Republic of) | Mozambique |
| Namibia (Republic of) | Namibia |
| Niger (Republic of the) | Niger |
| Nigeria (Federal Republic of) | Nigeria |
| Reunion (French Department of) | Réunion |
| Rwandese Republic | Rwanda |
| Sao Tome & Principe (Democratic Republic of) | S. Tome & Principe |
| Senegal (Republic of) | Senegal |
| Seychelles (Republic of) | Seychelles |
| Sierra Leone | Sierra Leone |
| Somali Democratic Republic | Somalia |
| Sudan (Republic of the) | Sudan |
| Swaziland (Kingdom of) | Swaziland |
| Tanzania (United Republic of) | Tanzania |
| Togolese Republic | Togo |
| Uganda (Republic of) | Uganda |
| Zambia (Republic of) | Zambia |
| Zimbabwe (Republic of) | Zimbabwe |
| **Sub-Saharan Africa** | **Sub-Saharan Africa** |

| | | Population | | GDP | Total telephone subscribers | | Effective |
|---|---|---|---|---|---|---|---|
| | | Total (M) 2003 | Density (per km2) 2003 | per capita (US$) 2002 | Total (000s) 2003 | per 100 inhabitants 2003 | tele-density 2003 |
| 1 | Algeria | 31.76 | 13 | 1'787 | 3'647 | 11.48 | 6.93 |
| 2 | Egypt | 70.19 | 70 | 1'260 | 14'534 | 20.71 | 12.45 |
| 3 | Libya | 5.53 | 3 | 3'484 | 850 | 15.37 | 13.56 |
| 4 | Morocco | 30.12 | 46 | 1'218 | 8'552 | 28.39 | 24.34 |
| 5 | Tunisia | 9.89 | 60 | 2'152 | 3'064 | 30.98 | 19.21 |
| | **North** | **147.50** | **25** | **1'513** | **30'646** | **20.78** | **14.18** |
| 6 | South Africa | 46.37 | 39 | *2'293* | *18'546* | *40.80* | *30.14* |
| | **South Africa** | **46.37** | **39** | **2'293** | **18'546** | **40.80** | **30.14** |
| 7 | Angola | 14.36 | 12 | 715 | *215* | *1.54* | *0.93* |
| 8 | Benin | 7.03 | 62 | 413 | 303 | 4.31 | 3.36 |
| 9 | Botswana | 1.76 | 3 | 2'939 | *577* | *33.57* | *25.29* |
| 10 | Burkina Faso | 12.26 | 45 | 220 | 292 | 2.39 | 1.85 |
| 11 | Burundi | 7.12 | 256 | 89 | 88 | 1.23 | 0.90 |
| 12 | Cameroon | 16.26 | 34 | 670 | *812* | *5.13* | *4.43* |
| 13 | Cape Verde | 0.46 | 114 | 1'407 | 125 | 27.26 | 15.63 |
| 14 | Central African Rep. | 4.14 | 7 | *265* | *22* | *0.55* | *0.32* |
| 15 | Chad | 8.08 | 6 | *212* | *46* | *0.58* | *0.43* |
| 16 | Comoros | 0.80 | 429 | *303* | 15 | 1.91 | 1.66 |
| 17 | Congo | 3.50 | 10 | 967 | 337 | 9.63 | 9.43 |
| 18 | Côte d'Ivoire | 16.63 | 52 | 711 | 1'564 | 9.40 | 7.43 |
| 19 | D.R. Congo | 52.77 | 22 | *143* | *570* | *1.08* | *1.06* |
| 20 | Djibouti | 0.67 | 30 | *894* | 32 | 4.86 | 3.44 |
| 21 | Equatorial Guinea | 0.54 | 19 | 4'289 | 51 | 9.41 | 7.64 |
| 22 | Eritrea | 4.15 | 44 | 146 | 38 | 0.92 | 0.92 |
| 23 | Ethiopia | 69.36 | 57 | *96* | 533 | 0.77 | 0.63 |
| 24 | Gabon | 1.34 | 5 | *3'611* | 338 | 25.31 | 22.44 |
| 25 | Gambia | 1.36 | 128 | 270 | *138* | *10.42* | *7.53* |
| 26 | Ghana | 22.44 | 94 | *209* | 1'102 | 4.91 | 3.56 |
| 27 | Guinea | 7.75 | 32 | *381* | 138 | 1.78 | 1.44 |
| 28 | Guinea-Bissau | 1.28 | 35 | 173 | 12 | 0.92 | 0.82 |
| 29 | Kenya | 31.71 | 54 | 391 | 1'919 | 6.05 | 5.02 |
| 30 | Lesotho | 2.17 | 72 | 330 | *125* | *5.79* | *4.47* |
| 31 | Liberia | 3.37 | 30 | 174 | *9* | *0.28* | *0.22* |
| 32 | Madagascar | 16.34 | 28 | 277 | 339 | 2.08 | 1.71 |
| 33 | Malawi | 10.49 | 111 | 192 | 220 | 2.10 | 1.29 |
| 34 | Mali | 10.86 | 9 | 318 | *109* | *1.03* | *0.53* |
| 35 | Mauritania | 2.75 | 3 | 365 | *279* | *10.39* | *9.22* |
| 36 | Mauritius | 1.22 | 655 | 3'957 | 811 | 66.39 | 37.87 |
| 37 | Mayotte | 0.17 | 444 | ... | *32* | *19.78* | *13.54* |
| 38 | Mozambique | 18.83 | 24 | 217 | *338* | *1.87* | *1.41* |
| 39 | Namibia | 1.92 | 2 | 1'523 | 351 | 18.25 | 11.63 |
| 40 | Niger | 12.29 | 10 | 165 | *39* | *0.33* | *0.19* |
| 41 | Nigeria | 123.31 | 133 | 409 | 4'003 | 3.25 | 2.55 |
| 42 | Réunion | 0.76 | 301 | ... | *721* | *98.65* | *57.61* |
| 43 | Rwanda | 8.40 | 319 | 210 | *134* | *1.64* | *1.36* |
| 44 | S. Tomé & Principe | 0.15 | 158 | 331 | 12 | 7.76 | 4.59 |
| 45 | Senegal | 10.36 | 53 | 506 | 805 | 7.77 | 5.56 |
| 46 | Seychelles | 0.08 | 198 | 8'647 | *66* | *82.25* | *55.35* |
| 47 | Sierra Leone | 4.97 | 69 | 199 | *91* | *1.84* | *1.35* |
| 48 | Somalia | 9.89 | 16 | ... | *135* | *1.37* | *1.01* |
| 49 | Sudan | 33.29 | 13 | 426 | 1'550 | 4.66 | 2.70 |
| 50 | Swaziland | 1.04 | 60 | 1'130 | 134 | 12.85 | 8.43 |
| 51 | Tanzania | 35.31 | 38 | 282 | 1'040 | 2.95 | 2.52 |
| 52 | Togo | 5.00 | 88 | 301 | 281 | 5.61 | 4.40 |
| 53 | Uganda | 25.60 | 106 | 243 | 837 | 3.27 | 3.03 |
| 54 | Zambia | 11.20 | 15 | 338 | 329 | 2.94 | 2.15 |
| 55 | Zimbabwe | 11.77 | 30 | 65 | 680 | 5.78 | 3.22 |
| | **Sub-Saharan** | **647.32** | **28** | **342** | **22'740** | **3.53** | **2.68** |
| | **AFRICA** | **841.18** | **28** | **660** | **71'932** | **8.60** | **6.20** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 2. Main telephone lines

**AFRICA**

| | | Main telephone lines | | | | Subscriber lines | |
|---|---|---|---|---|---|---|---|
| | | Total (000s) | CAGR (%) | per 100 inhabitants | | Total (000s) | per 100 inhabitants |
| | | 2003 | 1998-2003 | 2003 | CAGR (%) 1998-2003 | 2002 | 2002 |
| 1 | Algeria | 2'199.6 | 8.3 | 6.93 | 6.7 | 1'908.0 | 6.10 |
| 2 | Egypt | 8'736.7 | 17.1 | 12.45 | 11.5 | 7'736.4 | 11.49 |
| 3 | Libya | 750.0 | 8.4 | 13.56 | 6.9 | *660.0* | *11.83* |
| 4 | Morocco | 1'219.2 | -2.6 | 4.05 | -3.6 | 1'139.3 | 3.84 |
| 5 | Tunisia | 1'163.8 | 9.1 | 11.77 | 6.5 | 1'148.0 | 11.74 |
| | **North** | **14'069.3** | **11.7** | **9.54** | **9.5** | **12'591.7** | **8.77** |
| 6 | South Africa | *4'844.0* | *-1.2* | *10.66* | *-3.0* | 4'310.0 | 9.48 |
| | **South Africa** | **4'844.0** | **-1.2** | **10.66** | **-3.0** | **4'310.0** | **9.48** |
| 7 | Angola | 96.3 | 8.1 | 0.67 | 4.5 | 85.0 | 0.61 |
| 8 | Benin | 66.5 | 11.6 | 0.95 | 8.1 | 62.7 | 0.92 |
| 9 | Botswana | *142.4* | *8.7* | *8.28* | *6.2* | 142.4 | 8.28 |
| 10 | Burkina Faso | 65.4 | 9.7 | 0.53 | 7.0 | 61.9 | 0.52 |
| 11 | Burundi | 23.9 | 6.0 | 0.34 | 4.0 | 22.1 | 0.32 |
| 12 | Cameroon | *110.9* | *4.2* | *0.70* | *1.6* | 101.4 | 0.64 |
| 13 | Cape Verde | 71.7 | 12.4 | 15.63 | 10.3 | 70.2 | 15.58 |
| 14 | Central African Rep. | *9.0* | *-1.5* | *0.23* | *-4.6* | 9.0 | 0.23 |
| 15 | Chad | *11.8* | *8.2* | *0.15* | *5.4* | 11.8 | 0.15 |
| 16 | Comoros | 13.2 | 16.3 | 1.66 | 11.9 | 10.3 | 1.35 |
| 17 | Congo | 7.0 | -20.5 | 0.20 | -24.0 | 22.0 | 0.67 |
| 18 | Côte d'Ivoire | 328.0 | 14.0 | 1.97 | 10.6 | 336.1 | 2.04 |
| 19 | D.R. Congo | *10.0* | *1.7* | *0.02* | *0.0* | 10.0 | 0.02 |
| 20 | Djibouti | 9.5 | 3.6 | 1.42 | 1.7 | 10.1 | 1.54 |
| 21 | Equatorial Guinea | 9.6 | 11.5 | 1.77 | 6.4 | 8.9 | 1.76 |
| 22 | Eritrea | 38.1 | 9.4 | 0.92 | 6.2 | 35.9 | 0.90 |
| 23 | Ethiopia | 435.0 | 21.5 | 0.63 | 17.9 | 353.8 | 0.53 |
| 24 | Gabon | 38.4 | -0.1 | 2.87 | -2.8 | 32.1 | 2.47 |
| 25 | Gambia | *38.4* | *10.6* | *2.89* | *7.6* | 38.4 | 2.89 |
| 26 | Ghana | 302.3 | 17.8 | 1.35 | 14.1 | 274.3 | 1.27 |
| 27 | Guinea | 26.2 | 11.5 | 0.34 | 10.2 | 26.0 | 0.34 |
| 28 | Guinea-Bissau | 10.6 | 5.5 | 0.82 | 3.2 | 11.2 | 0.89 |
| 29 | Kenya | 328.4 | 2.6 | 1.04 | 0.0 | 321.5 | 1.02 |
| 30 | Lesotho | *28.6* | *8.0* | *1.32* | *6.7* | 28.6 | 1.32 |
| 31 | Liberia | *6.9* | *1.5* | *0.21* | *-3.3* | *6.7* | *0.21* |
| 32 | Madagascar | 59.6 | 4.8 | 0.36 | 1.9 | 59.4 | 0.37 |
| 33 | Malawi | 85.0 | 17.9 | 0.81 | 16.6 | 73.1 | 0.70 |
| 34 | Mali | *56.6* | *20.3* | *0.53* | *17.8* | 56.6 | 0.53 |
| 35 | Mauritania | *31.5* | *20.3* | *1.18* | *17.3* | 31.5 | 1.18 |
| 36 | Mauritius | 348.2 | 7.3 | 28.52 | 6.2 | 327.2 | 27.03 |
| 37 | Mayotte | *10.0* | *-4.8* | *6.24* | *-8.6* | *9.4* | *6.61* |
| 38 | Mozambique | *83.7* | *2.7* | *0.46* | *-0.4* | 83.7 | 0.46 |
| 39 | Namibia | 127.4 | 3.8 | 6.62 | 1.1 | 121.4 | 6.48 |
| 40 | Niger | *22.4* | *5.4* | *0.19* | *1.5* | 22.4 | 0.19 |
| 41 | Nigeria | 853.1 | 14.2 | 0.69 | 10.9 | 702.0 | 0.58 |
| 42 | Réunion | *300.0* | *7.3* | *41.04* | *4.9* | *253.3* | *35.86* |
| 43 | Rwanda | *23.2* | *21.0* | *0.28* | *14.7* | 23.2 | 0.28 |
| 44 | S. Tomé & Principe | 7.0 | 10.2 | 4.59 | 8.5 | 6.2 | 4.13 |
| 45 | Senegal | 228.8 | 10.4 | 2.21 | 7.3 | 224.6 | 2.23 |
| 46 | Seychelles | *21.7* | *3.8* | *26.91* | *3.1* | 21.7 | 26.91 |
| 47 | Sierra Leone | *24.0* | *8.4* | *0.48* | *6.9* | 24.0 | 0.48 |
| 48 | Somalia | *100.0* | *49.5* | *1.01* | *49.0* | 100.0 | 1.01 |
| 49 | Sudan | 900.0 | 40.9 | 2.70 | 37.4 | 671.8 | 2.04 |
| 50 | Swaziland | 46.2 | 9.8 | 4.43 | 7.8 | 34.6 | 3.35 |
| 51 | Tanzania | 149.1 | 4.1 | 0.42 | 1.3 | 161.6 | 0.47 |
| 52 | Togo | 60.6 | 14.1 | 1.21 | 11.2 | 51.2 | 1.05 |
| 53 | Uganda | 61.0 | 1.4 | 0.24 | -2.2 | 59.5 | 0.24 |
| 54 | Zambia | 88.4 | 2.6 | 0.79 | -0.2 | 87.7 | 0.81 |
| 55 | Zimbabwe | 300.9 | 4.9 | 2.56 | 3.8 | 287.9 | 2.47 |
| | **Sub-Saharan** | **6'216.5** | **11.8** | **0.96** | **9.0** | **5'586.5** | **0.88** |
| | **AFRICA** | **25'129.8** | **8.5** | **3.00** | **5.9** | **22'488.1** | **2.74** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.

*Source:* ITU.

| | | *Waiting list for telephone lines* | | | *Total demand* | *Satisfied demand* | *Waiting time* |
|---|---|---|---|---|---|---|---|
| | | *(000s)* | | *CAGR (%)* | *(000s)* | *(%)* | *(years)* |
| | | *1997* | *2002* | *1997-02* | *2002* | *2002* | *2002* |
| 1 | Algeria | 732.0 | *727.0* | *-0.2* | *2'635.0* | *72.4* | *7.1* |
| 2 | Egypt | 1'277.8 | 206.1 | -30.6 | 7'942.5 | 97.4 | 0.2 |
| 3 | Libya | ... | *80.0* | ... | *740.0* | *89.2* | *1.5* |
| 4 | Morocco | 29.0 | *5.0* | *-44.3* | *1'132.5* | *99.6* | ... |
| 5 | Tunisia | 77.5 | 129.5 | 10.8 | 1'278.1 | 89.9 | 1.3 |
| | **North** | **2'116.3** | **1'147.6** | **-11.5** | **13'728.0** | **91.6** | **2.5** |
| 6 | South Africa | 116.2 | *50.0* | *-24.5* | *4'894.0* | *99.0* | ... |
| | **South Africa** | **116.2** | **50.0** | **-24.5** | **4'894.0** | **99.0** | **...** |
| 7 | Angola | 5.4 | *21.1* | *97.1* | *106.1* | *80.1* | *3.6* |
| 8 | Benin | 10.0 | *23.0* | *32.0* | *85.7* | *73.2* | *3.6* |
| 9 | Botswana | 11.8 | ... | ... | ... | ... | ... |
| 10 | Burkina Faso | ... | 12.4 | ... | 74.3 | 83.3 | 2.6 |
| 11 | Burundi | 5.1 | *4.7* | *-2.0* | *28.6* | *83.6* | *2.9* |
| 12 | Cameroon | 45.0 | ... | ... | ... | ... | ... |
| 13 | Cape Verde | 10.8 | 1.7 | -31.3 | 71.8 | 97.7 | 0.2 |
| 14 | Central African Rep. | 0.2 | 1.2 | 46.0 | 10.2 | 88.2 | ... |
| 15 | Chad | 1.0 | *0.6* | *-23.6* | *12.4* | *95.2* | *0.8* |
| 16 | Comoros | ... | 3.4 | ... | 13.6 | 75.2 | 2.7 |
| 17 | Congo | ... | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | 43.3 | 24.2 | -11.0 | 360.3 | 93.3 | 0.6 |
| 19 | D.R. Congo | ... | ... | ... | ... | ... | ... |
| 20 | Djibouti | ... | ... | ... | ... | ... | ... |
| 21 | Equatorial Guinea | ... | ... | ... | ... | ... | ... |
| 22 | Eritrea | 42.0 | 38.5 | -1.7 | 74.4 | 48.3 | >10 |
| 23 | Ethiopia | 206.6 | 145.9 | -6.7 | 499.8 | 70.8 | 2.7 |
| 24 | Gabon | 10.0 | ... | ... | ... | ... | ... |
| 25 | Gambia | 22.0 | 10.6 | -13.6 | 49.0 | 78.3 | 3.5 |
| 26 | Ghana | ... | *154.8* | ... | *429.1* | *63.9* | *4.0* |
| 27 | Guinea | 1.9 | *1.4* | *-7.2* | *27.4* | *94.8* | *0.9* |
| 28 | Guinea-Bissau | 2.0 | *5.1* | *37.5* | *16.3* | *68.7* | *3.0* |
| 29 | Kenya | 93.9 | 110.1 | 3.2 | 431.5 | 74.5 | >10 |
| 30 | Lesotho | 10.0 | 21.1 | 16.1 | 49.7 | 57.6 | 9.0 |
| 31 | Liberia | 2.4 | *2.4* | *0.4* | *9.3* | *74.2* | *>10* |
| 32 | Madagascar | 16.9 | 1.8 | -35.8 | 61.3 | 97.0 | 0.6 |
| 33 | Malawi | 30.9 | 17.4 | -10.8 | 90.5 | 80.7 | 1.7 |
| 34 | Mali | ... | ... | ... | ... | ... | ... |
| 35 | Mauritania | 6.4 | *47.8* | *173.3* | *79.3* | *39.8* | *9.6* |
| 36 | Mauritius | 23.2 | 13.5 | -10.3 | 340.7 | 96.0 | 0.6 |
| 37 | Mayotte | 1.7 | ... | ... | ... | ... | ... |
| 38 | Mozambique | 17.4 | 12.7 | -6.1 | 96.4 | 86.9 | 6.7 |
| 39 | Namibia | 6.5 | 2.6 | -16.9 | 124.0 | 97.9 | 0.6 |
| 40 | Niger | ... | ... | ... | ... | ... | ... |
| 41 | Nigeria | ... | ... | ... | ... | ... | ... |
| 42 | Réunion | 1.8 | ... | ... | ... | ... | ... |
| 43 | Rwanda | 3.5 | *8.0* | *52.1* | *31.2* | *74.3* | *2.3* |
| 44 | S. Tomé & Principe | ... | 0.6 | ... | 6.9 | 90.6 | 1.1 |
| 45 | Senegal | 16.7 | *9.8* | *-12.4* | *234.5* | *95.8* | *0.5* |
| 46 | Seychelles | ... | *1.8* | ... | *23.5* | *92.4* | *2.6* |
| 47 | Sierra Leone | 17.5 | ... | ... | ... | ... | ... |
| 48 | Somalia | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | 320.0 | *444.0* | *8.5* | *1'115.8* | *60.2* | *3.2* |
| 50 | Swaziland | 15.2 | 15.6 | 0.5 | 50.7 | 69.2 | >10 |
| 51 | Tanzania | 37.2 | 8.0 | -26.5 | 169.6 | 95.3 | 2.0 |
| 52 | Togo | 13.0 | 27.5 | 16.2 | 78.7 | 65.0 | 6.4 |
| 53 | Uganda | 8.1 | *9.2* | *6.4* | *64.1* | *85.7* | ... |
| 54 | Zambia | 11.6 | 11.6 | 0.1 | 99.3 | 88.3 | 7.6 |
| 55 | Zimbabwe | 109.0 | *158.9* | *13.4* | *446.8* | *64.4* | *9.7* |
| | **Sub-Saharan** | **1'179.8** | **1'373.0** | **3.1** | **5'462.9** | **80.4** | **4.7** |
| | **AFRICA** | **3'412.4** | **2'570.6** | **-5.5** | **24'085.0** | **90.0** | **4.5** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 4. Local telephone network

**AFRICA**

| | | Main telephone lines | | | | Faults per 100 main lines per year |
|---|---|---|---|---|---|---|
| | | Capacity used (%) | Automatic (%) | Digital (%) | Residential (%) | |
| | | 2002 | 2002 | 2002 | 2002 | 2002 |
| 1 | Algeria | *68.2* | 100.0 | 100.0 | *84.0* | *6.0* |
| 2 | Egypt | 75.0 | *93.0* | 100.0 | 89.1 | *0.5* |
| 3 | Libya | ... | 100.0 | ... | ... | ... |
| 4 | Morocco | *77.5* | 100.0 | 100.0 | 71.0 | *24.8* |
| 5 | Tunisia | 72.4 | 100.0 | 100.0 | 67.0 | 28.0 |
| | **North** | **73.9** | **96.0** | **100.0** | **84.4** | **5.1** |
| 6 | South Africa | ... | ... | 99.8 | *51.0* | 48.2 |
| | **South Africa** | **...** | **...** | **99.8** | **51.0** | **48.2** |
| 7 | Angola | ... | 100.0 | *91.4* | ... | ... |
| 8 | Benin | *87.3* | 100.0 | *83.0* | ... | *6.0* |
| 9 | Botswana | 68.9 | 100.0 | 100.0 | *60.0* | ... |
| 10 | Burkina Faso | 66.7 | 100.0 | 95.7 | ... | 19.7 |
| 11 | Burundi | 70.8 | 100.0 | ... | *62.0* | ... |
| 12 | Cameroon | 80.3 | 100.0 | ... | ... | ... |
| 13 | Cape Verde | 81.7 | 100.0 | 100.0 | *91.0* | 44.4 |
| 14 | Central African Rep. | ... | 100.0 | ... | 60.0 | ... |
| 15 | Chad | *96.2* | 100.0 | 100.0 | ... | *60.8* |
| 16 | Comoros | ... | 100.0 | 100.0 | ... | 55.8 |
| 17 | Congo | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | *66.7* | 100.0 | 100.0 | *84.0* | 81.0 |
| 19 | D.R. Congo | ... | ... | ... | ... | ... |
| 20 | Djibouti | 29.6 | 100.0 | 100.0 | 70.0 | 8.6 |
| 21 | Equatorial Guinea | ... | 100.0 | ... | ... | ... |
| 22 | Eritrea | 79.0 | *97.9* | 80.7 | 55.2 | 53.3 |
| 23 | Ethiopia | 58.9 | *97.3* | 81.0 | 70.1 | ... |
| 24 | Gabon | 38.9 | 100.0 | 100.0 | 70.0 | ... |
| 25 | Gambia | ... | 100.0 | 100.0 | 85.0 | ... |
| 26 | Ghana | *75.3* | 100.0 | 100.0 | 70.0 | *67.4* |
| 27 | Guinea | 69.1 | 100.0 | 92.0 | 45.0 | 1.6 |
| 28 | Guinea-Bissau | *96.7* | 100.0 | 100.0 | *76.2* | *70.5* |
| 29 | Kenya | 65.3 | 99.0 | 76.0 | 36.0 | 149.0 |
| 30 | Lesotho | 58.2 | 100.0 | 100.0 | 72.6 | 72.8 |
| 31 | Liberia | ... | 100.0 | ... | ... | ... |
| 32 | Madagascar | 81.7 | *93.8* | 90.6 | 49.4 | 42.5 |
| 33 | Malawi | 65.2 | *99.0* | 96.0 | 52.3 | ... |
| 34 | Mali | *44.5* | 100.0 | 100.0 | *32.0* | *177.6* |
| 35 | Mauritania | ... | 100.0 | 100.0 | 54.7 | ... |
| 36 | Mauritius | 85.9 | 100.0 | 100.0 | 80.0 | 41.5 |
| 37 | Mayotte | ... | 100.0 | 100.0 | ... | ... |
| 38 | Mozambique | 60.5 | 100.0 | 100.0 | *80.0* | 70.0 |
| 39 | Namibia | 69.4 | 100.0 | 100.0 | 60.0 | 42.2 |
| 40 | Niger | ... | *90.0* | *79.7* | ... | *104.6* |
| 41 | Nigeria | 63.7 | 100.0 | 76.4 | *83.0* | ... |
| 42 | Réunion | ... | 100.0 | 100.0 | ... | ... |
| 43 | Rwanda | ... | 100.0 | 100.0 | ... | ... |
| 44 | S. Tomé & Principe | ... | 100.0 | 100.0 | 68.5 | ... |
| 45 | Senegal | *84.8* | 100.0 | 100.0 | *69.5* | *17.3* |
| 46 | Seychelles | ... | 100.0 | 100.0 | *65.0* | ... |
| 47 | Sierra Leone | ... | ... | *89.0* | *65.0* | ... |
| 48 | Somalia | ... | ... | ... | ... | ... |
| 49 | Sudan | *59.9* | 100.0 | 100.0 | *90.0* | ... |
| 50 | Swaziland | 62.6 | 100.0 | 100.0 | 53.4 | 100.0 |
| 51 | Tanzania | 68.9 | *97.0* | 96.0 | 63.0 | 24.0 |
| 52 | Togo | 59.4 | 100.0 | 100.0 | 80.0 | 6.2 |
| 53 | Uganda | ... | ... | 80.0 | *35.0* | ... |
| 54 | Zambia | 60.9 | 100.0 | 83.5 | 51.1 | 90.8 |
| 55 | Zimbabwe | *74.7* | 100.0 | 82.8 | *67.0* | ... |
| | **Sub-Saharan** | **67.2** | **99.6** | **91.8** | **70.3** | **64.7** |
| | **AFRICA** | **71.9** | **97.1** | **98.0** | **73.7** | **25.7** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | *Residential main lines* | | *% households* | *Public payhones* | | |
|---|---|---|---|---|---|---|---|
| | | *Total (000s)* | *per 100 households* | *with a telephone* | *Total (000s)* | *per 1'000 inhabitants* | *As % of main lines* |
| | | *2002* | *2002* | *2002* | *2002* | *2002* | *2002* |
| 1 | Algeria | *1'579.2* | *31.6* | *37.6* | *5.00* | *0.16* | *0.27* |
| 2 | Egypt | 6'893.1 | 47.6 | 48.0 | 47.49 | 0.71 | 0.61 |
| 3 | Libya | *440.0* | *57.1* | ... | *0.45* | *0.08* | *0.08* |
| 4 | Morocco | 800.8 | 14.9 | *24.9* | 77.81 | 2.63 | 6.90 |
| 5 | Tunisia | 769.6 | 36.8 | *38.0* | 28.48 | 2.91 | 2.48 |
| | **North** | **10'482.7** | **37.8** | **40.9** | **159.23** | **1.11** | **1.28** |
| 6 | South Africa | *2'511.5* | *22.4* | *24.4* | 179.00 | 3.94 | 3.70 |
| | **South Africa** | **2'511.5** | **22.4** | **24.4** | **179.00** | **3.94** | **3.70** |
| 7 | Angola | ... | ... | ... | *2.11* | *0.16* | *2.64* |
| 8 | Benin | *31.5* | *3.2* | *3.7* | *0.51* | *0.08* | *0.98* |
| 9 | Botswana | *85.6* | *21.1* | ... | 2.24 | 1.30 | 1.57 |
| 10 | Burkina Faso | ... | ... | *1.7* | 5.04 | 0.42 | 8.15 |
| 11 | Burundi | *12.7* | *0.9* | ... | 0.01 | 0.00 | 0.05 |
| 12 | Cameroon | ... | ... | ... | *6.56* | *0.45* | *6.93* |
| 13 | Cape Verde | *58.4* | *61.8* | ... | 0.45 | 0.99 | 0.64 |
| 14 | Central African Rep. | 5.4 | 0.8 | ... | 0.10 | 0.03 | 1.11 |
| 15 | Chad | ... | ... | ... | *0.06* | *0.01* | *0.60* |
| 16 | Comoros | ... | ... | ... | 0.30 | 0.39 | 2.88 |
| 17 | Congo | ... | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | *246.6* | *12.6* | 17.4 | *2.69* | *0.16* | *0.92* |
| 19 | D.R. Congo | ... | ... | ... | ... | ... | ... |
| 20 | Djibouti | 7.1 | 7.2 | *5.5* | 0.04 | 0.06 | 0.39 |
| 21 | Equatorial Guinea | ... | ... | ... | ... | ... | ... |
| 22 | Eritrea | 19.8 | 2.5 | ... | 0.44 | 0.11 | 1.23 |
| 23 | Ethiopia | 247.8 | 1.9 | *1.3* | 3.43 | 0.05 | 0.97 |
| 24 | Gabon | 22.5 | 8.6 | *12.8* | 0.12 | 0.10 | 0.39 |
| 25 | Gambia | 32.6 | 21.2 | ... | *0.60* | *0.46* | *1.70* |
| 26 | Ghana | 192.0 | 4.3 | ... | 5.00 | 0.23 | 1.82 |
| 27 | Guinea | 11.7 | 1.0 | *1.7* | 1.24 | 0.16 | 4.78 |
| 28 | Guinea-Bissau | *8.5* | *4.9* | ... | *0.20* | *0.17* | *1.83* |
| 29 | Kenya | 115.7 | 1.7 | ... | 9.60 | 0.30 | 2.99 |
| 30 | Lesotho | 20.8 | 4.8 | *5.6* | 1.82 | 0.84 | 6.36 |
| 31 | Liberia | ... | ... | ... | ... | ... | ... |
| 32 | Madagascar | 29.4 | 0.9 | *2.0* | 0.96 | 0.06 | 1.62 |
| 33 | Malawi | 38.2 | 1.6 | ... | 0.56 | 0.05 | 0.77 |
| 34 | Mali | *16.3* | *1.0* | *2.4* | *2.37* | *0.23* | *6.03* |
| 35 | Mauritania | 17.3 | 3.5 | *2.9* | 3.66 | 1.37 | 11.62 |
| 36 | Mauritius | 261.8 | 84.4 | *80.0* | 2.92 | 2.41 | 0.89 |
| 37 | Mayotte | ... | ... | ... | *0.25* | *1.78* | *2.62* |
| 38 | Mozambique | *68.6* | *1.7* | ... | 4.04 | 0.22 | 4.83 |
| 39 | Namibia | 72.8 | 20.4 | *17.0* | *5.30* | *2.98* | *4.81* |
| 40 | Niger | ... | ... | *0.6* | *0.06* | - | *0.26* |
| 41 | Nigeria | *498.3* | *2.1* | *1.8* | 4.87 | 0.04 | 0.69 |
| 42 | Réunion | *214.8* | *99.9* | ... | *1.12* | *1.59* | *0.42* |
| 43 | Rwanda | *10.4* | *0.5* | *1.1* | *0.40* | *0.06* | *3.16* |
| 44 | S. Tomé & Principe | 4.3 | 15.3 | ... | 0.08 | 0.54 | 1.30 |
| 45 | Senegal | *164.9* | *14.6* | *17.0* | *15.73* | *1.60* | *6.63* |
| 46 | Seychelles | *13.6* | *67.2* | 64.0 | 0.21 | 2.54 | 0.94 |
| 47 | Sierra Leone | *14.8* | *2.0* | ... | ... | ... | ... |
| 48 | Somalia | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | *407.7* | *7.8* | *10.0* | *7.35* | *0.23* | *1.62* |
| 50 | Swaziland | 18.7 | 11.4 | ... | 1.03 | 1.00 | 2.93 |
| 51 | Tanzania | 101.8 | 1.5 | *2.0* | 2.00 | 0.06 | 1.24 |
| 52 | Togo | 40.9 | 5.0 | *7.0* | 12.26 | 2.52 | 23.96 |
| 53 | Uganda | *21.6* | *0.4* | *2.7* | 3.24 | 0.13 | 5.90 |
| 54 | Zambia | 44.8 | 2.1 | 3.8 | 0.88 | 0.08 | 1.00 |
| 55 | Zimbabwe | *167.1* | *6.5* | *7.1* | *3.23* | *0.28* | *1.30* |
| | **Sub-Saharan** | **3'346.7** | **3.5** | **3.8** | **115.08** | **0.21** | **2.27** |
| | **AFRICA** | **16'340.9** | **12.1** | **13.1** | **453.32** | **0.61** | **2.03** |

*Note.* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 6. Telephone tariffs

**AFRICA**

| | | Residential | | Business | | Local call (US$) | Subscription as % of GDP per capita |
|---|---|---|---|---|---|---|---|
| | | Connection (US$) | Monthly subs. (US$) | Connection (US$) | Monthly subs. (US$) | | |
| | | 2002 | 2002 | 2002 | 2002 | 2002 | 2002 |
| 1 | Algeria | 44 | 2.5 | 44 | 2.5 | 0.04 | 1.7 |
| 2 | Egypt | 111 | 1.1 | 222 | 2.2 | 0.02 | 1.1 |
| 3 | Libya | ... | ... | ... | ... | ... | ... |
| 4 | Morocco | 54 | 7.6 | 109 | 10.9 | 0.15 | 7.5 |
| 5 | Tunisia | 56 | 1.9 | 56 | 1.9 | 0.02 | 1.0 |
| | **North** | **66** | **3.3** | **108** | **4.4** | **0.06** | **2.8** |
| 6 | South Africa | 23 | 6.4 | 23 | 8.5 | 0.09 | 3.4 |
| | **South Africa** | **23** | **6.4** | **23** | **8.5** | **0.09** | **3.4** |
| 7 | Angola | 46 | 5.7 | 112 | 11.2 | 0.09 | 9.6 |
| 8 | Benin | 138 | 4.2 | 280 | 4.2 | 0.09 | 12.2 |
| 9 | Botswana | 36 | 2.5 | 36 | 3.0 | 0.02 | 1.0 |
| 10 | Burkina Faso | 42 | 5.1 | 42 | 5.1 | 0.10 | 27.7 |
| 11 | Burundi | *12* | *0.5* | *72* | *0.5* | *0.02* | *6.3* |
| 12 | Cameroon | 43 | 2.5 | 43 | 2.5 | 0.06 | 4.5 |
| 13 | Cape Verde | 26 | 2.1 | 26 | 2.1 | 0.04 | 1.8 |
| 14 | Central African Rep. | 79 | 5.7 | 123 | 5.7 | 0.43 | 25.6 |
| 15 | Chad | 76 | 5.1 | 76 | 5.1 | 0.11 | 28.8 |
| 16 | Comoros | 75 | 4.3 | 75 | 4.3 | 0.14 | 17.1 |
| 17 | Congo | ... | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | 29 | 7.2 | 29 | 10.0 | 0.22 | 12.1 |
| 19 | D.R. Congo | ... | ... | ... | ... | ... | ... |
| 20 | Djibouti | 113 | 19.7 | 113 | 19.7 | 0.20 | 26.4 |
| 21 | Equatorial Guinea | ... | ... | ... | ... | ... | ... |
| 22 | Eritrea | 72 | 2.0 | 72 | 2.0 | 0.03 | 16.2 |
| 23 | Ethiopia | 36 | 0.9 | 36 | 2.0 | 0.02 | 11.7 |
| 24 | Gabon | 78 | 13.6 | 78 | 13.6 | 0.22 | 4.5 |
| 25 | Gambia | 41 | 1.5 | 41 | 1.8 | 0.03 | 6.7 |
| 26 | Ghana | 50 | 1.3 | 50 | 1.3 | 0.03 | 7.2 |
| 27 | Guinea | 110 | 3.0 | 110 | 3.0 | 0.08 | 9.4 |
| 28 | Guinea-Bissau | *67* | ... | *67* | ... | ... | ... |
| 29 | Kenya | 29 | 6.3 | 29 | 6.3 | 0.09 | 19.5 |
| 30 | Lesotho | 30 | 2.8 | 30 | 2.8 | 0.11 | 10.3 |
| 31 | Liberia | ... | ... | ... | ... | ... | ... |
| 32 | Madagascar | 30 | 3.7 | 30 | 3.7 | 0.07 | 16.2 |
| 33 | Malawi | 16 | 1.3 | 16 | 1.3 | 0.06 | 8.1 |
| 34 | Mali | 81 | 2.8 | 81 | 2.8 | ... | 10.4 |
| 35 | Mauritania | 39 | 5.4 | 39 | 5.4 | 0.13 | 17.9 |
| 36 | Mauritius | 33 | 2.5 | 67 | 7.0 | 0.04 | 0.8 |
| 37 | Mayotte | *45* | *11.5* | *45* | *14.7* | *0.11* | ... |
| 38 | Mozambique | 21 | 9.5 | 21 | 9.5 | 0.08 | 52.5 |
| 39 | Namibia | 25 | 4.1 | 25 | 4.5 | 0.03 | 3.2 |
| 40 | Niger | *41* | *3.8* | *41* | *3.8* | *0.10* | *29.6* |
| 41 | Nigeria | 75 | 4.1 | 75 | 4.1 | 0.11 | 12.2 |
| 42 | Réunion | ... | ... | ... | ... | ... | ... |
| 43 | Rwanda | 31 | 2.1 | 31 | 2.1 | 0.09 | 12.0 |
| 44 | S. Tomé & Principe | 44 | 4.4 | 44 | 11.0 | 0.17 | 16.0 |
| 45 | Senegal | 62 | 3.5 | 102 | 3.5 | 0.17 | 8.2 |
| 46 | Seychelles | 90 | 12.3 | 90 | 13.5 | 0.15 | 1.7 |
| 47 | Sierra Leone | 47 | 0.5 | 47 | 1.0 | 0.03 | 2.9 |
| 48 | Somalia | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | 25 | 1.9 | 25 | 1.9 | 0.03 | 5.4 |
| 50 | Swaziland | 19 | 1.2 | 32 | 2.5 | 0.04 | 1.3 |
| 51 | Tanzania | 41 | 3.6 | 41 | 3.6 | 0.12 | 15.4 |
| 52 | Togo | 156 | 2.5 | 156 | 2.5 | 0.10 | 9.8 |
| 53 | Uganda | 61 | 5.6 | 61 | 5.6 | 0.21 | 27.4 |
| 54 | Zambia | 11 | 1.1 | 34 | 2.3 | 0.09 | 4.0 |
| 55 | Zimbabwe | 4 | 0.3 | 8 | 0.5 | 0.01 | 4.9 |
| | **Sub-Saharan** | **52** | **4.3** | **65** | **5.1** | **0.09** | **12.7** |
| | **AFRICA** | **52** | **4.3** | **65** | **5.1** | **0.10** | **11.6** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.

*Source:* ITU.

| | | Mobile cellular subscribers | | | Prepaid | Population | As % of total |
|---|---|---|---|---|---|---|---|
| | | Total (000s) | per 100 inhabitants | CAGR (%) | subscribers (%) | coverage (%) | telephone subscribers |
| | | 2003 | 2003 | 1998-2003 | 2003 | 2003 | 2003 |
| 1 | Algeria | 1'447 | 4.56 | 140.5 | 81.8 | 73.0 | 39.7 |
| 2 | Egypt | 5'798 | 8.26 | 129.6 | *82.4* | 98.0 | 39.9 |
| 3 | Libya | 100 | 1.81 | 38.0 | ... | ... | 11.8 |
| 4 | Morocco | 7'333 | 24.34 | 128.9 | 95.4 | 95.0 | 85.7 |
| 5 | Tunisia | 1'900 | 19.21 | 117.6 | 92.1 | 60.0 | 62.0 |
| | **North** | **16'577** | **11.24** | **125.5** | **89.9** | **91.7** | **54.1** |
| 6 | South Africa | 16'860 | 36.36 | 38.3 | *76.0* | 96.0 | *73.9* |
| | **South Africa** | **16'860** | **36.36** | **38.3** | **76.0** | **97.9** | **73.9** |
| 7 | Angola | *130* | *0.93* | *90.7* | ... | ... | *60.5* |
| 8 | Benin | 236 | 3.36 | 106.5 | ... | *23.0* | 78.0 |
| 9 | Botswana | *435* | *25.29* | *131.3* | *96.8* | *99.0* | *75.3* |
| 10 | Burkina Faso | 227 | 1.85 | 142.1 | 47.6 | *60.0* | 77.6 |
| 11 | Burundi | 64 | 0.90 | 152.8 | ... | ... | 72.8 |
| 12 | Cameroon | 1'077 | 6.62 | 192.9 | 98.0 | *70.0* | *86.4* |
| 13 | Cape Verde | 53 | 11.63 | 120.6 | *99.6* | *90.0* | 42.7 |
| 14 | Central African Rep. | 13 | 0.31 | 51.4 | ... | ... | *58.3* |
| 15 | Chad | 65 | 0.80 | - | 100.0 | *8.0* | *74.3* |
| 16 | Comoros | 2 | 0.25 | - | ... | ... | 13.1 |
| 17 | Congo | 330 | 9.43 | 149.8 | 99.0 | *60.0* | 97.9 |
| 18 | Côte d'Ivoire | 1'236 | 7.43 | 68.4 | *93.7* | *46.6* | 79.0 |
| 19 | D.R. Congo | 1'000 | 1.89 | 151.2 | 97.3 | ... | *98.2* |
| 20 | Djibouti | 23 | 3.44 | 153.4 | *100.0* | *75.0* | 70.8 |
| 21 | Equatorial Guinea | 42 | 7.64 | 168.6 | ... | ... | 81.2 |
| 22 | Eritrea | - | - | - | - | - | - |
| 23 | Ethiopia | 98 | 0.14 | - | ... | ... | 18.4 |
| 24 | Gabon | 300 | 22.44 | 98.7 | ... | *45.0* | 88.6 |
| 25 | Gambia | *100* | *7.53* | *111.0* | *98.4* | *70.0* | *72.3* |
| 26 | Ghana | 800 | 3.56 | 80.5 | *82.5* | ... | 72.6 |
| 27 | Guinea | 112 | 1.44 | 38.9 | *74.9* | ... | 81.0 |
| 28 | Guinea-Bissau | 1 | 0.10 | - | ... | ... | 10.8 |
| 29 | Kenya | 1'591 | 5.02 | 171.6 | *97.8* | ... | 82.9 |
| 30 | Lesotho | *97* | *4.47* | *77.2* | *93.7* | 80.0 | *77.2* |
| 31 | Liberia | *2* | *0.06* | - | ... | 16.4 | *22.7* |
| 32 | Madagascar | 280 | 1.71 | 85.3 | ... | 30.0 | 82.4 |
| 33 | Malawi | 135 | 1.29 | 66.7 | *86.8* | *70.0* | 61.4 |
| 34 | Mali | 250 | 2.30 | 123.6 | ... | ... | *48.2* |
| 35 | Mauritania | 300 | 10.90 | - | ... | ... | *88.7* |
| 36 | Mauritius | 462 | 37.87 | 50.2 | *79.6* | *99.8* | 57.0 |
| 37 | Mayotte | 36 | 21.56 | - | *86.6* | ... | *68.5* |
| 38 | Mozambique | 429 | 2.28 | 129.6 | *89.8* | ... | *75.3* |
| 39 | Namibia | 224 | 11.63 | 62.9 | ... | *90.0* | 63.7 |
| 40 | Niger | 24 | 0.20 | 77.8 | - | *13.0* | *42.6* |
| 41 | Nigeria | 3'149 | 2.55 | 175.1 | ... | *38.0* | 78.7 |
| 42 | Réunion | 565 | 74.74 | 62.2 | *64.5* | ... | *58.4* |
| 43 | Rwanda | 134 | 1.60 | 93.0 | *91.0* | *50.0* | *82.7* |
| 44 | S. Tomé & Principe | 5 | 3.17 | - | *84.6* | ... | 40.9 |
| 45 | Senegal | 576 | 5.56 | 83.8 | *96.0* | 85.0 | 71.6 |
| 46 | Seychelles | 55 | 68.18 | 60.1 | ... | ... | *67.3* |
| 47 | Sierra Leone | *67* | *1.35* | - | ... | ... | *73.6* |
| 48 | Somalia | *35* | *0.36* | - | ... | ... | *25.9* |
| 49 | Sudan | 650 | 1.95 | 137.5 | ... | *60.0* | 41.9 |
| 50 | Swaziland | 88 | 8.43 | 79.7 | *95.0* | *80.0* | 65.6 |
| 51 | Tanzania | 891 | 2.52 | 88.0 | *96.1* | 25.0 | 85.7 |
| 52 | Togo | 220 | 4.40 | 96.5 | *98.8* | 80.0 | 78.4 |
| 53 | Uganda | 776 | 3.03 | 91.7 | 95.3 | *55.0* | 92.7 |
| 54 | Zambia | 241 | 2.15 | 96.3 | ... | *50.5* | 73.2 |
| 55 | Zimbabwe | 379 | 3.22 | 82.0 | 69.9 | ... | 55.8 |
| | **Sub-Saharan** | **18'004** | **2.78** | **98.4** | **91.2** | **47.6** | **72.7** |
| | **AFRICA** | **51'441** | **6.12** | **65.0** | **85.3** | **63.2** | **65.1** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 8. Prepaid cellular tariffs, US$ AFRICA
## October 2003

| | | Connection charge 2003 | Per minute local call | | Cost of local SMS 2003 |
|---|---|---|---|---|---|
| | | | Peak 2003 | Off-peak 2003 | |
| 1 | Algeria | 62.74 | 0.25 | 0.25 | 0.13 |
| 2 | Egypt | 87.78 | 0.33 | 0.33 | 0.11 |
| 3 | Libya | ... | ... | ... | ... |
| 4 | Morocco | 22.69 | 0.27 | 0.18 | 0.09 |
| 5 | Tunisia | 84.51 | 0.16 | 0.12 | ... |
| | **North** | **64.43** | **0.25** | **0.22** | **0.11** |
| 6 | South Africa | 14.14 | 0.27 | 0.15 | 0.08 |
| | **South Africa** | **14.14** | **0.27** | **0.15** | **0.08** |
| 7 | Angola | ... | ... | ... | ... |
| 8 | Benin | 28.69 | 0.34 | 0.16 | ... |
| 9 | Botswana | 21.33 | 0.32 | 0.07 | 0.03 |
| 10 | Burkina Faso | 43.62 | 0.29 | 0.29 | 0.11 |
| 11 | Burundi | 10.74 | 0.31 | 0.26 | 0.03 |
| 12 | Cameroon | 28.69 | 0.36 | 0.29 | 0.10 |
| 13 | Cape Verde | 34.50 | 0.30 | 0.21 | 0.13 |
| 14 | Central African Rep. | 28.69 | 0.14 | 0.14 | ... |
| 15 | Chad | ... | ... | ... | ... |
| 16 | Comoros | ... | 0.19 | 0.19 | 0.14 |
| 17 | Congo | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | 35.87 | 0.65 | 0.65 | 0.07 |
| 19 | D.R. Congo | ... | ... | ... | ... |
| 20 | Djibouti | 5.63 | 0.17 | 0.11 | ... |
| 21 | Equatorial Guinea | ... | ... | ... | ... |
| 22 | Eritrea | * | * | * | * |
| 23 | Ethiopia | *53.45* | *0.08* | *0.04* | ... |
| 24 | Gabon | ... | 0.27 | 0.13 | ... |
| 25 | Gambia | ... | ... | ... | ... |
| 26 | Ghana | 34.04 | 0.32 | 0.24 | 0.08 |
| 27 | Guinea | 37.45 | 0.20 | 0.15 | 0.05 |
| 28 | Guinea-Bissau | * | * | * | * |
| 29 | Kenya | 12.57 | 0.20 | 0.20 | 0.06 |
| 30 | Lesotho | ... | 0.28 | 0.15 | 0.07 |
| 31 | Liberia | ... | ... | ... | ... |
| 32 | Madagascar | 3.66 | 0.18 | 0.18 | 0.09 |
| 33 | Malawi | ... | *0.29* | *0.22* | *0.11* |
| 34 | Mali | ... | ... | ... | ... |
| 35 | Mauritania | ... | ... | ... | ... |
| 36 | Mauritius | 15.25 | 0.04 | 0.04 | 0.02 |
| 37 | Mayotte | ... | ... | ... | ... |
| 38 | Mozambique | ... | 0.14 | 0.12 | 0.04 |
| 39 | Namibia | 8.06 | 0.21 | 0.10 | 0.07 |
| 40 | Niger | ... | ... | ... | ... |
| 41 | Nigeria | 49.76 | 0.41 | 0.33 | 0.12 |
| 42 | Réunion | ... | ... | ... | ... |
| 43 | Rwanda | ... | 0.27 | 0.21 | 0.10 |
| 44 | S. Tomé & Principe | *55.02* | *0.26* | *0.26* | *0.24* |
| 45 | Senegal | 21.81 | 0.32 | 0.17 | 0.09 |
| 46 | Seychelles | 8.94 | 0.73 | 0.73 | 0.09 |
| 47 | Sierra Leone | 15.00 | 0.18 | 0.16 | 0.05 |
| 48 | Somalia | ... | ... | ... | ... |
| 49 | Sudan | 22.95 | 0.10 | 0.10 | 0.02 |
| 50 | Swaziland | 4.74 | 0.25 | 0.25 | 0.08 |
| 51 | Tanzania | ... | 0.25 | 0.25 | 0.05 |
| 52 | Togo | *28.55* | *0.24* | *0.24* | - |
| 53 | Uganda | 13.91 | 0.19 | 0.16 | 0.06 |
| 54 | Zambia | *14.78* | *0.30* | *0.26* | *0.05* |
| 55 | Zimbabwe | 53.21 | 0.10 | 0.09 | 0.02 |
| | **Sub-Saharan** | **25.59** | **0.26** | **0.21** | **0.07** |
| | **AFRICA** | **28.32** | **0.25** | **0.20** | **0.07** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.
* No network.

| | | *ISDN subscribers (000s) 2002* | *B-channel equivalents (000s) 2002* | *B-channel per 1'000 inhabitants 2002* | *B-channel as % of main lines 2002* | *ADSL subscribers* | |
|---|---|---|---|---|---|---|---|
| | | | | | | *Total (000s) 2003* | *As % of subscriber lines 2003* |
| 1 | Algeria | - | - | - | - | - | - |
| 2 | Egypt | 11.1 | 25.0 | 0.37 | 0.32 | 4.9 | 0.06 |
| 3 | Libya | - | - | - | - | - | - |
| 4 | Morocco | 11.8 | 39.8 | 1.34 | 3.53 | 2.7 | 0.22 |
| 5 | Tunisia | 0.9 | 2.7 | 0.28 | 0.24 | 2.6 | 0.22 |
| | **North** | **23.8** | **67.5** | **0.36** | **0.54** | **10.1** | **0.08** |
| 6 | South Africa | *24.1* | *467.5* | *10.29* | *9.65* | *2.7* | *0.06* |
| | **South Africa** | **24.1** | **467.5** | **10.29** | **9.65** | **2.7** | **0.06** |
| 7 | Angola | - | - | - | - | - | - |
| 8 | Benin | - | - | - | - | - | - |
| 9 | Botswana | - | - | - | - | - | - |
| 10 | Burkina Faso | - | - | - | - | 0.1 | 0.11 |
| 11 | Burundi | - | - | - | - | - | - |
| 12 | Cameroon | - | - | - | - | - | - |
| 13 | Cape Verde | 0.8 | 2.4 | 5.33 | 3.42 | - | - |
| 14 | Central African Rep. | - | - | - | - | - | - |
| 15 | Chad | - | - | - | - | - | - |
| 16 | Comoros | - | - | - | - | - | - |
| 17 | Congo | - | - | - | - | - | - |
| 18 | Côte d'Ivoire | 2.2 | 14.6 | 0.89 | 4.34 | - | - |
| 19 | D.R. Congo | - | - | - | - | - | - |
| 20 | Djibouti | *0.2* | *0.9* | *1.42* | *9.19* | - | - |
| 21 | Equatorial Guinea | - | - | - | - | - | - |
| 22 | Eritrea | - | - | - | - | - | - |
| 23 | Ethiopia | - | - | - | - | 0.1 | 0.01 |
| 24 | Gabon | - | - | - | - | 0.1 | 0.13 |
| 25 | Gambia | 0.04 | 0.1 | 0.06 | 0.21 | - | - |
| 26 | Ghana | *0.2* | *0.5* | *0.03* | *0.22* | - | - |
| 27 | Guinea | - | - | - | - | - | - |
| 28 | Guinea-Bissau | - | - | - | - | - | - |
| 29 | Kenya | 0.4 | 4.7 | 0.15 | 1.46 | - | - |
| 30 | Lesotho | - | - | - | - | - | - |
| 31 | Liberia | - | - | - | - | - | - |
| 32 | Madagascar | *0.3* | *2.0* | *0.13* | *3.42* | - | - |
| 33 | Malawi | - | - | - | - | - | - |
| 34 | Mali | - | - | - | - | - | - |
| 35 | Mauritania | - | - | - | - | - | - |
| 36 | Mauritius | 2.6 | 12.0 | 9.94 | 3.68 | *0.3* | *0.09* |
| 37 | Mayotte | ... | ... | ... | ... | - | - |
| 38 | Mozambique | 0.5 | 1.9 | 0.11 | 2.29 | - | - |
| 39 | Namibia | *2.2* | *4.5* | *2.44* | *3.80* | - | - |
| 40 | Niger | - | - | - | - | - | - |
| 41 | Nigeria | *0.1* | *0.3* | *0.002* | *0.05* | - | - |
| 42 | Réunion | ... | ... | ... | ... | ... | ... |
| 43 | Rwanda | *0.3* | *0.5* | *0.06* | *2.33* | - | - |
| 44 | S. Tomé & Principe | 0.1 | 0.3 | 1.85 | 4.49 | - | - |
| 45 | Senegal | *1.7* | *7.9* | *0.80* | *3.32* | 2.1 | 0.92 |
| 46 | Seychelles | *0.2* | *0.3* | *4.15* | *1.63* | *0.1* | *0.55* |
| 47 | Sierra Leone | - | - | - | - | - | - |
| 48 | Somalia | - | - | - | - | - | - |
| 49 | Sudan | *0.3* | *0.5* | *0.02* | *0.11* | 10.0 | 1.11 |
| 50 | Swaziland | 0.3 | 0.8 | 0.75 | 2.21 | - | - |
| 51 | Tanzania | - | - | - | - | - | - |
| 52 | Togo | 0.2 | 0.4 | 0.07 | 0.70 | - | - |
| 53 | Uganda | *0.1* | *0.1* | *0.004* | *0.18* | - | - |
| 54 | Zambia | - | - | - | - | - | - |
| 55 | Zimbabwe | *0.2* | *0.5* | *0.04* | *0.19* | - | - |
| | **Sub-Saharan** | **12.8** | **55.1** | **0.09** | **1.16** | **12.7** | **0.23** |
| | **AFRICA** | **60.7** | **590.1** | **0.73** | **2.67** | **25.5** | **0.11** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 10. International telephone traffic — AFRICA

| | | Outgoing international telephone traffic | | | | | International telephone circuits (000s) |
|---|---|---|---|---|---|---|---|
| | | Total M Minutes 2002 | As % of bothway 2002 | CAGR (%) 1997-2002 | Minutes per inhab. 2002 | Minutes per subscriber 2002 | |
| 1 | Algeria | *209.2* | *...* | *20.3* | *6.8* | *111.3* | *4.9* |
| 2 | Egypt | 268.2 | 20.5 | 17.6 | 4.0 | 34.7 | 11.8 |
| 3 | Libya | *45.2* | *...* | *1.3* | *8.1* | *68.5* | *...* |
| 4 | Morocco | *269.5* | *...* | *15.9* | *9.2* | *226.2* | *12.0* |
| 5 | Tunisia | 200.4 | 33.4 | 15.4 | 20.5 | 174.5 | 5.1 |
| | **North** | **992.5** | **24.6** | **14.3** | **7.0** | **78.7** | **33.8** |
| 6 | South Africa | 567.2 | 41.1 | 9.0 | 12.5 | 117.1 | ... |
| | **South Africa** | **567.2** | **41.1** | **9.0** | **12.5** | **117.1** | **...** |
| 7 | Angola | 34.3 | 34.9 | 9.4 | 2.5 | 403.5 | *0.6* |
| 8 | Benin | *17.5* | *35.7* | *18.1* | *2.7* | *294.5* | *0.3* |
| 9 | Botswana | 63.7 | 58.2 | 11.5 | 37.0 | 447.5 | ... |
| 10 | Burkina Faso | 19.7 | 39.8 | 20.3 | 1.7 | 318.8 | 1.2 |
| 11 | Burundi | 2.8 | ... | 2.7 | 0.4 | 126.8 | ... |
| 12 | Cameroon | *22.1* | *...* | *-3.1* | *1.4* | *208.4* | *9.5* |
| 13 | Cape Verde | 8.7 | 15.8 | 10.3 | 19.3 | 124.0 | 0.8 |
| 14 | Central African Rep. | 4.2 | ... | 5.4 | 1.1 | 466.1 | ... |
| 15 | Chad | *3.9* | *...* | *8.8* | *0.5* | *363.0* | *...* |
| 16 | Comoros | 3.8 | 20.5 | 25.6 | 5.0 | 373.0 | 0.1 |
| 17 | Congo | ... | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | 68.5 | 36.6 | 11.3 | 4.2 | 203.8 | *1.9* |
| 19 | D.R. Congo | ... | ... | ... | ... | ... | ... |
| 20 | Djibouti | 5.7 | ... | 4.1 | 8.7 | 563.0 | *0.3* |
| 21 | Equatorial Guinea | *4.3* | *...* | *22.7* | *9.1* | *623.2* | *...* |
| 22 | Eritrea | 4.5 | 15.1 | 17.0 | 1.1 | 124.7 | 0.2 |
| 23 | Ethiopia | 12.9 | 27.3 | 3.8 | 0.2 | 36.4 | 0.6 |
| 24 | Gabon | 27.4 | ... | 8.3 | 21.1 | 854.2 | ... |
| 25 | Gambia | 13.5 | ... | 20.3 | 10.2 | 352.0 | 4.9 |
| 26 | Ghana | 58.3 | 27.6 | 21.6 | 2.7 | 212.6 | ... |
| 27 | Guinea | 8.4 | 14.6 | 8.0 | 1.1 | 324.1 | 0.7 |
| 28 | Guinea-Bissau | *3.0* | *24.8* | *0.9* | *2.5* | *270.8* | *...* |
| 29 | Kenya | 24.3 | 40.1 | -3.4 | 0.8 | 75.7 | 3.6 |
| 30 | Lesotho | *35.8* | *...* | *5.0* | *17.0* | *1'657.4* | *0.4* |
| 31 | Liberia | *5.9* | *...* | *4.5* | *1.9* | *867.6* | *...* |
| 32 | Madagascar | 6.6 | 26.2 | -2.8 | 0.4 | 111.2 | 0.4 |
| 33 | Malawi | 34.2 | 58.2 | 27.9 | 3.3 | 468.1 | 0.5 |
| 34 | Mali | *15.3* | *20.2* | *8.1* | *1.5* | *300.1* | *0.3* |
| 35 | Mauritania | *9.8* | *...* | *15.7* | *3.7* | *394.3* | *0.6* |
| 36 | Mauritius | 37.1 | 36.9 | 8.5 | 30.7 | 113.4 | 1.1 |
| 37 | Mayotte | ... | ... | ... | ... | ... | ... |
| 38 | Mozambique | 23.0 | ... | 7.0 | 1.3 | 274.1 | ... |
| 39 | Namibia | 60.6 | 53.8 | 4.9 | 32.3 | 499.1 | ... |
| 40 | Niger | *6.3* | *...* | *4.5* | *0.6* | *292.0* | *0.1* |
| 41 | Nigeria | 86.9 | ... | 10.6 | 0.7 | 123.8 | ... |
| 42 | Réunion | *12.6* | *...* | *8.9* | *17.8* | *46.8* | *...* |
| 43 | Rwanda | *5.3* | *...* | *11.2* | *0.7* | *245.3* | *0.2* |
| 44 | S. Tomé & Principe | 1.2 | 23.8 | 7.2 | 8.1 | 194.9 | 0.1 |
| 45 | Senegal | *69.6* | *30.7* | *25.9* | *7.1* | *293.6* | *3.6* |
| 46 | Seychelles | *8.2* | *...* | *20.8* | *100.1* | *392.8* | *...* |
| 47 | Sierra Leone | *7.6* | *...* | *17.6* | *1.6* | *336.1* | *...* |
| 48 | Somalia | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | *36.1* | *15.6* | *24.6* | *1.1* | *79.7* | *2.3* |
| 50 | Swaziland | 23.0 | 55.8 | 2.5 | 22.3 | 656.8 | *0.9* |
| 51 | Tanzania | 11.8 | 22.9 | 3.0 | 0.3 | 72.9 | *0.5* |
| 52 | Togo | 17.9 | 23.6 | 16.3 | 3.7 | 349.4 | 0.9 |
| 53 | Uganda | *7.0* | *...* | *2.5* | *0.3* | *124.7* | *...* |
| 54 | Zambia | 15.6 | ... | 3.8 | 1.4 | 177.9 | 0.5 |
| 55 | Zimbabwe | *78.4* | *...* | *11.9* | *6.8* | *309.0* | *...* |
| | **Sub-Saharan** | **1'027.4** | **32.2** | **9.6** | **1.8** | **197.9** | **37.0** |
| | **AFRICA** | **2'587.1** | **31.8** | **11.1** | **3.4** | **114.2** | **70.8** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | *Telecommunication staff* | | | | *Mobile staff* | |
|---|---|---|---|---|---|---|---|
| | | *Total (000s) 2002* | *CAGR (%) 1997-2002* | *% female 2002* | *Subscribers per employee 2002* | *Total (000s) 2002* | *Mobile subs. per employee 2002* |
| 1 | Algeria | *17.9* | *-1.2* | … | *111* | … | … |
| 2 | Egypt | 53.1 | 0.4 | 21.7 | 230 | … | … |
| 3 | Libya | *14.0* | *2.5* | … | *46* | … | … |
| 4 | Morocco | 13.1 | -1.6 | … | 560 | … | … |
| 5 | Tunisia | 7.7 | 4.4 | 31.6 | 224 | … | … |
| | **North** | **105.8** | **0.3** | **23.0** | **226** | **…** | **…** |
| 6 | South Africa | 41.6 | -6.1 | 22.3 | 446 | *8.16* | *1'321* |
| | **South Africa** | **41.6** | **-6.1** | **22.3** | **446** | **8.16** | **1'321** |
| 7 | Angola | 2.2 | 0.8 | 27.7 | 96 | … | … |
| 8 | Benin | *1.2* | *-1.1* | *12.8* | *150* | … | … |
| 9 | Botswana | 1.7 | -0.1 | 27.0 | 341 | … | … |
| 10 | Burkina Faso | 1.3 | 0.3 | 13.3 | 138 | *0.04* | *1'900* |
| 11 | Burundi | 0.8 | 4.1 | … | 98 | … | … |
| 12 | Cameroon | 2.2 | 4.1 | … | 365 | … | … |
| 13 | Cape Verde | 0.5 | 2.8 | 67.0 | 241 | … | … |
| 14 | Central African Rep. | 0.4 | 0.0 | 15.0 | 54 | … | … |
| 15 | Chad | *0.7* | *18.0* | … | *50* | … | … |
| 16 | Comoros | 0.2 | 1.4 | … | 68 | - | - |
| 17 | Congo | … | … | … | … | … | … |
| 18 | Côte d'Ivoire | 3.7 | 0.7 | 28.7 | 368 | 1.24 | 826 |
| 19 | D.R. Congo | … | … | … | … | … | … |
| 20 | Djibouti | *0.6* | *4.2* | … | *23* | … | … |
| 21 | Equatorial Guinea | *0.2* | *16.1* | … | *110* | … | … |
| 22 | Eritrea | 0.6 | 0.4 | 46.6 | 56 | - | - |
| 23 | Ethiopia | 7.6 | 6.2 | 33.3 | 53 | … | … |
| 24 | Gabon | *1.2* | *10.5* | … | *256* | … | … |
| 25 | Gambia | 1.1 | 4.5 | 24.3 | 124 | … | … |
| 26 | Ghana | 4.8 | 6.3 | 19.3 | 150 | *0.10* | *1'957* |
| 27 | Guinea | 0.8 | -1.4 | 32.8 | 150 | 0.05 | 1'681 |
| 28 | Guinea-Bissau | *0.2* | *0.6* | … | *46* | - | - |
| 29 | Kenya | 18.8 | 6.4 | 27.8 | 80 | … | … |
| 30 | Lesotho | 0.4 | -10.7 | 38.4 | 349 | … | … |
| 31 | Liberia | … | … | … | … | … | … |
| 32 | Madagascar | 2.4 | -3.6 | 22.7 | 93 | 0.68 | 240 |
| 33 | Malawi | 3.2 | -7.3 | 10.7 | 49 | 0.53 | 164 |
| 34 | Mali | 1.5 | 2.4 | 22.4 | 71 | … | … |
| 35 | Mauritania | *0.7* | *16.4* | *28.8* | *48* | … | … |
| 36 | Mauritius | 1.8 | 0.1 | 20.4 | 373 | … | … |
| 37 | Mayotte | *0.0* | *-40.3* | … | *372* | - | - |
| 38 | Mozambique | 2.1 | -0.6 | 30.0 | 158 | 0.37 | 685 |
| 39 | Namibia | 1.5 | -2.1 | … | 181 | 0.16 | 938 |
| 40 | Niger | *1.3* | *-1.3* | … | *18* | … | … |
| 41 | Nigeria | 12.1 | -1.3 | 17.5 | 192 | *0.21* | *1'914* |
| 42 | Réunion | *0.7* | *-5.0* | … | *521* | … | … |
| 43 | Rwanda | *0.4* | *8.8* | *23.0* | *247* | … | … |
| 44 | S. Tomé & Principe | 0.1 | -6.6 | 21.1 | 87 | - | - |
| 45 | Senegal | 1.6 | 3.3 | 23.5 | 429 | *0.12* | *2'624* |
| 46 | Seychelles | *0.4* | *2.5* | *33.2* | *162* | … | … |
| 47 | Sierra Leone | *1.2* | *5.8* | … | *42* | … | … |
| 48 | Somalia | … | … | … | … | … | … |
| 49 | Sudan | *3.0* | *5.2* | *17.9* | *184* | … | … |
| 50 | Swaziland | 0.5 | 1.8 | … | 209 | … | … |
| 51 | Tanzania | 3.5 | -5.7 | 30.4 | 262 | … | … |
| 52 | Togo | 0.9 | 0.9 | 18.3 | 248 | 0.12 | 1'417 |
| 53 | Uganda | *2.4* | *14.4* | … | *142* | … | … |
| 54 | Zambia | *3.1* | *-1.8* | *23.3* | *68* | … | … |
| 55 | Zimbabwe | *4.0* | *-10.8* | … | *144* | … | … |
| | **Sub-Saharan** | **99.5** | **1.0** | **24.7** | **154** | **3.62** | **805** |
| | **AFRICA** | **246.8** | **-0.7** | **23.5** | **234** | **11.78** | **1'163** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 12. Telecommunication revenue

**AFRICA**

| | | Telecommunication revenue | | | | | |
|---|---|---|---|---|---|---|---|
| | | *Total (M US$) 2002* | *% mobile 2002* | *Per inhabitant (US$) 2002* | *Per telephone subscriber (US$) 2002* | *Per employee (US$) 2002* | *As a % of GDP 2002* |
| 1 | Algeria | *361.7* | *...* | *11.7* | *183* | *20'205* | *0.7* |
| 2 | Egypt | 2'395.4 | 46.2 | 35.6 | 196 | 45'104 | 2.8 |
| 3 | Libya | ... | ... | ... | ... | ... | ... |
| 4 | Morocco | 1'549.4 | 41.5 | 52.3 | 211 | 118'377 | 4.3 |
| 5 | Tunisia | 578.9 | 25.8 | 59.2 | 336 | 75'149 | 2.8 |
| | **North** | **4'885.4** | **42.0** | **35.5** | **210** | **53'217** | **2.5** |
| 6 | South Africa | 5'338.8 | 57.0 | 117.5 | 288 | 128'368 | 5.1 |
| | **South Africa** | **5'338.8** | **57.0** | **117.5** | **288** | **128'368** | **5.1** |
| 7 | Angola | *113.8* | *27.4* | *8.7* | *1'191* | *53'903* | *1.2* |
| 8 | Benin | *61.9* | *33.0* | *9.4* | *336* | *50'312* | *2.6* |
| 9 | Botswana | 182.8 | 43.3 | 106.3 | 317 | 107'899 | 3.6 |
| 10 | Burkina Faso | 63.3 | ... | 5.3 | 362 | 49'965 | 2.4 |
| 11 | Burundi | *14.7* | *43.6* | *2.1* | *288* | *20'083* | *2.2* |
| 12 | Cameroon | *411.0* | *35.0* | *28.0* | *4'086* | *185'721* | ... |
| 13 | Cape Verde | 48.2 | 25.1 | 107.0 | 426 | 102'782 | 7.6 |
| 14 | Central African Rep. | 10.8 | 2.7 | 2.7 | 498 | 26'901 | 1.1 |
| 15 | Chad | *21.3* | *...* | *2.9* | *2'199* | *53'325* | *...* |
| 16 | Comoros | 9.9 | - | 13.1 | 970 | 66'317 | 4.5 |
| 17 | Congo | ... | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | 398.7 | 49.7 | 24.2 | 292 | 107'698 | 3.4 |
| 19 | D.R. Congo | ... | ... | ... | ... | ... | ... |
| 20 | Djibouti | *22.5* | *...* | *34.9* | *1'740* | *40'408* | *3.9* |
| 21 | Equatorial Guinea | *18.8* | *...* | *40.1* | *860* | *94'129* | *1.1* |
| 22 | Eritrea | 17.5 | - | 4.4 | 487 | 27'263 | 3.0 |
| 23 | Ethiopia | 104.4 | 13.0 | 1.6 | 258 | 13'778 | 1.7 |
| 24 | Gabon | 128.9 | ... | 99.2 | 414 | ... | 2.8 |
| 25 | Gambia | 29.8 | ... | 22.5 | 216 | 26'786 | 8.3 |
| 26 | Ghana | 128.0 | 9.6 | 5.9 | 177 | 26'475 | 2.9 |
| 27 | Guinea | *28.5* | *65.1* | *3.8* | *352* | *35'402* | *1.0* |
| 28 | Guinea-Bissau | ... | - | ... | ... | ... | ... |
| 29 | Kenya | 622.2 | 49.0 | 19.8 | 412 | 33'175 | 5.1 |
| 30 | Lesotho | 13.9 | 57.1 | 6.4 | 111 | 38'849 | 1.9 |
| 31 | Liberia | ... | ... | ... | ... | ... | ... |
| 32 | Madagascar | 96.0 | 46.2 | 6.0 | 432 | 40'230 | 2.2 |
| 33 | Malawi | 32.2 | 51.6 | 3.1 | 203 | 10'021 | 1.6 |
| 34 | Mali | 91.8 | ... | 8.6 | 841 | 59'898 | 2.7 |
| 35 | Mauritania | 65.8 | 61.2 | 24.5 | 236 | ... | 6.7 |
| 36 | Mauritius | 163.3 | ... | 134.9 | 242 | 90'163 | 3.4 |
| 37 | Mayotte | *8.3* | *...* | *58.1* | *856* | *317'915* | *...* |
| 38 | Mozambique | 128.4 | 36.2 | 7.1 | 379 | 60'100 | 3.3 |
| 39 | Namibia | 120.3 | ... | 64.2 | 443 | 80'053 | 4.2 |
| 40 | Niger | *18.4* | *3.2* | *1.6* | *772* | *13'732* | *1.1* |
| 41 | Nigeria | 1'217.2 | 70.2 | 10.1 | 527 | 101'009 | 2.5 |
| 42 | Réunion | *138.1* | *...* | *195.5* | *364* | *189'713* | *...* |
| 43 | Rwanda | *39.0* | *68.9* | *4.9* | *451* | *111'429* | *2.3* |
| 44 | S. Tomé & Principe | 6.9 | 8.2 | 45.7 | 839 | 72'607 | 13.8 |
| 45 | Senegal | 233.8 | 20.0 | 23.2 | 344 | 147'404 | 4.6 |
| 46 | Seychelles | *40.1* | *...* | *494.3* | *861* | *108'391* | *6.7* |
| 47 | Sierra Leone | ... | ... | ... | ... | ... | ... |
| 48 | Somalia | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | 178.7 | ... | 5.4 | 207 | ... | 1.3 |
| 50 | Swaziland | 34.8 | 52.9 | 33.7 | 337 | 70'532 | 3.0 |
| 51 | Tanzania | 221.4 | 49.5 | 6.4 | 240 | 63'005 | 2.3 |
| 52 | Togo | 42.1 | ... | 8.6 | 190 | 47'329 | 2.9 |
| 53 | Uganda | 112.1 | 70.2 | 4.5 | 250 | ... | 1.9 |
| 54 | Zambia | *69.2* | *2.0* | *6.5* | *335* | *22'620* | *1.9* |
| 55 | Zimbabwe | *207.2* | *60.5* | *18.0* | *356* | *51'183* | *2.3* |
| | **Sub-Saharan** | **5'716.3** | **48.6** | **9.7** | **357** | **53'893** | **2.6** |
| | **AFRICA** | **15'940.5** | **49.6** | **21.2** | **274** | **67'459** | **3.1** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | *Telecommunication investment* | | | | |
|---|---|---|---|---|---|---|
| | | *Total (M US$) 2002* | *Per inhabitant (US$) 2002* | *Per telephone subscriber (US$) 2002* | *As a % of revenue 2002* | *As % of GFCF 2002* |
| 1 | Algeria | *96.5* | *3.1* | *48.7* | *26.7* | *0.8* |
| 2 | Egypt | 665.8 | 9.9 | 54.4 | 27.8 | 4.4 |
| 3 | Libya | ... | ... | ... | ... | ... |
| 4 | Morocco | 644.3 | 21.7 | 87.9 | 41.6 | 7.8 |
| 5 | Tunisia | 305.8 | 31.3 | 177.5 | 52.8 | 5.8 |
| | **North** | **1'712.4** | **9.9** | **73.6** | **35.1** | **4.2** |
| 6 | South Africa | 712.0 | 15.7 | 38.4 | 13.3 | 4.5 |
| | **South Africa** | **712.0** | **15.7** | **38.4** | **13.3** | **4.5** |
| 7 | Angola | ... | ... | ... | ... | ... |
| 8 | Benin | *26.4* | *4.0* | *143.4* | *42.7* | *5.8* |
| 9 | Botswana | 12.4 | 7.2 | 21.4 | 6.8 | 1.0 |
| 10 | Burkina Faso | 24.0 | 2.0 | 137.3 | 38.0 | 3.3 |
| 11 | Burundi | ... | ... | ... | ... | ... |
| 12 | Cameroon | 80.2 | 5.1 | 98.7 | ... | 2.4 |
| 13 | Cape Verde | 14.9 | 33.0 | 131.4 | 30.8 | ... |
| 14 | Central African Rep. | 0.1 | 0.03 | 5.3 | 1.1 | ... |
| 15 | Chad | ... | ... | ... | ... | ... |
| 16 | Comoros | 4.2 | 5.5 | 408.7 | 42.1 | ... |
| 17 | Congo | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | 137.7 | 8.3 | 101.0 | 34.5 | 11.3 |
| 19 | D.R. Congo | ... | ... | ... | ... | ... |
| 20 | Djibouti | *2.1* | *3.4* | *216.4* | *10.5* | *3.0* |
| 21 | Equatorial Guinea | ... | ... | ... | ... | ... |
| 22 | Eritrea | 0.9 | 0.2 | 25.4 | 5.2 | ... |
| 23 | Ethiopia | 29.1 | 0.4 | 71.9 | 27.8 | ... |
| 24 | Gabon | 11.3 | 8.7 | 36.3 | 8.8 | ... |
| 25 | Gambia | 3.7 | 2.8 | 26.5 | 12.3 | ... |
| 26 | Ghana | 59.4 | 2.7 | 82.1 | 46.4 | ... |
| 27 | Guinea | *0.8* | *0.1* | *10.1* | *2.9* | ... |
| 28 | Guinea-Bissau | ... | ... | ... | ... | ... |
| 29 | Kenya | 44.6 | 1.4 | 29.6 | 7.2 | 2.8 |
| 30 | Lesotho | 7.1 | 3.3 | 56.4 | 50.7 | 3.3 |
| 31 | Liberia | ... | ... | ... | ... | ... |
| 32 | Madagascar | *11.2* | *0.7* | *94.6* | *14.0* | *1.8* |
| 33 | Malawi | ... | ... | ... | ... | ... |
| 34 | Mali | *17.7* | *1.7* | *183.9* | *30.0* | *3.0* |
| 35 | Mauritania | *4.1* | *1.6* | *247.8* | *14.3* | ... |
| 36 | Mauritius | 58.8 | 48.6 | 87.1 | 36.0 | 5.8 |
| 37 | Mayotte | ... | ... | ... | ... | ... |
| 38 | Mozambique | 59.2 | 3.3 | 174.9 | 46.1 | 13.8 |
| 39 | Namibia | 9.0 | 4.8 | 33.1 | 7.5 | 1.5 |
| 40 | Niger | ... | ... | ... | ... | ... |
| 41 | Nigeria | *132.2* | *1.2* | *226.6* | *37.2* | ... |
| 42 | Réunion | ... | ... | ... | ... | ... |
| 43 | Rwanda | *16.8* | *2.3* | *709.0* | *93.1* | *5.0* |
| 44 | S. Tomé & Principe | 4.1 | 27.4 | 504.1 | 60.1 | ... |
| 45 | Senegal | 108.6 | 10.8 | 159.7 | 46.5 | 10.4 |
| 46 | Seychelles | *4.1* | *50.8* | *88.4* | *10.3* | ... |
| 47 | Sierra Leone | ... | ... | ... | ... | ... |
| 48 | Somalia | ... | ... | ... | ... | ... |
| 49 | Sudan | *108.1* | *3.4* | *194.2* | *65.6* | ... |
| 50 | Swaziland | *9.5* | *9.3* | *107.3* | *25.7* | *4.1* |
| 51 | Tanzania | *9.4* | *0.3* | *16.4* | *4.3* | *0.6* |
| 52 | Togo | 30.0 | 6.2 | 135.6 | 71.2 | 11.5 |
| 53 | Uganda | *55.2* | *2.5* | *485.9* | *63.4* | *4.7* |
| 54 | Zambia | *4.8* | *0.5* | *23.4* | *7.0* | ... |
| 55 | Zimbabwe | *117.9* | *10.4* | *211.2* | *66.6* | *11.5* |
| | **Sub-Saharan** | **1'219.7** | **2.4** | **103.0** | **29.1** | **4.7** |
| | **AFRICA** | **3'644.1** | **5.3** | **67.9** | **25.2** | **4.4** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 14. Equipment trade

**AFRICA**

| | | Telecom equipment exports | | | Telecom equipment imports | | | Trade balance |
|---|---|---|---|---|---|---|---|---|
| | | (M US$) | | CAGR (%) | (M US$) | | CAGR (%) | (M US$) |
| | | 1997 | 2002 | 1997-02 | 1997 | 2002 | 1997-02 | 2002 |
| 1 | Algeria | ... | ... | ... | 85.9 | *118.2* | *11.2* | ... |
| 2 | Egypt | ... | *1.1* | ... | 145.0 | 186.5 | 5.2 | *-237* |
| 3 | Libya | ... | ... | ... | ... | ... | ... | ... |
| 4 | Morocco | ... | *1.8* | ... | 49.6 | *296.9* | *56.4* | *-295* |
| 5 | Tunisia | ... | *3.5* | ... | 43.0 | *99.1* | *23.2* | *-96* |
| | **North** | ... | **6.4** | **...** | **323.5** | **700.6** | **16.7** | **-628** |
| 6 | South Africa | 93.7 | 140.4 | 8.4 | 1'142.8 | 1'166.8 | 0.4 | -1'026 |
| | **South Africa** | **93.7** | **140.4** | **8.4** | **1'142.8** | **1'166.8** | **0.4** | **-1'026** |
| 7 | Angola | ... | ... | ... | ... | ... | ... | ... |
| 8 | Benin | ... | *0.01* | ... | ... | *6.1* | ... | *-6* |
| 9 | Botswana | ... | *1.4* | ... | ... | *87.6* | ... | *-86* |
| 10 | Burkina Faso | ... | *1.3* | ... | ... | *8.5* | ... | *-7* |
| 11 | Burundi | ... | ... | ... | ... | *1.9* | ... | ... |
| 12 | Cameroon | ... | 0.2 | ... | ... | 19.8 | ... | -20 |
| 13 | Cape Verde | ... | ... | ... | 5.3 | *3.3* | *-11.3* | ... |
| 14 | Central African Rep. | ... | ... | ... | ... | ... | ... | ... |
| 15 | Chad | ... | ... | ... | ... | ... | ... | ... |
| 16 | Comoros | ... | ... | ... | ... | *0.4* | ... | ... |
| 17 | Congo | ... | ... | ... | ... | ... | ... | ... |
| 18 | Côte d'Ivoire | ... | 1.6 | ... | ... | 28.4 | ... | -27 |
| 19 | D.R. Congo | ... | ... | ... | ... | ... | ... | ... |
| 20 | Djibouti | ... | ... | ... | ... | ... | ... | ... |
| 21 | Equatorial Guinea | ... | ... | ... | ... | ... | ... | ... |
| 22 | Eritrea | ... | ... | ... | ... | ... | ... | ... |
| 23 | Ethiopia | ... | ... | ... | ... | 22.0 | ... | ... |
| 24 | Gabon | ... | ... | ... | ... | ... | ... | ... |
| 25 | Gambia | ... | ... | ... | 5.5 | ... | ... | ... |
| 26 | Ghana | ... | *0.01* | ... | ... | *26.4* | ... | *-26* |
| 27 | Guinea | ... | *0.02* | ... | 62.7 | *2.9* | *-53.6* | *-3* |
| 28 | Guinea-Bissau | ... | ... | ... | ... | ... | ... | ... |
| 29 | Kenya | ... | 2.1 | ... | 20.0 | 108.6 | 40.3 | -107 |
| 30 | Lesotho | ... | ... | ... | ... | *2.1* | ... | ... |
| 31 | Liberia | ... | ... | ... | ... | ... | ... | ... |
| 32 | Madagascar | ... | ... | ... | 11.1 | ... | ... | ... |
| 33 | Malawi | ... | *0.4* | ... | 8.5 | *14.3* | *13.8* | *-14* |
| 34 | Mali | ... | ... | ... | 5.9 | ... | ... | ... |
| 35 | Mauritania | ... | ... | ... | ... | ... | ... | ... |
| 36 | Mauritius | ... | 9.5 | ... | 20.9 | 24.7 | 3.5 | -15 |
| 37 | Mayotte | ... | ... | ... | ... | ... | ... | ... |
| 38 | Mozambique | ... | ... | ... | ... | ... | ... | ... |
| 39 | Namibia | ... | *1.2* | ... | ... | *25.1* | ... | *-24* |
| 40 | Niger | ... | *0.02* | ... | 2.7 | *2.1* | *-5.9* | *-2* |
| 41 | Nigeria | ... | ... | ... | 148.5 | *57.3* | *-27.2* | ... |
| 42 | Réunion | ... | ... | ... | ... | ... | ... | ... |
| 43 | Rwanda | ... | ... | ... | ... | 4.8 | ... | ... |
| 44 | S. Tomé & Principe | ... | ... | ... | ... | ... | ... | ... |
| 45 | Senegal | ... | 1.1 | ... | 8.5 | 24.8 | 24.0 | -24 |
| 46 | Seychelles | ... | ... | ... | ... | 1.6 | ... | ... |
| 47 | Sierra Leone | ... | ... | ... | ... | ... | ... | ... |
| 48 | Somalia | ... | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | ... | 0.2 | ... | 19.9 | 46.9 | 18.7 | -47 |
| 50 | Swaziland | ... | *0.2* | ... | ... | *8.3* | ... | *-8* |
| 51 | Tanzania | ... | *0.03* | ... | 20.7 | *67.8* | *34.5* | *-68* |
| 52 | Togo | ... | 0.01 | ... | 8.1 | 8.4 | 0.6 | -8 |
| 53 | Uganda | ... | 1.7 | ... | ... | 28.9 | ... | -27 |
| 54 | Zambia | ... | 0.3 | ... | ... | 18.1 | ... | -18 |
| 55 | Zimbabwe | 1.9 | 1.3 | -7.6 | 69.0 | 30.1 | -15.3 | -29 |
| | **Sub-Saharan** | **1.9** | **22.6** | **-7.6** | **417.2** | **680.9** | **-0.2** | **-565** |
| | **AFRICA** | **95.7** | **169.4** | **8.2** | **1'883.6** | **2'548.3** | **3.9** | **-2'219** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | Internet | | | | PCs | |
|---|---|---|---|---|---|---|---|
| | | Hosts Total 2003 | Hosts per 100 inhab. 2003 | Users (000s) 2003 | Users per 100 inhab. 2003 | Total (000s) 2003 | Per 100 inhab. 2003 |
| 1 | Algeria | 866 | - | *500* | *1.60* | *242* | *0.77* |
| 2 | Egypt | 3'338 | - | 2'700 | 3.85 | 1'500 | 2.14 |
| 3 | Libya | *83* | - | 160 | 2.89 | *130* | *2.34* |
| 4 | Morocco | 3'561 | 0.01 | 800 | 2.66 | 600 | 1.99 |
| 5 | Tunisia | 271 | - | 630 | 6.37 | 400 | 4.05 |
| | **North** | **8'119** | **0.01** | **4'790** | **3.26** | **2'872** | **1.95** |
| 6 | South Africa | 288'633 | 0.62 | 3'100 | 6.82 | *3'300* | *7.26* |
| | **South Africa** | **288'633** | **0.62** | **3'100** | **6.82** | **3'300** | **7.26** |
| 7 | Angola | 17 | - | *41* | *0.29* | *27* | *0.19* |
| 8 | Benin | 854 | 0.01 | 70 | 1.00 | 26 | 0.37 |
| 9 | Botswana | 1'920 | 0.11 | *60* | *3.49* | *70* | *4.07* |
| 10 | Burkina Faso | 442 | - | 48 | 0.39 | 26 | 0.21 |
| 11 | Burundi | 22 | - | 14 | 0.20 | 13 | 0.18 |
| 12 | Cameroon | 477 | - | *60* | *0.38* | *90* | *0.57* |
| 13 | Cape Verde | 63 | 0.01 | 20 | 4.44 | *35* | *7.77* |
| 14 | Central African Rep. | 6 | - | *5* | *0.13* | *8* | *0.20* |
| 15 | Chad | 11 | - | *15* | *0.19* | *13* | *0.17* |
| 16 | Comoros | *12* | - | 5 | 0.63 | 5 | 0.58 |
| 17 | Congo | 46 | - | 15 | 0.43 | 15 | 0.43 |
| 18 | Côte d'Ivoire | 3'791 | 0.02 | *90* | *0.55* | *154* | *0.93* |
| 19 | D.R. Congo | 153 | - | *50* | *0.09* | ... | ... |
| 20 | Djibouti | *498* | *0.08* | 7 | 0.97 | 15 | 2.17 |
| 21 | Equatorial Guinea | 3 | - | *2* | *0.36* | *4* | 0.69 |
| 22 | Eritrea | 1'045 | 0.03 | 10 | 0.23 | 12 | 0.29 |
| 23 | Ethiopia | *41* | - | 75 | 0.11 | 150 | 0.22 |
| 24 | Gabon | 283 | 0.02 | 35 | 2.62 | 30 | 2.24 |
| 25 | Gambia | *568* | *0.04* | *25* | *1.88* | *19* | *1.43* |
| 26 | Ghana | *313* | - | *170* | *0.78* | *82* | 0.38 |
| 27 | Guinea | 372 | - | 40 | 0.52 | 43 | 0.55 |
| 28 | Guinea-Bissau | 2 | - | 19 | 1.48 | ... | ... |
| 29 | Kenya | 8'325 | 0.03 | *400* | *1.27* | *204* | *0.65* |
| 30 | Lesotho | 119 | 0.01 | *21* | *0.97* | ... | ... |
| 31 | Liberia | 14 | - | *1* | *0.03* | ... | ... |
| 32 | Madagascar | 773 | - | 71 | 0.43 | 80 | 0.49 |
| 33 | Malawi | 18 | - | 36 | 0.34 | 16 | 0.15 |
| 34 | Mali | 187 | - | *25* | *0.24* | *15* | *0.14* |
| 35 | Mauritania | 25 | - | *10* | *0.37* | *29* | *1.08* |
| 36 | Mauritius | 3'985 | 0.33 | 150 | 12.29 | *180* | 14.87 |
| 37 | Mayotte | - | - | ... | ... | ... | ... |
| 38 | Mozambique | 3'249 | 0.02 | *50* | *0.28* | *82* | *0.45* |
| 39 | Namibia | 3'164 | 0.16 | 65 | 3.38 | 191 | 9.93 |
| 40 | Niger | 134 | - | *15* | *0.13* | *7* | *0.06* |
| 41 | Nigeria | 1'094 | - | 750 | 0.61 | *853* | 0.71 |
| 42 | Réunion | 20 | - | *150* | *20.52* | *53* | *7.13* |
| 43 | Rwanda | 1'495 | 0.02 | *25* | *0.31* | ... | ... |
| 44 | S. Tomé & Principe | 1'069 | 0.70 | 15 | 9.87 | ... | ... |
| 45 | Senegal | *761* | *0.01* | 225 | 2.17 | 220 | 2.12 |
| 46 | Seychelles | 264 | 0.33 | *12* | *14.52* | *13* | 16.08 |
| 47 | Sierra Leone | 277 | 0.01 | *8* | *0.16* | ... | ... |
| 48 | Somalia | 4 | - | *89* | *0.90* | ... | ... |
| 49 | Sudan | - | - | 300 | 0.90 | *200* | *0.61* |
| 50 | Swaziland | 1'401 | 0.13 | 27 | 2.59 | 30 | 2.87 |
| 51 | Tanzania | 5'534 | 0.02 | 250 | 0.71 | 200 | 0.57 |
| 52 | Togo | 82 | - | 210 | 4.20 | 160 | 3.20 |
| 53 | Uganda | 2'561 | 0.01 | 125 | 0.49 | 103 | 0.40 |
| 54 | Zambia | 1'880 | 0.02 | 68 | 0.61 | 95 | 0.85 |
| 55 | Zimbabwe | 4'501 | 0.04 | *500* | *4.30* | 620 | 5.27 |
| | **Sub-Saharan** | **51'875** | **0.01** | **4'473** | **0.70** | **4'186** | **0.75** |
| | **AFRICA** | **348'627** | **0.04** | **12'363** | **1.48** | **10'358** | **1.38** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 16. Internet tariff
## 20 hours per month, August 2003

**AFRICA**

| | | ISP charge | | | | Telephone | Total Internet price | |
|---|---|---|---|---|---|---|---|---|
| | | *Monthly fee US$* | *Hours included* | *Excess time charge US$* | *Total ISP charge US$* | *usage charge US$* | *20 hours of use US$* | *As % of GNI per capita* |
| 1 | Algeria | 11.30 | 30 | - | 11.30 | 6.53 | 17.82 | 12.4 |
| 2 | Egypt | - | * | - | - | 5.47 | 5.47 | 4.5 |
| 3 | Libya | - | - | 15.75 | 15.75 | 3.15 | 18.90 | 3.8 |
| 4 | Morocco | 25.32 | * | - | 25.32 | - | 25.32 | 25.5 |
| 5 | Tunisia | 2.93 | * | - | 2.93 | 14.37 | 17.30 | 10.4 |
| | **North** | **7.91** | | **3.15** | **11.06** | **5.90** | **16.96** | **11.3** |
| 6 | South Africa | 7.50 | * | - | 7.50 | 25.83 | 33.33 | 15.4 |
| | **South Africa** | **7.50** | | **-** | **7.50** | **25.83** | **33.33** | **15.4** |
| 7 | Angola | 20.00 | * | - | 20.00 | 58.81 | 78.81 | 143.3 |
| 8 | Benin | 8.52 | * | - | 8.52 | 37.88 | 46.40 | 146.5 |
| 9 | Botswana | 11.85 | * | - | 11.85 | 15.17 | 27.01 | 10.9 |
| 10 | Burkina Faso | 14.39 | 10 | 10.33 | 24.72 | 20.66 | 45.38 | 247.5 |
| 11 | Burundi | 50.00 | 20 | - | 50.00 | 30.94 | 80.94 | 971.3 |
| 12 | Cameroon | - | - | 28.69 | 28.69 | 22.96 | 51.65 | 110.7 |
| 13 | Cape Verde | 17.06 | 20 | - | 17.06 | 13.46 | 30.51 | 28.4 |
| 14 | Central African Rep. | 14.35 | - | 103.30 | 117.65 | 57.39 | 175.04 | 807.9 |
| 15 | Chad | - | * | - | - | 68.87 | 68.87 | 375.6 |
| 16 | Comoros | 9.56 | - | 57.39 | 66.95 | - | 66.95 | 206.0 |
| 17 | Congo | 121.22 | * | - | 121.22 | - | 121.22 | 207.8 |
| 18 | Côte d'Ivoire | 51.65 | * | - | 51.65 | 15.50 | 67.15 | 132.1 |
| 19 | D.R. Congo | 14.00 | 20 | - | 14.00 | 60.00 | 74.00 | 986.7 |
| 20 | Djibouti | 36.12 | * | - | 36.12 | 78.78 | 114.90 | 153.2 |
| 21 | Equatorial Guinea | 103.30 | * | - | 103.30 | - | 103.30 | 177.1 |
| 22 | Eritrea | 15.33 | 15 | - | 15.33 | 11.46 | 26.79 | 200.9 |
| 23 | Ethiopia | 2.68 | - | 15.40 | 18.09 | 9.33 | 27.42 | 329.1 |
| 24 | Gabon | 35.87 | * | - | 35.87 | 86.08 | 121.95 | 46.9 |
| 25 | Gambia | 11.04 | * | - | 11.04 | 16.06 | 27.11 | 116.2 |
| 26 | Ghana | 33.75 | * | - | 33.75 | 10.08 | 43.83 | 194.8 |
| 27 | Guinea | 22.78 | 15 | 10.12 | 32.90 | 30.37 | 63.26 | 185.2 |
| 28 | Guinea-Bissau | 105.00 | 30 | - | 105.00 | 0.09 | 105.09 | 840.7 |
| 29 | Kenya | 12.70 | * | - | 12.70 | 33.02 | 45.71 | 152.4 |
| 30 | Lesotho | 8.06 | * | - | 8.06 | 35.29 | 43.36 | 110.7 |
| 31 | Liberia | ... | ... | ... | ... | ... | ... | ... |
| 32 | Madagascar | 45.37 | 20 | - | 45.38 | 21.96 | 67.33 | 336.7 |
| 33 | Malawi | 32.00 | * | - | 32.00 | 30.00 | 62.00 | 465.0 |
| 34 | Mali | 28.69 | 25 | - | 28.69 | 29.27 | 57.96 | 289.8 |
| 35 | Mauritania | 16.56 | - | 22.08 | 38.64 | - | 38.64 | 113.1 |
| 36 | Mauritius | 15.02 | 20 | - | 15.02 | - | 15.02 | 4.7 |
| 37 | Mayotte | ... | ... | ... | ... | ... | ... | ... |
| 38 | Mozambique | 20.00 | * | - | 20.00 | 30.79 | 50.79 | 290.2 |
| 39 | Namibia | 9.49 | * | - | 9.49 | 23.91 | 33.40 | 22.5 |
| 40 | Niger | - | - | 64.56 | 64.56 | 32.28 | 96.85 | 683.6 |
| 41 | Nigeria | 42.69 | * | - | 42.69 | 42.79 | 85.48 | 353.7 |
| 42 | Réunion | ... | ... | ... | ... | ... | ... | ... |
| 43 | Rwanda | 31.49 | * | - | 31.49 | 35.27 | 66.76 | 348.3 |
| 44 | S. Tomé & Principe | - | - | 40.00 | 40.00 | 49.51 | 89.51 | 370.4 |
| 45 | Senegal | 40.63 | * | - | 40.63 | - | 40.63 | 103.7 |
| 46 | Seychelles | 31.93 | 30 | - | 31.93 | 59.85 | 91.79 | 16.9 |
| 47 | Sierra Leone | - | - | - | - | 12.01 | 12.01 | 102.9 |
| 48 | Somalia | ... | ... | ... | ... | ... | ... | ... |
| 49 | Sudan | 1.14 | - | 22.79 | 23.93 | 136.72 | 160.65 | 550.8 |
| 50 | Swaziland | 8.69 | - | - | 8.69 | 11.95 | 20.64 | 21.0 |
| 51 | Tanzania | 69.00 | * | - | 69.00 | 48.00 | 117.00 | 501.4 |
| 52 | Togo | 10.04 | * | - | 10.04 | 20.32 | 30.36 | 134.9 |
| 53 | Uganda | 30.00 | 30 | - | 30.00 | 66.76 | 96.76 | 464.4 |
| 54 | Zambia | 19.00 | 100 | - | 19.00 | 13.64 | 32.64 | 118.7 |
| 55 | Zimbabwe | 7.91 | * | - | 7.91 | 15.41 | 23.32 | 58.3 |
| | **Sub-Saharan Africa** | **26.20** | | **8.33** | **34.52** | **30.95** | **65.47** | **271.8** |
| | **AFRICA** | **24.04** | | **7.66** | **31.69** | **28.39** | **60.09** | **241.3** |

*Note:* For data comparability and coverage, see the technical notes. * - Unlimited access.
Figures in italics are estimates or refer to years other than those specified.

*Source:* ITU.

| | | Internet subscribers (000s) 2003 | Broadband Total (000s) 2003 | Broadband As % of total subscribers 2003 | Broadband CAGR (%) 2002-2003 | International bandwidth Total (Mbps) 2002 | International bandwidth Bits per inhabitant 2002 |
|---|---|---|---|---|---|---|---|
| 1 | Algeria | *60.0* | - | - | - | 156.3 | 5.0 |
| 2 | Egypt | ... | *4.9* | ... | 517.6 | 735.0 | 10.9 |
| 3 | Libya | ... | - | - | - | 6.0 | 1.1 |
| 4 | Morocco | 60.0 | 2.7 | 4.5 | 135.0 | 310.0 | 10.5 |
| 5 | Tunisia | 91.8 | 2.6 | *2.8* | ... | 124.0 | 12.7 |
| | **North** | **211.8** | **10.1** | **4.8** | **257.1** | **1'331.3** | **9.3** |
| 6 | South Africa | *1'000.0* | *2.7* | *0.3* | ... | 564.5 | 12.4 |
| | **South Africa** | **1'000.0** | **2.7** | **0.3** | **...** | **564.5** | **12.4** |
| 7 | Angola | *9.0* | - | - | - | 7.0 | 0.5 |
| 8 | Benin | 6.8 | - | - | - | 2.1 | 0.3 |
| 9 | Botswana | ... | - | - | - | 26.0 | 15.1 |
| 10 | Burkina Faso | 10.6 | 0.1 | 0.7 | 150.0 | 8.0 | 0.7 |
| 11 | Burundi | 0.8 | - | - | - | 4.0 | 0.6 |
| 12 | Cameroon | *5.5* | - | - | - | 9.0 | 0.6 |
| 13 | Cape Verde | 5.0 | - | - | - | 3.0 | 6.7 |
| 14 | Central African Rep. | *1.3* | - | - | - | 0.5 | 0.1 |
| 15 | Chad | *1.8* | - | - | - | 0.5 | 0.1 |
| 16 | Comoros | 1.0 | - | - | - | 0.3 | 0.3 |
| 17 | Congo | 0.7 | - | - | - | 0.1 | 0.0 |
| 18 | Côte d'Ivoire | *15.2* | - | - | - | 11.0 | 0.7 |
| 19 | D.R. Congo | *6.0* | - | - | - | 10.2 | 0.2 |
| 20 | Djibouti | 2.1 | - | - | - | 2.0 | 3.1 |
| 21 | Equatorial Guinea | 1.0 | - | - | - | 1.0 | 2.0 |
| 22 | Eritrea | 3.0 | - | - | - | 2.0 | 0.5 |
| 23 | Ethiopia | 11.4 | 0.1 | 0.5 | ... | 10.0 | 0.1 |
| 24 | Gabon | 7.8 | 0.1 | 0.6 | ... | 45.0 | 34.6 |
| 25 | Gambia | *4.0* | - | - | - | 2.0 | 1.5 |
| 26 | Ghana | *20.1* | - | - | - | 12.0 | 0.6 |
| 27 | Guinea | 11.0 | - | - | - | 2.0 | 0.3 |
| 28 | Guinea-Bissau | *0.2* | - | - | - | *0.1* | *0.1* |
| 29 | Kenya | *45.0* | - | - | - | *56.0* | *1.8* |
| 30 | Lesotho | *1.7* | - | - | - | 1.0 | 0.5 |
| 31 | Liberia | ... | - | - | - | 0.3 | 0.1 |
| 32 | Madagascar | *18.0* | - | - | - | 6.0 | 0.4 |
| 33 | Malawi | 12.6 | 0.1 | 0.5 | ... | *2.0* | *0.2* |
| 34 | Mali | *15.0* | - | - | - | 6.0 | 0.6 |
| 35 | Mauritania | ... | - | - | - | 9.5 | 3.5 |
| 36 | Mauritius | *58.0* | *0.3* | *0.5* | ... | 34.0 | 28.1 |
| 37 | Mayotte | ... | - | - | - | ... | ... |
| 38 | Mozambique | ... | - | - | - | *4.5* | *0.3* |
| 39 | Namibia | 15.5 | - | - | - | 8.5 | 4.5 |
| 40 | Niger | *2.4* | - | - | - | 0.5 | 0.0 |
| 41 | Nigeria | *53.2* | - | - | - | 72.0 | 0.6 |
| 42 | Réunion | ... | - | - | - | 2.0 | 2.7 |
| 43 | Rwanda | *2.3* | - | - | - | 10.3 | 1.3 |
| 44 | S. Tomé & Principe | 1.1 | - | - | - | 2.0 | 13.2 |
| 45 | Senegal | *9.6* | *1.2* | *12.5* | ... | 79.0 | 7.8 |
| 46 | Seychelles | *3.3* | *0.1* | *3.6* | ... | 6.0 | 74.2 |
| 47 | Sierra Leone | *0.8* | - | - | - | 0.5 | 0.1 |
| 48 | Somalia | *5.0* | - | - | - | 0.8 | 0.1 |
| 49 | Sudan | 60.0 | 10.0 | 16.7 | ... | 10.0 | 0.3 |
| 50 | Swaziland | 19.0 | - | - | - | 1.0 | 1.0 |
| 51 | Tanzania | 50.0 | - | - | - | 16.0 | 0.5 |
| 52 | Togo | 12.5 | - | - | - | 12.0 | 2.5 |
| 53 | Uganda | 7.0 | - | - | - | 9.5 | 0.4 |
| 54 | Zambia | 12.0 | - | - | - | 5.1 | 0.5 |
| 55 | Zimbabwe | 83.7 | 4.6 | 5.5 | ... | 11.0 | 0.9 |
| | **Sub-Saharan** | **612.1** | **16.5** | **2.7** | **150.0** | **523.3** | **0.8** |
| | **AFRICA** | **1'823.9** | **29.3** | **1.6** | **255.3** | **2'419.1** | **2.9** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | Radio | | | Television | | |
|---|---|---|---|---|---|---|---|
| | | *Households (000s) 2002* | *As % of total households 2002* | *Population coverage 2002* | *Households (000s) 2002* | *As % of total households 2002* | *Population coverage 2002* |
| 1 | Algeria | 3'600 | 71.0 | *95* | 4'466 | 88.1 | *95* |
| 2 | Egypt | 12'775 | 88.2 | 95 | 12'825 | 88.6 | … |
| 3 | Libya | *700* | *90.8* | *100* | *750* | *95.1* | 100 |
| 4 | Morocco | 4'810 | 89.2 | 95 | 4'100 | 76.1 | 88 |
| 5 | Tunisia | 1'600 | 76.5 | 100 | 1'917 | 91.7 | 100 |
| | **North** | **23'485** | **84.5** | **96** | **24'058** | **86.5** | **93** |
| 6 | South Africa | 8'324 | 73.0 | 95 | 6'134 | 53.8 | 91 |
| | **South Africa** | **8'324** | **73.0** | **95** | **6'134** | **53.8** | **91** |
| 7 | Angola | 500 | 17.9 | *85* | 250 | 9.0 | *35* |
| 8 | Benin | 968 | 90.6 | *85* | 210 | 19.7 | *80* |
| 9 | Botswana | 380 | 91.8 | *85* | 63 | 15.2 | *30* |
| 10 | Burkina Faso | 1'150 | 65.4 | 95 | 120 | 6.8 | 70 |
| 11 | Burundi | 850 | 60.8 | 99 | 190 | 13.6 | 86 |
| 12 | Cameroon | 1'560 | 54.2 | 100 | 510 | 17.7 | 70 |
| 13 | Cape Verde | 63 | 65.8 | *84* | 38 | 40.0 | *78* |
| 14 | Central African Rep. | 330 | 51.1 | … | 12 | 1.8 | … |
| 15 | Chad | 700 | 44.5 | 95 | 36 | 2.3 | 13 |
| 16 | Comoros | 90 | 59.2 | 100 | 17 | 11.2 | … |
| 17 | Congo | 200 | 31.7 | … | 38 | 6.0 | … |
| 18 | Côte d'Ivoire | 1'600 | 78.9 | 100 | 700 | 34.5 | *100* |
| 19 | D.R. Congo | 1'000 | 15.4 | … | 110 | 1.7 | … |
| 20 | Djibouti | 56 | 57.1 | *80* | 40 | 40.8 | *75* |
| 21 | Equatorial Guinea | … | … | … | … | … | … |
| 22 | Eritrea | 492 | 62.1 | 100 | 105 | 13.2 | 85 |
| 23 | Ethiopia | 2'694 | 20.9 | *81* | 310 | 2.4 | *13* |
| 24 | Gabon | 200 | 76.9 | 80 | 140 | 53.8 | 70 |
| 25 | Gambia | 112 | 72.9 | 100 | 19 | 12.4 | *100* |
| 26 | Ghana | 2'545 | 57.0 | 100 | 955 | 21.4 | *95* |
| 27 | Guinea | 650 | 56.0 | 96 | 110 | 9.5 | 90 |
| 28 | Guinea-Bissau | 49 | 27.5 | *75* | 46 | 25.7 | … |
| 29 | Kenya | 5'970 | 87.2 | *95* | 1'170 | 17.1 | *65* |
| 30 | Lesotho | 125 | 28.9 | 80 | 74 | 17.1 | 10 |
| 31 | Liberia | … | … | … | … | … | … |
| 32 | Madagascar | 1'300 | 40.9 | … | 250 | 7.9 | … |
| 33 | Malawi | 1'350 | 55.6 | *80* | 56 | 2.3 | *70* |
| 34 | Mali | 1'250 | 71.2 | 95 | 260 | 14.8 | 90 |
| 35 | Mauritania | 245 | 50.3 | 100 | 100 | 20.5 | *44* |
| 36 | Mauritius | 279 | 90.0 | 100 | 288 | 93.0 | *98* |
| 37 | Mayotte | … | … | … | 23 | 61.3 | … |
| 38 | Mozambique | 1'949 | 45.6 | 90 | 265 | 6.2 | … |
| 39 | Namibia | 318 | 89.1 | 98 | 140 | 39.2 | 48 |
| 40 | Niger | 600 | 32.7 | *85* | 100 | 5.4 | *70* |
| 41 | Nigeria | 15'249 | 62.1 | … | 6'286 | 25.6 | … |
| 42 | Réunion | 178 | 95.8 | … | 133 | 71.5 | … |
| 43 | Rwanda | 950 | 40.7 | … | 58 | 2.5 | 60 |
| 44 | S. Tomé & Principe | 15 | 53.8 | 98 | 10 | 35.7 | 70 |
| 45 | Senegal | 850 | 73.5 | 100 | 330 | 28.5 | *90* |
| 46 | Seychelles | 19 | 92.8 | 98 | 19 | 89.0 | 98 |
| 47 | Sierra Leone | 400 | 53.3 | 100 | 50 | 6.7 | … |
| 48 | Somalia | 220 | 16.9 | … | 110 | 8.4 | … |
| 49 | Sudan | 4'268 | 79.6 | 100 | 2'654 | 49.5 | 93 |
| 50 | Swaziland | 95 | 57.9 | … | 30 | 18.3 | 85 |
| 51 | Tanzania | 3'631 | 51.9 | *90* | 996 | 14.2 | *65* |
| 52 | Togo | 700 | 86.2 | 100 | 416 | 51.2 | 100 |
| 53 | Uganda | 2'846 | 54.1 | 100 | 326 | 6.2 | … |
| 54 | Zambia | 1'291 | 61.0 | *70* | 550 | 26.0 | *42* |
| 55 | Zimbabwe | 1'687 | 63.8 | *90* | 701 | 26.5 | *60* |
| | **Sub-Saharan** | **61'973** | **52.7** | **92** | **19'412** | **16.5** | **62** |
| | **AFRICA** | **93'782** | **59.8** | **93** | **49'604** | **31.6** | **69** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | *Cable TV subscribers* | | *Home satellite antennas* | | *Cable modem subscribers* | |
|---|---|---|---|---|---|---|---|
| | | *Total (000s) 2002* | *As % of TV households 2002* | *Total (000s) 2002* | *As % of TV households 2002* | *Total (000s) 2002* | *As % of cable TV subscribers 2002* |
| 1 | Algeria | - | - | 4'119.0 | 92.2 | - | - |
| 2 | Egypt | - | - | 891.0 | 6.9 | - | - |
| 3 | Libya | ... | ... | 587.0 | ... | - | - |
| 4 | Morocco | - | - | 816.0 | 19.9 | - | - |
| 5 | Tunisia | ... | ... | 888.0 | 46.3 | - | - |
| | **North** | **-** | **-** | **7'301.0** | **28.8** | **-** | **-** |
| 6 | South Africa | - | - | 502.0 | 8.2 | - | - |
| | **South Africa** | **-** | **-** | **502.0** | **8.2** | **-** | **-** |
| 7 | Angola | *12.1* | *5.3* | *7.2* | *3.1* | - | - |
| 8 | Benin | ... | ... | ... | ... | - | - |
| 9 | Botswana | ... | ... | *13.0* | *21.0* | - | - |
| 10 | Burkina Faso | - | - | ... | ... | - | - |
| 11 | Burundi | - | - | 0.6 | 0.3 | - | - |
| 12 | Cameroon | ... | ... | ... | ... | - | - |
| 13 | Cape Verde | ... | ... | ... | ... | - | - |
| 14 | Central African Rep. | ... | ... | ... | ... | - | - |
| 15 | Chad | ... | ... | 1.0 | 2.8 | - | - |
| 16 | Comoros | ... | ... | ... | ... | - | - |
| 17 | Congo | ... | ... | ... | ... | - | - |
| 18 | Côte d'Ivoire | - | - | ... | ... | - | - |
| 19 | D.R. Congo | ... | ... | ... | ... | - | - |
| 20 | Djibouti | ... | ... | *5.1* | *13.2* | - | - |
| 21 | Equatorial Guinea | ... | ... | ... | ... | - | - |
| 22 | Eritrea | - | - | 4.0 | 3.8 | - | - |
| 23 | Ethiopia | - | - | *1.9* | *0.8* | - | - |
| 24 | Gabon | 15.0 | 10.7 | 1.0 | 0.7 | - | - |
| 25 | Gambia | ... | ... | ... | ... | - | - |
| 26 | Ghana | *6.0* | *0.7* | ... | ... | - | - |
| 27 | Guinea | - | - | 10.5 | 9.6 | - | - |
| 28 | Guinea-Bissau | ... | ... | *0.6* | *1.5* | - | - |
| 29 | Kenya | *15.0* | *1.4* | ... | ... | - | - |
| 30 | Lesotho | ... | ... | ... | ... | - | - |
| 31 | Liberia | ... | ... | ... | ... | - | - |
| 32 | Madagascar | ... | ... | ... | ... | - | - |
| 33 | Malawi | - | - | *10.1* | *18.4* | - | - |
| 34 | Mali | ... | ... | 1.3 | 0.5 | - | - |
| 35 | Mauritania | ... | ... | *2.7* | *3.0* | - | - |
| 36 | Mauritius | ... | ... | 13.0 | 4.5 | - | - |
| 37 | Mayotte | ... | ... | ... | ... | - | - |
| 38 | Mozambique | ... | ... | ... | ... | - | - |
| 39 | Namibia | 30.0 | 21.4 | 20.0 | 14.3 | - | - |
| 40 | Niger | ... | ... | *2.2* | *2.7* | - | - |
| 41 | Nigeria | *59.0* | *1.0* | ... | ... | - | - |
| 42 | Réunion | ... | ... | ... | ... | ... | ... |
| 43 | Rwanda | ... | ... | ... | ... | - | - |
| 44 | S. Tomé & Principe | ... | ... | 0.1 | 0.5 | - | - |
| 45 | Senegal | *0.5* | *0.2* | *2.0* | *0.7* | - | - |
| 46 | Seychelles | ... | ... | - | - | - | - |
| 47 | Sierra Leone | ... | ... | *1.3* | *2.6* | - | - |
| 48 | Somalia | ... | ... | ... | ... | - | - |
| 49 | Sudan | - | - | 86.1 | 3.2 | - | - |
| 50 | Swaziland | ... | ... | 5.0 | 16.7 | - | - |
| 51 | Tanzania | *8.0* | *1.0* | ... | ... | - | - |
| 52 | Togo | ... | ... | 1.5 | 0.4 | - | - |
| 53 | Uganda | *6.0* | *2.1* | - | - | - | - |
| 54 | Zambia | *13.0* | *2.6* | *11.1* | *2.6* | - | - |
| 55 | Zimbabwe | *24.0* | *3.8* | *32.0* | *5.1* | - | - |
| | **Sub-Saharan** | **188.6** | **1.2** | **233.1** | **3.4** | **-** | **-** |
| | **AFRICA** | **188.6** | **0.4** | **8'036.1** | **20.5** | **-** | **-** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

| | | *Main telephone lines* | | | *Mobile cellular subscribers* | | |
|---|---|---|---|---|---|---|---|
| | | *Total (000s)* | *per 100 inhabitants* | | *Total (000s)* | *per 100 inhabitants* | |
| | | *2005* | *2002* | *2005* | *2005* | *2002* | *2005* |
| 1 | Algeria | 2'151 | 6.10 | 6.58 | 2'406 | 1.28 | 7.36 |
| 2 | Egypt | 12'964 | 11.49 | 17.64 | 7'269 | 6.68 | 9.89 |
| 3 | Libya | ... | 11.83 | ... | 97 | 1.26 | 1.77 |
| 4 | Morocco | 793 | 3.80 | 2.55 | 7'944 | 20.91 | 25.54 |
| 5 | Tunisia | 1'515 | 11.74 | 14.97 | 843 | 5.87 | 8.33 |
| | **North** | **17'424** | **8.30** | **11.39** | **18'560** | **8.17** | **12.14** |
| 6 | South Africa | 4'673 | 10.66 | 9.69 | 17'165 | 30.14 | 35.58 |
| | **South Africa** | **4'673** | **10.66** | **9.69** | **17'165** | **30.14** | **35.58** |
| 7 | Angola | 114 | 0.61 | 0.75 | 195 | 0.93 | 1.28 |
| 8 | Benin | 84 | 0.92 | 1.12 | 391 | 3.22 | 5.21 |
| 9 | Botswana | 153 | 8.28 | 8.28 | 592 | 25.29 | 32.14 |
| 10 | Burkina Faso | 78 | 0.52 | 0.60 | 167 | 0.94 | 1.30 |
| 11 | Burundi | 30 | 0.34 | 0.40 | 89 | 0.74 | 1.21 |
| 12 | Cameroon | 140 | 0.70 | 0.82 | 1'194 | 4.43 | 7.02 |
| 13 | Cape Verde | 102 | 15.58 | 21.51 | 58 | 9.53 | 12.18 |
| 14 | Central African Rep. | 8 | 0.23 | 0.18 | 15 | 0.32 | 0.34 |
| 15 | Chad | 15 | 0.15 | 0.17 | 53 | 0.43 | 0.62 |
| 16 | Comoros | 19 | 1.35 | 2.18 | ... | * | ... |
| 17 | Congo | 22 | 0.67 | 0.56 | 326 | 6.72 | 8.32 |
| 18 | Côte d'Ivoire | 484 | 2.04 | 2.49 | 1'434 | 6.23 | 7.38 |
| 19 | D.R. Congo | 10 | 0.02 | 0.02 | 2'993 | 1.06 | 5.53 |
| 20 | Djibouti | 11 | 1.54 | 1.56 | 135 | 2.29 | 19.46 |
| 21 | Equatorial Guinea | 15 | 1.74 | 2.57 | 73 | 6.34 | 12.36 |
| 22 | Eritrea | 46 | 0.90 | 1.01 | ... | * | ... |
| 23 | Ethiopia | 667 | 0.53 | 0.91 | 95 | 0.07 | 0.13 |
| 24 | Gabon | 24 | 2.47 | 1.74 | 300 | 21.48 | 21.73 |
| 25 | Gambia | 47 | 2.89 | 3.29 | 187 | 7.53 | 12.96 |
| 26 | Ghana | 341 | 1.27 | 1.42 | 1'156 | 2.07 | 4.80 |
| 27 | Guinea | 29 | 0.34 | 0.36 | 149 | 1.18 | 1.88 |
| 28 | Guinea-Bissau | 11 | 0.89 | 0.85 | ... | * | ... |
| 29 | Kenya | 372 | 1.02 | 1.13 | 2'470 | 3.77 | 7.53 |
| 30 | Lesotho | 42 | 1.32 | 1.91 | 167 | 4.47 | 7.63 |
| 31 | Liberia | 7 | 0.21 | 0.21 | ... | ... | ... |
| 32 | Madagascar | 67 | 0.37 | 0.39 | 178 | 1.02 | 1.04 |
| 33 | Malawi | 144 | 0.70 | 1.36 | 133 | 0.82 | 1.25 |
| 34 | Mali | 98 | 0.53 | 0.87 | 60 | 0.50 | 0.54 |
| 35 | Mauritania | 68 | 1.18 | 2.33 | 605 | 9.22 | 20.90 |
| 36 | Mauritius | 411 | 27.03 | 33.28 | 439 | 28.76 | 35.49 |
| 37 | Mayotte | 10 | 6.24 | 5.54 | ... | 13.54 | ... |
| 38 | Mozambique | 81 | 0.46 | 0.41 | 430 | 1.41 | 2.19 |
| 39 | Namibia | 140 | 6.48 | 6.93 | 209 | 8.00 | 10.31 |
| 40 | Niger | 27 | 0.19 | 0.20 | 369 | 0.14 | 2.74 |
| 41 | Nigeria | 1'003 | 0.58 | 0.77 | 9'756 | 1.34 | 7.50 |
| 42 | Réunion | ... | 41.04 | ... | 563 | 65.88 | 68.98 |
| 43 | Rwanda | 35 | 0.28 | 0.40 | 192 | 1.36 | 2.16 |
| 44 | S. Tomé & Principe | 10 | 4.13 | 6.37 | ... | 1.31 | ... |
| 45 | Senegal | 256 | 2.23 | 2.33 | 686 | 4.52 | 6.25 |
| 46 | Seychelles | 24 | 26.91 | 29.31 | 54 | 55.35 | 66.95 |
| 47 | Sierra Leone | 34 | 0.48 | 0.67 | 190 | 1.35 | 3.73 |
| 48 | Somalia | 483 | 1.01 | 4.85 | ... | 0.36 | ... |
| 49 | Sudan | 1'538 | 2.04 | 4.31 | 362 | 0.58 | 1.01 |
| 50 | Swaziland | 40 | 3.40 | 3.79 | 83 | 6.59 | 7.76 |
| 51 | Tanzania | 145 | 0.47 | 0.39 | 1'385 | 2.21 | 3.71 |
| 52 | Togo | 67 | 1.05 | 1.27 | 312 | 3.49 | 5.93 |
| 53 | Uganda | 46 | 0.22 | 0.17 | 540 | 1.59 | 1.96 |
| 54 | Zambia | 95 | 0.81 | 0.80 | 158 | 1.28 | 1.33 |
| 55 | Zimbabwe | 357 | 2.47 | 2.97 | 376 | 3.03 | 3.13 |
| | **Sub-Saharan** | **8'050** | **0.84** | **1.18** | **29'319** | **1.91** | **4.29** |
| | **AFRICA** | **30'146** | **2.69** | **3.41** | **65'044** | **4.57** | **7.36** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
* No network.

*Source:* ITU.

## 21. MDG Goal 8: Develop a global partnership for development: work opportunities, access to drugs and access to new technologies

***Target 18: Make available the benefits of new technologies, especially information and communications***

| | | *Main telephone lines and mobile cellular subscribers per 100 inhabitants* | | *Internet users per 100 inhabitants* | | *Personal computers per 100 inhabitants* | |
|---|---|---|---|---|---|---|---|
| | | *1995* | *2003* | *1995* | *2003* | *1995* | *2003* |
| 1 | Algeria | 4.21 | 11.48 | - | *1.60* | 0.30 | *0.77* |
| 2 | Egypt | 4.68 | 20.71 | 0.03 | 3.85 | 0.43 | 2.14 |
| 3 | Libya | 5.88 | 15.37 | - | 2.89 | ... | *2.34* |
| 4 | Morocco | 4.35 | 28.39 | - | 2.66 | 0.32 | 1.99 |
| 5 | Tunisia | 5.86 | 30.98 | 0.01 | 6.37 | 0.67 | 4.05 |
| | **North** | **4.64** | **20.78** | **0.02** | **3.26** | **0.39** | **1.95** |
| 6 | South Africa | 11.49 | *40.80* | *0.71* | *6.82* | 2.79 | *7.26* |
| | **South Africa** | **11.49** | **40.80** | **0.71** | **6.82** | **2.79** | **7.26** |
| 7 | Angola | 0.51 | *1.54* | - | *0.29* | ... | *0.19* |
| 8 | Benin | 0.54 | 4.31 | - | 1.00 | 0.06 | 0.37 |
| 9 | Botswana | 4.09 | *33.57* | 0.07 | *3.49* | 1.03 | *4.07* |
| 10 | Burkina Faso | 0.30 | 2.39 | - | 0.39 | 0.03 | 0.21 |
| 11 | Burundi | 0.29 | 1.23 | - | 0.20 | ... | 0.18 |
| 12 | Cameroon | 0.51 | *5.13* | - | *0.38* | 0.15 | *0.57* |
| 13 | Cape Verde | 5.57 | 27.26 | - | 4.44 | ... | *7.77* |
| 14 | Central African Rep. | 0.25 | *0.55* | - | *0.13* | ... | *0.20* |
| 15 | Chad | 0.08 | *0.58* | - | *0.19* | ... | *0.17* |
| 16 | Comoros | 0.72 | 1.91 | - | 0.63 | 0.03 | 0.58 |
| 17 | Congo | 0.81 | 9.63 | - | 0.43 | ... | 0.43 |
| 18 | Côte d'Ivoire | 0.86 | 9.40 | - | *0.55* | ... | *0.93* |
| 19 | D.R. Congo | 0.10 | *1.08* | - | *0.09* | ... | ... |
| 20 | Djibouti | 1.31 | 4.86 | 0.02 | 0.97 | 0.69 | 2.17 |
| 21 | Equatorial Guinea | 0.63 | 9.41 | - | *0.36* | ... | *0.69* |
| 22 | Eritrea | 0.49 | 0.92 | - | 0.23 | ... | 0.29 |
| 23 | Ethiopia | 0.25 | 0.77 | - | 0.11 | ... | 0.22 |
| 24 | Gabon | 3.35 | 25.31 | - | 2.62 | 0.56 | 2.24 |
| 25 | Gambia | 1.88 | *10.42* | 0.01 | *1.88* | 0.06 | *1.43* |
| 26 | Ghana | 0.41 | 4.91 | - | *0.78* | 0.12 | *0.38* |
| 27 | Guinea | 0.17 | 1.78 | - | 0.52 | 0.14 | 0.55 |
| 28 | Guinea-Bissau | 0.69 | 0.92 | - | 1.48 | ... | ... |
| 29 | Kenya | 1.01 | 6.05 | - | *1.27* | 0.07 | *0.65* |
| 30 | Lesotho | 0.88 | *5.79* | - | *0.97* | ... | ... |
| 31 | Liberia | 0.16 | *0.28* | - | *0.03* | ... | ... |
| 32 | Madagascar | 0.30 | 2.08 | - | 0.43 | ... | 0.49 |
| 33 | Malawi | 0.37 | 2.10 | - | 0.34 | ... | 0.15 |
| 34 | Mali | 0.19 | *1.03* | - | *0.24* | 0.03 | *0.14* |
| 35 | Mauritania | 0.41 | *10.39* | - | *0.37* | ... | *1.08* |
| 36 | Mauritius | 14.25 | 66.39 | - | 12.29 | 3.21 | *14.87* |
| 37 | Mayotte | 4.47 | *19.78* | - | ... | ... | ... |
| 38 | Mozambique | 0.40 | *1.87* | - | *0.28* | ... | *0.45* |
| 39 | Namibia | 5.24 | 18.25 | 0.01 | 3.38 | ... | 9.93 |
| 40 | Niger | 0.15 | *0.33* | - | *0.13* | ... | *0.06* |
| 41 | Nigeria | 0.41 | 3.25 | - | 0.61 | 0.48 | *0.71* |
| 42 | Réunion | 33.96 | *98.65* | - | *20.52* | ... | *7.13* |
| 43 | Rwanda | 0.13 | *1.64* | - | *0.31* | ... | ... |
| 44 | S. Tomé & Principe | 1.97 | 7.76 | - | 9.87 | ... | ... |
| 45 | Senegal | 0.98 | 7.77 | - | 2.17 | 0.72 | 2.12 |
| 46 | Seychelles | 17.48 | *82.25* | - | *14.52* | ... | *16.08* |
| 47 | Sierra Leone | 0.37 | *1.84* | - | *0.16* | ... | ... |
| 48 | Somalia | 0.17 | *1.37* | - | *0.90* | ... | ... |
| 49 | Sudan | 0.28 | 4.66 | - | 0.90 | 0.04 | *0.61* |
| 50 | Swaziland | 2.32 | 12.85 | - | 2.59 | ... | *2.42* |
| 51 | Tanzania | 0.33 | 2.95 | - | 0.71 | ... | 0.57 |
| 52 | Togo | 0.52 | 5.61 | - | 4.20 | 0.36 | *3.08* |
| 53 | Uganda | 0.21 | 3.27 | - | 0.49 | 0.05 | 0.40 |
| 54 | Zambia | 0.88 | 2.94 | 0.01 | 0.61 | ... | *0.74* |
| 55 | Zimbabwe | 1.42 | 5.78 | 0.01 | *4.30* | 0.31 | 5.27 |
| | **Sub-Saharan** | **0.52** | **3.53** | **0.002** | **0.70** | **0.29** | **0.75** |
| | **AFRICA** | **1.90** | **8.60** | **0.08** | **1.48** | **0.55** | **1.38** |

*Note:* For data comparability and coverage, see the technical notes.
Figures in italics are estimates or refer to years other than those specified.
*Source:* ITU.

## 22. Digital Access Index (DAI) AFRICA

| Economy | Sub. lines p. 100 inhab. | Mobile sub. p. 100 inhab. | Internet tariff as % of GNI | Adult literacy | School Enrol-ment | Int'l Internet band-width p. 100 inhab. | Broad-band sub. p. 100 inhab. | Internet users p. 100 inhab. | INFRA-STRUC TURE | AF-FOR-DABI-LITY | KNOW-LEDGE | QUAL-ITY | USAGE | DAI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UPPER** | | | | | | | | | | | | | | |
| Seychelles | 26.2 | 53.9 | 16.9 | 91.0 | 79 | 72.3 | 0.1 | 14.1 | 0.49 | 0.83 | 0.87 | 0.32 | 0.17 | **0.54** |
| Mauritius | 27.0 | 28.9 | 4.7 | 84.8 | 69 | 28.1 | 0.0 | 9.9 | 0.37 | 0.95 | 0.80 | 0.29 | 0.12 | **0.50** |
| **MEDIUM** | | | | | | | | | | | | | | |
| South Africa | 9.5 | 30.4 | 15.4 | 85.6 | 78 | 12.4 | 0.0 | 6.8 | 0.23 | 0.85 | 0.83 | 0.26 | 0.08 | **0.45** |
| Botswana | 8.3 | 24.1 | 10.9 | 78.1 | 80 | 15.1 | 0.0 | 2.9 | 0.19 | 0.89 | 0.79 | 0.26 | 0.03 | **0.43** |
| Libya | 11.9 | 1.3 | 3.8 | 80.8 | 89 | 1.1 | 0.0 | 2.3 | 0.11 | 0.96 | 0.84 | 0.17 | 0.03 | **0.42** |
| Tunisia | 11.7 | 5.1 | 10.4 | 72.1 | 76 | 7.6 | 0.0 | 5.2 | 0.12 | 0.90 | 0.73 | 0.24 | 0.06 | **0.41** |
| Egypt | 11.5 | 6.7 | 4.5 | 56.1 | 76 | 10.9 | 0.0 | 2.8 | 0.13 | 0.96 | 0.63 | 0.25 | 0.03 | **0.40** |
| Cape Verde | 15.6 | 9.5 | 28.4 | 74.9 | 80 | 17.8 | 0.0 | 3.6 | 0.18 | 0.72 | 0.77 | 0.27 | 0.04 | **0.39** |
| Namibia | 6.5 | 10.7 | 22.5 | 82.7 | 74 | 4.5 | 0.0 | 2.7 | 0.11 | 0.77 | 0.80 | 0.22 | 0.03 | **0.39** |
| Algeria | 6.1 | 1.3 | 12.4 | 67.8 | 71 | 5.0 | 0.0 | 1.6 | 0.06 | 0.88 | 0.69 | 0.22 | 0.02 | **0.37** |
| Swaziland | 3.3 | 6.1 | 21.0 | 80.3 | 77 | 1.0 | 0.0 | 1.9 | 0.06 | 0.79 | 0.79 | 0.17 | 0.02 | **0.37** |
| Gabon | 2.5 | 21.6 | 46.9 | 71.0 | 83 | 12.6 | 0.0 | 1.9 | 0.13 | 0.53 | 0.75 | 0.26 | 0.02 | **0.34** |
| Morocco | 3.8 | 20.9 | 25.5 | 49.8 | 51 | 10.5 | 0.0 | 2.4 | 0.14 | 0.74 | 0.50 | 0.25 | 0.03 | **0.33** |
| **LOW** | | | | | | | | | | | | | | |
| Zimbabwe | 2.5 | 3.0 | 58.3 | 89.3 | 59 | 0.9 | 0.0 | 4.3 | 0.04 | 0.42 | 0.79 | 0.16 | 0.05 | **0.29** |
| S. Tomé & Principe | 4.1 | 1.3 | 287.7 | 83.1 | 58 | 13.2 | 0.0 | 7.3 | 0.04 | 0.00 | 0.75 | 0.26 | 0.09 | **0.23** |
| Equatorial Guinea | 1.8 | 6.4 | 177.1 | 84.2 | 58 | 2.0 | 0.0 | 0.4 | 0.05 | 0.00 | 0.75 | 0.19 | 0.00 | **0.20** |
| Kenya | 1.0 | 4.2 | 152.4 | 83.3 | 52 | 1.8 | 0.0 | 1.3 | 0.03 | 0.00 | 0.73 | 0.19 | 0.01 | **0.19** |
| Lesotho | 1.6 | 4.2 | 110.7 | 83.9 | 63 | 0.5 | 0.0 | 1.0 | 0.03 | 0.00 | 0.77 | 0.14 | 0.01 | **0.19** |
| Togo | 1.1 | 3.6 | 134.9 | 58.4 | 67 | 2.6 | 0.0 | 4.3 | 0.03 | 0.00 | 0.61 | 0.20 | 0.05 | **0.18** |
| Uganda | 0.2 | 2.0 | 464.4 | 68.0 | 71 | 0.4 | 0.0 | 0.4 | 0.01 | 0.00 | 0.69 | 0.13 | 0.00 | **0.17** |
| Zambia | 0.8 | 1.3 | 118.7 | 79.0 | 45 | 0.5 | 0.0 | 0.5 | 0.01 | 0.00 | 0.68 | 0.14 | 0.01 | **0.17** |
| Congo | 0.7 | 6.7 | 207.8 | 81.8 | 57 | 0.0 | 0.0 | 0.2 | 0.04 | 0.00 | 0.74 | 0.05 | 0.00 | **0.17** |
| Cameroon | 0.7 | 4.3 | 110.7 | 72.4 | 48 | 0.6 | 0.0 | 0.4 | 0.03 | 0.00 | 0.64 | 0.15 | 0.00 | **0.16** |
| Ghana | 1.3 | 2.4 | 177.8 | 72.7 | 46 | 0.6 | 0.0 | 0.8 | 0.02 | 0.00 | 0.64 | 0.15 | 0.01 | **0.16** |
| Malawi | 0.7 | 0.8 | 465.0 | 61.0 | 72 | 0.2 | 0.0 | 0.3 | 0.01 | 0.00 | 0.65 | 0.11 | 0.00 | **0.15** |
| Tanzania | 0.5 | 1.9 | 501.4 | 76.0 | 31 | 0.5 | 0.0 | 0.2 | 0.01 | 0.00 | 0.61 | 0.14 | 0.00 | **0.15** |
| Nigeria | 0.6 | 1.3 | 353.7 | 65.4 | 45 | 0.6 | 0.0 | 0.3 | 0.01 | 0.00 | 0.59 | 0.15 | 0.00 | **0.15** |
| Djibouti | 1.5 | 2.3 | 153.2 | 65.5 | 21 | 3.1 | 0.0 | 0.7 | 0.02 | 0.00 | 0.51 | 0.21 | 0.01 | **0.15** |
| Rwanda | 0.3 | 1.4 | 348.3 | 68.0 | 52 | 0.2 | 0.0 | 0.3 | 0.01 | 0.00 | 0.63 | 0.10 | 0.00 | **0.15** |
| Madagascar | 0.4 | 1.0 | 336.7 | 67.3 | 41 | 0.4 | 0.0 | 0.3 | 0.01 | 0.00 | 0.59 | 0.13 | 0.00 | **0.15** |
| Mauritania | 1.2 | 9.2 | 113.1 | 40.7 | 43 | 3.5 | 0.0 | 0.4 | 0.06 | 0.00 | 0.41 | 0.21 | 0.00 | **0.14** |
| Senegal | 2.3 | 5.6 | 103.7 | 38.3 | 38 | 8.1 | 0.0 | 1.1 | 0.05 | 0.00 | 0.38 | 0.24 | 0.01 | **0.14** |
| Gambia | 2.8 | 7.3 | 116.2 | 37.8 | 47 | 1.5 | 0.0 | 1.8 | 0.06 | 0.00 | 0.41 | 0.18 | 0.02 | **0.13** |
| Sudan | 2.1 | 0.6 | 550.8 | 58.8 | 34 | 0.3 | 0.0 | 0.3 | 0.02 | 0.00 | 0.51 | 0.12 | 0.00 | **0.13** |
| Comoros | 1.4 | 0.0 | 206.0 | 56.0 | 40 | 0.3 | 0.0 | 0.4 | 0.01 | 0.00 | 0.51 | 0.13 | 0.00 | **0.13** |
| Côte d'Ivoire | 2.0 | 6.2 | 132.1 | 49.7 | 39 | 0.4 | 0.0 | 0.5 | 0.05 | 0.00 | 0.46 | 0.13 | 0.01 | **0.13** |
| Eritrea | 0.9 | 0.0 | 200.9 | 56.7 | 33 | 0.5 | 0.0 | 0.2 | 0.01 | 0.00 | 0.49 | 0.14 | 0.00 | **0.13** |
| D.R. Congo | 0.0 | 1.1 | 986.7 | 62.7 | 27 | 0.2 | 0.0 | 0.1 | 0.01 | 0.00 | 0.51 | 0.11 | 0.00 | **0.12** |
| Benin | 1.0 | 3.3 | 146.5 | 38.6 | 49 | 0.3 | 0.0 | 0.8 | 0.02 | 0.00 | 0.42 | 0.13 | 0.01 | **0.12** |
| Mozambique | 0.5 | 1.4 | 233.1 | 45.2 | 37 | 0.5 | 0.0 | 0.2 | 0.01 | 0.00 | 0.42 | 0.14 | 0.00 | **0.12** |
| Angola | 0.6 | 0.9 | 143.3 | 42.0 | 29 | 0.5 | 0.0 | 0.3 | 0.01 | 0.00 | 0.38 | 0.14 | 0.00 | **0.11** |
| Burundi | 0.3 | 0.7 | 703.2 | 49.2 | 31 | 0.1 | 0.0 | 0.1 | 0.01 | 0.00 | 0.43 | 0.08 | 0.00 | **0.10** |
| Guinea | 0.3 | 1.2 | 185.2 | 41.0 | 34 | 0.2 | 0.0 | 0.5 | 0.01 | 0.00 | 0.39 | 0.11 | 0.01 | **0.10** |
| Sierra Leone | 0.5 | 1.3 | 857.1 | 36.0 | 51 | 0.1 | 0.0 | 0.2 | 0.01 | 0.00 | 0.41 | 0.08 | 0.00 | **0.10** |
| Central African Rep. | 0.2 | 0.3 | 807.9 | 48.2 | 24 | 0.1 | 0.0 | 0.1 | 0.00 | 0.00 | 0.40 | 0.09 | 0.00 | **0.10** |
| Ethiopia | 0.5 | 0.1 | 329.0 | 40.3 | 34 | 0.1 | 0.0 | 0.1 | 0.00 | 0.00 | 0.38 | 0.10 | 0.00 | **0.10** |
| Guinea-Bissau | 0.9 | 0.0 | 840.0 | 39.6 | 43 | 0.1 | 0.0 | 0.4 | 0.01 | 0.00 | 0.41 | 0.06 | 0.00 | **0.10** |
| Chad | 0.2 | 0.4 | 375.7 | 44.2 | 33 | 0.1 | 0.0 | 0.2 | 0.00 | 0.00 | 0.40 | 0.07 | 0.00 | **0.10** |
| Mali | 0.5 | 0.5 | 289.8 | 26.4 | 29 | 0.6 | 0.0 | 0.2 | 0.01 | 0.00 | 0.27 | 0.15 | 0.00 | **0.09** |
| Burkina Faso | 0.5 | 0.8 | 247.5 | 24.8 | 22 | 0.7 | 0.0 | 0.2 | 0.01 | 0.00 | 0.24 | 0.15 | 0.00 | **0.08** |
| Niger | 0.2 | 0.1 | 683.6 | 16.5 | 17 | 0.0 | 0.0 | 0.1 | 0.00 | 0.00 | 0.17 | 0.05 | 0.00 | **0.04** |

Note: DAI values are shown to hundreds of a decimal point. Economies with the same DAI value are ranked by thousands of a decimal point.
Source: ITU.

# Algeria

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *2'381'745* | | | | | | |
| *Local currency:* | *Dinar* | | | *Year ending 31.12* | | | |
| *Capital:* | *Algier* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 29'507 | 29'950 | 30'386 | 30'836 | 31'293 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 48'188 | 48'647 | 54'462 | 54'935 | 55'916 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 12'407 | 11'863 | 11'685 | 12'504 | 1'383 |
| Average annual exchange rate per US$ | (2) | | 58.74 | 66.57 | 75.26 | 77.22 | 79.68 |
| Consumer price index (1995=100) | (3) | | 132 | 135 | 136 | 141 | 143 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 1'477'000 | 1'600'000 | 1'761'327 | 1'880'000 | 1'908'000 |
| Main telephone lines per 100 inhabitants | | | 5.01 | 5.34 | 5.80 | 6.10 | 6.10 |
| Percent of main lines connected to digital exchanges | | % | 57.89 | 70.00 | 92.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 730'000 | 640'000 | 646'000 | 727'000 | ... |
| Public payphones | | | 5'000 | 5'000 | 5'000 | 5'000 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 18'000 | 72'000 | 86'000 | 100'000 | 400'000 |
| Cellular subscribers per 100 inhabitants | | | 0.06 | 0.24 | 0.28 | 0.32 | 1.28 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 121 | 143 | 152 | 209 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 18'230 | 17'809 | 17'900 | 17'900 | ... |
| Subscribers per employee | | | 82 | 94 | 103 | 111 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 287 | 291 | 306 | 362 | ... |
| Telecommunication revenues as a % of GDP | | % | 0.60 | 0.60 | 0.56 | 0.66 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 146 | 114 | ... | 96 | ... |
| Telecommunication investment as a % of GFCF | | % | 1.18 | 0.96 | ... | 0.77 | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 73.47 | 77.44 | 78.58 | 82.90 | 88.06 |
| Per cent of households with a radio | (5) | | 77.78 | 76.03 | 71.55 | 71.00 | 70.98 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 6'000 | 60'000 | 150'000 | 200'000 | 500'000 |
| Internet users per 100 inhabitants | | | 0.02 | 0.20 | 0.49 | 0.65 | 1.60 |

*Notes:* Ministère des Postes et Télécommunications (MPT).

(1) Source: Algeria Statistical Office.

(2) Source: IMF.

(3) Source: IMF.

(4) 2001: Entreprise Nationale de Télévision. 2002: OBS. Other years: ITU estimate.

(5) Source: UNESCO. ITU estimates.

*Source:* ITU.

# Angola

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *1'246'700* | | | | | | |
| *Local currency:* | *Kwanza* | | | | *Year ending 31.12* | | |
| *Capital:* | *Luanda* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 12'092 | 12'479 | 13'134 | 13'528 | 13'937 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 6'507 | 8'084 | 9'130 | 8'936 | 9'960 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 0.39 | 2.12 | 10.04 | 22.06 | 43.53 |
| Consumer price index (1995=100) | (3) | | 28'086 | 97'792 | 415'620 | 1'002'000 | 2'193'000 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 65'100 | 67'200 | 69'700 | 80'000 | 85'000 |
| Main telephone lines per 100 inhabitants | | | 0.54 | 0.54 | 0.53 | 0.59 | 0.61 |
| Percent of main lines connected to digital exchanges | | % | 65.00 | 81.01 | 91.42 | ... | ... |
| Waiting list for main lines | | | 11'341 | 21'149 | ... | ... | ... |
| Public payphones | | | 236 | 274 | 390 | 2'110 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 9'820 | 24'000 | 25'806 | 86'500 | 130'000 |
| Cellular subscribers per 100 inhabitants | | | 0.08 | 0.19 | 0.20 | 0.64 | 0.93 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 28 | 35 | 35 | 33 | 34 |
| International incoming telephone traffic (minutes) | | 10x6 | 22 | 33 | 40 | 52 | 64 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 2'056 | 2'110 | 2'111 | 2'160 | 2'237 |
| Subscribers per employee | | | 36 | 43 | 45 | 77 | 96 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 129 | 160 | 114 | ... | ... |
| Telecommunication revenues as a % of GDP | | % | 1.97 | 1.98 | 1.25 | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 6.25 | 6.80 | 8.85 | 8.89 | 8.97 |
| Per cent of households with a radio | | | 12.92 | 14.40 | 15.77 | 16.67 | 17.94 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'500 | 10'000 | 15'000 | 20'000 | 41'000 |
| Internet users per 100 inhabitants | | | 0.02 | 0.08 | 0.11 | 0.15 | 0.29 |

*Notes:* Angola Telecom.

(1) Source: UN.

(2) Source: IMF.

(3) Source: IMF.

(4) Source: 1998: MIH, other years: ITU estimate.

*Source:* ITU.

# Benin

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *112'622* | | | | | | |
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Porto Novo* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 5'973 | 6'170 | 6'373 | 6'584 | 6'801 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 2'306 | 2'360 | 2'255 | 2'371 | 2'811 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 424 | 446 | 425 | 455 | 546 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 115 | 115 | 120 | 125 | 128 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 38'354 | 43'656 | 51'644 | 59'298 | 62'669 |
| Main telephone lines per 100 inhabitants | | | 0.64 | 0.71 | 0.81 | 0.90 | 0.92 |
| Percent of main lines connected to digital exchanges | | % | 77.64 | 78.71 | 82.22 | 83.03 | ... |
| Waiting list for main lines | | | 13'695 | 16'690 | 23'000 | ... | ... |
| Public payphones | | | 311 | 442 | 508 | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (4) | | 6'286 | 7'269 | 55'476 | 125'000 | 218'770 |
| Cellular subscribers per 100 inhabitants | | | 0.11 | 0.12 | 0.87 | 1.90 | 3.22 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 11 | 11 | 16 | 17 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 16 | 17 | 16 | 31 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'267 | 1'242 | 1'225 | 1'231 | ... |
| Subscribers per employee | | | 35 | 41 | 87 | 150 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 45 | 46 | 54 | 62 | ... |
| Telecommunication revenues as a % of GDP | | % | 1.97 | 1.95 | 2.41 | 2.61 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 24 | 32 | 29 | 26 | ... |
| Telecommunication investment as a % of GFCF | | % | 5.59 | 7.15 | 6.93 | 5.80 | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 14.74 | 16.44 | 17.98 | 18.87 | 19.66 |
| Per cent of households with a radio | | | 71.05 | 77.60 | 84.09 | 85.85 | 90.64 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 3'000 | 10'000 | 15'000 | 25'000 | 50'000 |
| Internet users per 100 inhabitants | | | 0.05 | 0.16 | 0.24 | 0.38 | 0.74 |

*Notes:* Office des Postes et Télécommunications (OPT).

(1) Source: UN. ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 2001: ITU estimate.

(5) Source: 1996 and 2001: Measure DHS. ITU estimates.

*Source:* ITU.

# Botswana

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *582'000* | | | | | | |
| *Local currency:* | *Pula* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Gaborone* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 1'567 | 1'611 | 1'643 | 1'681 | 1'720 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 4'771 | 4'659 | 4'891 | 4'909 | 5'055 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'223 | 1'356 | 1'324 | 1'181 | 1'223 |
| Average annual exchange rate per US$ | (2) | | 4.23 | 4.62 | 5.10 | 5.84 | 6.33 |
| Consumer price index (1995=100) | (3) | | 128 | 138 | 149 | 159 | 172 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 102'016 | 123'819 | 135'900 | 142'600 | 142'362 |
| Main telephone lines per 100 inhabitants | | | 6.51 | 7.69 | 8.27 | 8.48 | 8.28 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 19'624 | ... | ... | ... | ... |
| Public payphones | | | 2'449 | 2'999 | 2'893 | 2'964 | 2'242 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (4) | | 15'190 | 92'000 | 200'000 | 316'000 | 435'000 |
| Cellular subscribers per 100 inhabitants | | | 0.97 | 5.71 | 12.17 | 18.80 | 25.29 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (5) | 10x6 | 40 | 40 | 42 | 59 | 64 |
| International incoming telephone traffic (minutes) | (6) | 10x6 | 29 | 29 | 31 | 41 | 46 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (7) | | 1'700 | 1'754 | 1'771 | 1'724 | 1'694 |
| Subscribers per employee | | | 69 | 123 | 190 | 266 | 341 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 91 | 121 | 185 | 177 | 183 |
| Telecommunication revenues as a % of GDP | | % | 1.92 | 2.59 | 3.79 | 3.60 | 3.62 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 41 | 48 | 26 | 25 | 12 |
| Telecommunication investment as a % of GFCF | | % | 3.36 | 3.52 | 1.95 | 2.10 | 1.01 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (8) | | 9.70 | 13.33 | 15.40 | 15.32 | 15.22 |
| Per cent of households with a radio | | | 72.04 | 77.33 | 82.14 | 80.31 | 91.79 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 10'000 | 19'000 | 25'000 | 50'000 | 60'000 |
| Internet users per 100 inhabitants | | | 0.64 | 1.18 | 1.52 | 2.97 | 3.49 |

*Notes:* Botswana Telecommunications Corporation (BTC).

(1) Source: Botswana Central Statistics Office. 2001: Latest census. Other years: ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) At December.

(5) 2001-02: Telegeography.

(6) 1998-2000: Estimate. 2001-02: Telegeography.

(7) BTC.

(8) MIH, ITU estimates

*Source:* ITU.

# Burkina Faso

| *Land area (km²):* | *274'122* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Ouagadougou* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 10'835 | 11'106 | 11'383 | 11'668 | 11'959 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 2'522 | 2'516 | 2'218 | 2'329 | 2'630 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 594 | 669 | 590 | 620 | 738 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 114 | 113 | 113 | 118 | 121 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 41'218 | 47'338 | 53'217 | 58'036 | 61'908 |
| Main telephone lines per 100 inhabitants | | | 0.38 | 0.43 | 0.47 | 0.50 | 0.52 |
| Percent of main lines connected to digital exchanges | | % | 89.53 | 91.84 | 95.63 | 95.56 | 95.66 |
| Waiting list for main lines | | | ... | ... | 12'252 | ... | 12'436 |
| Public payphones | | | 893 | 1'042 | 1'437 | 2'568 | 5'043 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (4) | | 2'730 | 5'036 | 25'245 | 76'000 | 113'000 |
| Cellular subscribers per 100 inhabitants | | | 0.03 | 0.05 | 0.22 | 0.65 | 0.94 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 9 | 10 | 11 | 15 | 20 |
| International incoming telephone traffic (minutes) | | 10x6 | 13 | 16 | ... | 23 | 30 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'250 | 1'256 | 1'272 | 1'289 | 1'266 |
| Subscribers per employee | | | 35 | 42 | 62 | 104 | 138 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 52 | 54 | 52 | 103 | 63 |
| Telecommunication revenues as a % of GDP | | % | 2.06 | 2.14 | 2.32 | 4.40 | 2.41 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 15 | 16 | 20 | 19 | 24 |
| Telecommunication investment as a % of GFCF | | % | 2.58 | 2.35 | 3.32 | 3.13 | 3.25 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 6.28 | 6.43 | 6.57 | 6.70 | 6.82 |
| Per cent of households with a radio | (6) | | 58.38 | 60.62 | 62.72 | 64.10 | 65.38 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 5'000 | 7'000 | 9'000 | 19'000 | 25'000 |
| Internet users per 100 inhabitants | | | 0.05 | 0.06 | 0.08 | 0.16 | 0.21 |

*Notes:* Office National des Télécommunications (ONATEL).

(1) Source: UN. ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) From 2001: Including Celtel subscribers.

(5) 1998: Measure DHS. ITU estimates.

(6) 1998: Measure DHS. ITU estimates.

*Source:* ITU.

# Burundi

| *Land area (km²):* | *27'834* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Bujumbura* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 6'458 | 6'589 | 6'723 | 6'860 | 6'988 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 894 | 808 | 709 | 662 | 624 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 54 | 61 | 54 | 48 | 60 |
| Average annual exchange rate per US$ | (2) | | 447.77 | 563.56 | 720.67 | 830.35 | 930.75 |
| Consumer price index (1995=100) | (3) | | 187 | 193 | 240 | 262 | 258 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 17'849 | 18'993 | 20'543 | 22'084 | 23'895 |
| Main telephone lines per 100 inhabitants | | | 0.28 | 0.29 | 0.31 | 0.32 | 0.34 |
| Percent of main lines connected to digital exchanges | | % | 89.60 | 91.90 | ... | ... | ... |
| Waiting list for main lines | | | 10'000 | 12'000 | 11'116 | 4'692 | ... |
| Public payphones | | | 78 | 15 | 10 | 10 | 10 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (5) | | 620 | 800 | 16'320 | 30'687 | 52'000 |
| Cellular subscribers per 100 inhabitants | | | 0.01 | 0.01 | 0.24 | 0.45 | 0.74 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (6) | 10x6 | 2 | 2 | 3 | 4 | 3 |
| International incoming telephone traffic (minutes) | | 10x6 | 4 | 4 | 4 | 7 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (7) | | 620 | 581 | 732 | 734 | 755 |
| Subscribers per employee | | | 30 | 34 | 50 | 72 | 101 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 11 | 9 | 13 | 15 | ... |
| Telecommunication revenues as a % of GDP | | % | 1.27 | 1.13 | 1.87 | 2.23 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 2 | 11 | 24 | 30 | ... |
| Telecommunication investment as a % of GFCF | | % | 4.38 | 17.51 | 44.49 | 62.26 | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (8) | | 6.92 | 8.32 | 11.40 | 13.33 | 13.60 |
| Per cent of households with a radio | | | 50.00 | 52.96 | 57.00 | 59.26 | 60.82 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 1'000 | 2'500 | 5'000 | 7'000 | 8'000 |
| Internet users per 100 inhabitants | | | 0.02 | 0.04 | 0.07 | 0.10 | 0.11 |

*Notes:* Office National des Télécommunications (ONATEL).

(1) Source: UN; ITU estimate.
(2) Source: IMF.
(3) Source: IMF.
(4) 2000-01: Estimate.
(5) 2001: ITU Estimate.
(6) 2002: Telegeography.
(7) 1998: ITU Estimate.
(8) Source: RFI.

*Source:* ITU.

# Cameroon

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *475'500* | | | | | | |
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Yaounde* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 14'305 | 14'693 | 15'085 | 15'415 | 15'830 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 9'445 | 9'759 | 9'273 | 9'609 | 10'611 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | 2'026 | 2'249 | 2'803 | 3'280 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 112 | 114 | 112 | 117 | 120 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 93'920 | 94'599 | 95'000 | 106'287 | 110'881 |
| Main telephone lines per 100 inhabitants | | | 0.66 | 0.64 | 0.63 | 0.69 | 0.70 |
| Percent of main lines connected to digital exchanges | | % | 68.00 | 68.00 | ... | ... | ... |
| Waiting list for main lines | | | 50'000 | ... | ... | ... | ... |
| Public payphones | | | 300 | 6'555 | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 5'000 | 6'000 | 103'279 | 417'295 | 701'507 |
| Cellular subscribers per 100 inhabitants | | | 0.03 | 0.04 | 0.68 | 2.71 | 4.43 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 24 | 28 | ... | 22 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 44 | 58 | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 2'500 | 2'213 | 2'213 | 2'213 | 2'225 |
| Subscribers per employee | | | 40 | 45 | 90 | 237 | 365 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 58 | 69 | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | 0.61 | 0.70 | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | 83 | 44 | 80 |
| Telecommunication investment as a % of GFCF | | % | ... | ... | 3.70 | 1.57 | 2.44 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 16.54 | 16.85 | 17.20 | 17.72 | 17.71 |
| Per cent of households with a radio | | | 51.92 | 52.43 | 53.07 | 54.25 | 54.17 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'000 | 20'000 | 40'000 | 45'000 | 60'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.14 | 0.27 | 0.29 | 0.38 |

*Notes:* Ministère des Postes et Télécommunications.

(1) Source: UN. ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 2000-2001: Estimate.

*Source:* ITU.

# Cape Verde

| *Land area (km²):* | *4'033* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Escudo* | | | *Year ending 31.12* | | | |
| *Capital:* | *Praia* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 417 | 428 | 435 | 442 | 450 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 540 | 581 | 559 | 564 | 634 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 98.16 | 102.70 | 115.88 | 123.21 | 117.26 |
| Consumer price index (1995=100) | (3) | | 120 | 125 | 122 | 127 | 129 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 39'985 | 46'865 | 54'644 | 64'132 | 70'187 |
| Main telephone lines per 100 inhabitants | | | 9.58 | 10.94 | 12.57 | 14.49 | 15.58 |
| Percent of main lines connected to digital exchanges | | % | 86.60 | 88.80 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 7'431 | 5'814 | 4'391 | 2'914 | 1'651 |
| Public payphones | | | 407 | 411 | 394 | 448 | 448 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 1'020 | 8'068 | 19'729 | 31'507 | 42'949 |
| Cellular subscribers per 100 inhabitants | | | 0.24 | 1.88 | 4.54 | 7.12 | 9.53 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 6 | 7 | 7 | 8 | 9 |
| International incoming telephone traffic (minutes) | | 10x6 | 16 | 22 | 29 | 36 | 46 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 423 | 433 | 483 | 466 | 469 |
| Subscribers per employee | | | 97 | 127 | 154 | 205 | 241 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 30 | 34 | 38 | 42 | 48 |
| Telecommunication revenues as a % of GDP | | % | 5.49 | 5.93 | 6.87 | 7.38 | 7.61 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 12 | 16 | 14 | 12 | 15 |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 38.90 | 39.56 | 39.69 | 40.04 | 40.00 |
| Per cent of households with a radio | | | 68.80 | 67.03 | 65.91 | 65.68 | 65.79 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (5) | | 2'000 | 5'000 | 8'000 | 12'000 | 16'000 |
| Internet users per 100 inhabitants | | | 0.48 | 1.17 | 1.84 | 2.71 | 3.55 |

*Notes:* Cabo Verde Telecom.

(1) Source: UN, INE. 2000-03: INE. 2000: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) Source: INE, ITU estimates.

(5) 2002: ITU estimate.

*Source:* ITU.

## Central African Rep.

| *Land area (km²):* | *624'977* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Bangui* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 3'485 | 3'550 | 3'615 | 3'782 | 3'957 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'057 | 1'072 | 991 | 1'004 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 104 | 151 | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 103 | 102 | 105 | 109 | 112 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 9'563 | 9'860 | 9'468 | 8'917 | 9'000 |
| Main telephone lines per 100 inhabitants | | | 0.27 | 0.28 | 0.26 | 0.24 | 0.23 |
| Percent of main lines connected to digital exchanges | | % | 98.59 | 96.86 | ... | ... | ... |
| Waiting list for main lines | | | 1'762 | ... | 860 | 1'600 | 1'200 |
| Public payphones | | | 76 | 88 | 90 | 95 | 100 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 1'633 | 4'162 | 4'967 | 11'000 | 12'600 |
| Cellular subscribers per 100 inhabitants | | | 0.05 | 0.12 | 0.14 | 0.29 | 0.32 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 3 | 4 | 5 | 5 | 4 |
| International incoming telephone traffic (minutes) | | 10x6 | 4 | 4 | 4 | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 388 | 391 | 409 | 402 | 400 |
| Subscribers per employee | | | 29 | 36 | 35 | 50 | 54 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 12 | 12 | 10 | 10 | 11 |
| Telecommunication revenues as a % of GDP | | % | 1.16 | 1.09 | 1.03 | 1.02 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | — | — | — | — | — |
| Telecommunication investment as a % of GFCF | | % | 0.08 | 0.06 | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 2.47 | 2.85 | 2.10 | 1.84 | 1.81 |
| Per cent of households with a radio | | | 49.15 | 58.49 | 55.56 | 50.39 | 51.08 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 1'000 | 1'500 | 2'000 | 3'000 | 5'000 |
| Internet users per 100 inhabitants | | | 0.03 | 0.04 | 0.06 | 0.08 | 0.13 |

*Notes:* Société Centrafricaine de Télécommunications (SOCATEL).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

*Source:* ITU.

# Chad

| *Land area (km²):* | *1'284'000* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *N'Djamena* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 7'076 | 7'267 | 7'463 | 7'665 | 7'872 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'700 | 1'506 | 1'374 | 1'622 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | 235 | 323 | 777 | 1'171 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 133 | 124 | 129 | 145 | 152 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 8'631 | 9'700 | 10'261 | 10'689 | 11'835 |
| Main telephone lines per 100 inhabitants | | | 0.12 | 0.13 | 0.14 | 0.14 | 0.15 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 583 | 600 | ... | ... | ... |
| Public payphones | | | 64 | 64 | 64 | 64 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (5) | | — | — | 5'500 | 22'000 | 34'200 |
| Cellular subscribers per 100 inhabitants | | | — | — | 0.07 | 0.29 | 0.43 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 3 | 3 | 3 | 4 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 4 | 4 | 4 | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (6) | | 343 | 400 | 504 | 655 | ... |
| Subscribers per employee | | | 25 | 24 | 31 | 50 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 18 | 21 | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | 1.04 | 1.42 | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (7) | | 1.77 | 2.06 | 2.14 | 2.22 | 2.29 |
| Per cent of households with a radio | (8) | | 35.33 | 37.84 | 40.20 | 42.40 | 44.46 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 335 | 1'000 | 3'000 | 4'000 | 15'000 |
| Internet users per 100 inhabitants | | | — | 0.01 | 0.04 | 0.05 | 0.19 |

*Notes:* Office National des Postes et Télécommunications (ONPT).

(1) ITU estimate.
(2) Source: IMF.
(3) Source: IMF.
(4) 2000-2001: ITU estimate.
(5) 2002: September.
(6) 1999: ITU estimate.
(7) ITU estimates.
(8) ITU estimates.

*Source:* ITU.

# Comoros

| *Land area (km²):* | *1'862* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Franc CFA* | | | | *Year ending 31.12* | | |
| *Capital:* | *Moroni* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 658 | 676 | 694 | 727 | 762 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 215 | 223 | 204 | 220 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | | | 442.46 | 461.78 | 533.98 | 549.78 | 522.74 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 6'226 | 6'521 | 6'773 | 8'876 | 10'258 |
| Main telephone lines per 100 inhabitants | | | 0.95 | 0.96 | 0.98 | 1.22 | 1.35 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | ... | ... | 3'054 | 2'145 | 3'379 |
| Public payphones | | | 130 | 151 | 175 | 249 | 295 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | — | — | — |
| Cellular subscribers per 100 inhabitants | | | — | — | — | — | — |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 2 | 2 | 2 | 2 | 4 |
| International incoming telephone traffic (minutes) | | 10x6 | 5 | 7 | 11 | 11 | 15 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (2) | | 140 | 125 | 123 | 121 | 150 |
| Subscribers per employee | | | 44 | 52 | 55 | 73 | 68 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 8 | 6 | 6 | 9 | 10 |
| Telecommunication revenues as a % of GDP | | % | 3.56 | 2.50 | 3.14 | 3.91 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | 6 | 4 |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 10.38 | 10.49 | 10.40 | 10.69 | 11.18 |
| Per cent of households with a radio | | | 53.85 | 54.68 | 55.48 | 58.62 | 59.21 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 200 | 800 | 1'500 | 2'500 | 3'200 |
| Internet users per 100 inhabitants | | | 0.03 | 0.12 | 0.22 | 0.34 | 0.42 |

*Notes:* Société Nationale des Postes et Telecommunications (SNPT).
(1) Source: UN; ITU estimate.
(2) 2002: Estimate.

*Source:* ITU.

# Congo

| *Land area (km²):* | *342'000* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Brazzaville* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 2'785 | 2'864 | 2'943 | 3'111 | 3'300 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'949 | 2'354 | 3'220 | 2'988 | 3'193 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 945 | 832 | 751 | 931 | 905 |
| Average annual exchange rate per US$ | | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (2) | | 124 | 131 | 130 | 130 | 136 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (3) | | 22'000 | 22'000 | 22'000 | 22'000 | 22'000 |
| Main telephone lines per 100 inhabitants | | | 0.79 | 0.77 | 0.75 | 0.71 | 0.67 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | ... | ... | ... |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | | | ... | ... | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (4) | | 3'390 | 5'000 | 70'000 | 150'000 | 221'800 |
| Cellular subscribers per 100 inhabitants | | | 0.12 | 0.17 | 2.38 | 4.82 | 6.72 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | ... | ... | ... | ... | ... |
| Subscribers per employee | | | ... | ... | ... | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 5.89 | 5.89 | 5.89 | 5.83 | 6.02 |
| Per cent of households with a radio | | | 31.48 | 30.62 | 30.23 | 30.00 | 31.70 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 100 | 500 | 800 | 1'000 | 5'000 |
| Internet users per 100 inhabitants | | | — | 0.02 | 0.03 | 0.03 | 0.15 |

*Notes:* Office National des Postes et des Télécommunications (ONPT).

(1) Source: UN.

(2) Source: IMF.

(3) 1998-2000: ITU estimate.

(4) 2002: September.

*Source:* ITU.

# Côte d'Ivoire

| *Land area (km²):* | *322'463* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Yamoussoukro* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 14'292 | 14'526 | 14'786 | 16'348 | 16'490 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 12'783 | 12'561 | 10'599 | 10'735 | 11'717 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'979 | 1'826 | 1'154 | 1'038 | 1'223 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 112 | 112 | 115 | 120 | 124 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 170'001 | 219'283 | 263'667 | 293'568 | 336'129 |
| Main telephone lines per 100 inhabitants | | | 1.19 | 1.51 | 1.78 | 1.80 | 2.04 |
| Percent of main lines connected to digital exchanges | | % | 93.80 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 33'112 | 33'112 | 31'712 | 22'700 | 24'202 |
| Public payphones | (4) | | 655 | 655 | 1'298 | 2'688 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 91'212 | 257'134 | 472'952 | 728'545 | 1'027'058 |
| Cellular subscribers per 100 inhabitants | | | 0.64 | 1.77 | 3.20 | 4.46 | 6.23 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 57 | 71 | 73 | 62 | 68 |
| International incoming telephone traffic (minutes) | | 10x6 | 47 | 70 | 74 | 109 | 119 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 3'641 | 3'720 | 3'897 | 3'837 | 3'702 |
| Subscribers per employee | | | 72 | 128 | 189 | 266 | 368 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 299 | 287 | 362 | 377 | 399 |
| Telecommunication revenues as a % of GDP | | % | 2.34 | 2.28 | 3.42 | 3.51 | 3.40 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 60 | 151 | 86 | 113 | 138 |
| Telecommunication investment as a % of GFCF | | % | 3.02 | 8.26 | 7.45 | 10.87 | 11.25 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 28.95 | 30.13 | 31.71 | 33.19 | 34.53 |
| Per cent of households with a radio | (6) | | 66.82 | 71.22 | 73.98 | 76.58 | 78.93 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 10'000 | 20'000 | 40'000 | 70'000 | 90'000 |
| Internet users per 100 inhabitants | | | 0.07 | 0.14 | 0.27 | 0.43 | 0.55 |

*Notes:* Société Côte d'Ivoire-TELECOM (CI-TELCOM).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) In service. CI-Telecom only.

(5) 1998: Measure DHS. ITU estimates.

(6) 1998: Measure DHS. ITU estimates.

*Source:* ITU.

# D.R. Congo

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *2'345'410* | | | | | | |
| *Local currency:* | *Zaire* | | | | *Year ending 31.12* | | |
| *Capital:* | *Kinshasa* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 49'300 | 50'335 | 51'654 | 52'522 | 52'647 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 6'205 | 12'892 | 15'349 | 7'531 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 454 | 953 | 1'285 | 320 | ... |
| Average annual exchange rate per US$ | (2) | | 1.61 | 4.02 | 21.82 | 206.62 | 346.49 |
| Consumer price index (1995=100) | (3) | | 2'284 | 8'791 | 53'970 | 248'226 | 326'473 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 9'350 | 9'550 | 9'810 | 9'980 | 10'000 |
| Main telephone lines per 100 inhabitants | | | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | ... | ... | ... |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | (5) | | ... | ... | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (6) | | 10'000 | 12'000 | 15'000 | 150'000 | 560'000 |
| Cellular subscribers per 100 inhabitants | | | 0.02 | 0.02 | 0.03 | 0.29 | 1.06 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | ... | ... | ... | ... | ... |
| Subscribers per employee | | | ... | ... | ... | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 1.45 | 1.42 | 1.40 | 1.38 | 1.69 |
| Per cent of households with a radio | | | 16.13 | 15.80 | 15.53 | 15.38 | 15.38 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 200 | 500 | 3'000 | 6'000 | 50'000 |
| Internet users per 100 inhabitants | | | — | — | 0.01 | 0.01 | 0.09 |

*Notes:* Ministère des Postes et Télécommunications.

(1) Source: UN. ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) Estimate.

(5) 1998-2001: ITU estimate.

(6) ITU estimate.

*Source:* ITU.

# Djibouti

| *Land area (km²):* | *22'000* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Djibouti* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 608 | 620 | 632 | 644 | 656 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 514 | 536 | 553 | 576 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 79 | 48 | 71 | ... | ... |
| Average annual exchange rate per US$ | (2) | | 177.72 | 177.72 | 177.72 | 177.72 | 177.72 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 7'932 | 8'831 | 9'704 | 9'932 | 10'125 |
| Main telephone lines per 100 inhabitants | | | 1.30 | 1.42 | 1.54 | 1.54 | 1.54 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | — | — | — | ... | ... |
| Public payphones | | | 41 | 56 | 64 | ... | 39 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 220 | 280 | 230 | 3'000 | 15'000 |
| Cellular subscribers per 100 inhabitants | | | 0.04 | 0.05 | 0.04 | 0.47 | 2.29 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 5 | 5 | 5 | 4 | 6 |
| International incoming telephone traffic (minutes) | | 10x6 | 6 | 9 | 12 | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 437 | 395 | 525 | 557 | ... |
| Subscribers per employee | | | 19 | 23 | 19 | 23 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 21 | 20 | 20 | 23 | ... |
| Telecommunication revenues as a % of GDP | | % | 4.03 | 3.72 | 3.71 | 3.91 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 2 | 2 | 2 | ... | ... |
| Telecommunication investment as a % of GFCF | | % | 2.69 | 4.51 | 3.02 | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 39.56 | 39.25 | 39.47 | 39.69 | 40.82 |
| Per cent of households with a radio | | | 57.14 | 56.99 | 56.84 | 56.70 | 57.14 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 650 | 750 | 1'400 | 3'300 | 4'500 |
| Internet users per 100 inhabitants | | | 0.11 | 0.12 | 0.22 | 0.51 | 0.69 |

*Notes:* Office des Postes et Télécommunications (OPT).

(1) Source: UN. 1998-2001: World Bank, ITU estimate.

(2) Source: IMF.

*Source:* ITU.

# Egypt

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *1'000'250* | | | | | | |
| *Local currency:* | *Pound* | | | | *Year ending 31.12* | | |
| *Capital:* | *Cairo* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 61'401 | 62'430 | 63'475 | 64'550 | 67'313 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 84'829 | 90'471 | 98'012 | 90'353 | 84'822 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 17'178 | 17'500 | 18'559 | 16'020 | 15'000 |
| Average annual exchange rate per US$ | (2) | | 3.39 | 3.40 | 3.47 | 3.97 | 4.50 |
| Consumer price index (1995=100) | (3) | | 117 | 120 | 124 | 126 | 130 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 3'971'518 | 4'686'361 | 5'483'601 | 6'694'894 | 7'736'400 |
| Main telephone lines per 100 inhabitants | | | 6.47 | 7.51 | 8.64 | 10.37 | 11.49 |
| Percent of main lines connected to digital exchanges | | % | 82.00 | 86.00 | 96.00 | 99.00 | 100.00 |
| Waiting list for main lines | | | 1'362'758 | 1'293'570 | 1'300'000 | 583'254 | 206'056 |
| Public payphones | (5) | | 4'976 | 10'316 | 21'987 | 36'048 | 47'490 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (6) | | 90'786 | 480'974 | 1'359'900 | 2'793'800 | 4'494'700 |
| Cellular subscribers per 100 inhabitants | | | 0.15 | 0.77 | 2.14 | 4.33 | 6.68 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 127 | 149 | 187 | 223 | 268 |
| International incoming telephone traffic (minutes) | | 10x6 | 475 | 532 | 621 | 818 | 1'037 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 55'647 | 55'524 | 54'922 | 54'810 | 53'108 |
| Subscribers per employee | | | 73 | 93 | 125 | 173 | 230 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 1'375 | 1'998 | 2'727 | 2'550 | 2'395 |
| Telecommunication revenues as a % of GDP | | % | 1.62 | 2.21 | 2.78 | 2.82 | 2.82 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | 713 | 513 | 658 | 666 |
| Telecommunication investment as a % of GFCF | | % | ... | 4.07 | 2.76 | 4.11 | 4.44 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (7) | | 85.00 | 87.17 | 89.40 | 89.86 | 88.60 |
| Per cent of households with a radio | | | 72.89 | 77.26 | 81.90 | 85.83 | 88.25 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (8) | | 100'000 | 200'000 | 450'000 | 600'000 | 1'900'000 |
| Internet users per 100 inhabitants | | | 0.16 | 0.32 | 0.71 | 0.93 | 2.82 |

*Notes:* Telecom Egypt.

(1) Source: UN.

(2) Source: IMF.

(3) Source: IMF.

(4) Until 2000: June.

(5) 1999-2001: Including data from Menatel Company and Nile Company.

(6) Until 2000: June.

(7) ITU estimates. Eutelsat.

(8) Until 1999: June.

*Source:* ITU.

# Equatorial Guinea

| *Land area (km²):* | *28'051* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Malabo* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population (1) | | 10x3 | 431 | 442 | 453 | 470 | 505 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 449 | 758 | 1'253 | 1'781 | 2'166 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) (2) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 5'580 | 5'800 | 6'100 | 6'900 | 8'800 |
| Main telephone lines per 100 inhabitants | | | 1.29 | 1.31 | 1.35 | 1.47 | 1.74 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | ... | ... | ... |
| Waiting list for main lines | | | 1'900 | ... | ... | ... | ... |
| Public payphones | | | 3 | ... | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 297 | 600 | 5'000 | 15'000 | 32'000 |
| Cellular subscribers per 100 inhabitants | | | 0.07 | 0.14 | 1.10 | 3.19 | 6.34 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 3 | ... | 4 | 4 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 124 | 150 | 170 | 200 | ... |
| Subscribers per employee | | | 47 | 43 | 65 | 110 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 12 | 12 | 15 | 19 | ... |
| Telecommunication revenues as a % of GDP | | % | 2.61 | 1.54 | 1.19 | 1.06 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | ... | ... | ... | ... | ... |
| Per cent of households with a radio | | | ... | ... | ... | ... | ... |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 470 | 500 | 700 | 900 | 1'800 |
| Internet users per 100 inhabitants | | | 0.11 | 0.11 | 0.15 | 0.19 | 0.36 |

*Notes:* Ministerio de Transportes, Información y Comunicaciones.
(1) Source: UN.
(2) Source: IMF.

*Source:* ITU.

# Eritrea

| *Land area (km²):* | *93'679* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Nakfa* | | | *Year ending 31.12* | | | |
| *Capital:* | *Asmara* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 3'577 | 3'620 | 3'659 | 3'816 | 3'980 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 670 | 711 | 645 | 700 | 582 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 7.51 | 8.20 | 9.62 | 11.11 | 13.96 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 24'308 | 27'375 | 30'554 | 31'249 | 35'897 |
| Main telephone lines per 100 inhabitants | | | 0.68 | 0.76 | 0.84 | 0.82 | 0.90 |
| Percent of main lines connected to digital exchanges | | % | 73.86 | 74.32 | 77.37 | 78.50 | 80.74 |
| Waiting list for main lines | | | 18'382 | 19'260 | 20'492 | 26'971 | 38'496 |
| Public payphones | | | 381 | 431 | 416 | 430 | 443 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | — | — | — |
| Cellular subscribers per 100 inhabitants | | | — | — | — | — | — |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 3 | 3 | 3 | 4 | 4 |
| International incoming telephone traffic (minutes) | | 10x6 | 13 | 14 | 18 | 23 | 25 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 578 | 463 | 453 | 476 | 641 |
| Subscribers per employee | | | 42 | 59 | 67 | 66 | 56 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 22 | 20 | 18 | 19 | 17 |
| Telecommunication revenues as a % of GDP | | % | 3.30 | 2.75 | 2.76 | 2.66 | 3.00 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 17 | 9 | 23 | 1 | 1 |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 9.13 | 10.15 | 11.29 | 12.12 | 13.19 |
| Per cent of households with a radio | | | 48.31 | 51.46 | 54.68 | 56.13 | 62.11 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 300 | 900 | 5'000 | 6'000 | 9'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.02 | 0.14 | 0.16 | 0.23 |

*Notes:* Eritrea Telecommunication Services Corporation (EriTel).

(1) Source: UN.

(2) UN operational rate of exchange, end of period.

*Source:* ITU.

# Ethiopia

| *Land area (km²):* | *1'223'500* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Birr* | | | *Year ending 30.06* | | | |
| *Capital:* | *Addis Ababa* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 59'649 | 61'095 | 63'490 | 65'390 | 67'347 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 6'325 | 6'132 | 6'335 | 6'268 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 7.12 | 7.94 | 8.22 | 8.46 | 8.57 |
| Consumer price index (1995=100) | (3) | | 100 | 108 | 108 | 99 | 101 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 164'140 | 194'494 | 231'945 | 283'683 | 353'816 |
| Main telephone lines per 100 inhabitants | | | 0.28 | 0.32 | 0.37 | 0.43 | 0.53 |
| Percent of main lines connected to digital exchanges | | % | 40.16 | 52.18 | 62.17 | 74.30 | 81.00 |
| Waiting list for main lines | | | 230'225 | 224'788 | 196'883 | 155'208 | 145'938 |
| Public payphones | | | 1'577 | 1'589 | 2'022 | 2'554 | 3'431 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | 6'740 | 17'757 | 27'500 | 50'369 |
| Cellular subscribers per 100 inhabitants | | | — | 0.01 | 0.03 | 0.04 | 0.07 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 12 | 12 | 13 | 13 | 13 |
| International incoming telephone traffic (minutes) | | 10x6 | 42 | 46 | 51 | 43 | 34 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 6'086 | 6'573 | 7'083 | 7'370 | 7'580 |
| Subscribers per employee | | | 27 | 31 | 35 | 42 | 53 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 88 | 79 | 88 | 108 | 104 |
| Telecommunication revenues as a % of GDP | | % | 1.39 | 1.29 | 1.38 | 1.72 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 19 | 30 | 37 | 46 | 29 |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 1.20 | 1.45 | 1.87 | 2.00 | 2.41 |
| Per cent of households with a radio | (5) | | 14.26 | 14.49 | 20.34 | 20.94 | 20.93 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 6'000 | 8'000 | 10'000 | 25'000 | 50'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.01 | 0.02 | 0.04 | 0.07 |

*Notes:* Ethiopian Telecommunications Corporation (ETC).

(1) Source: UN.

(2) Source: IMF.

(3) Source: IMF.

(4) Source: Ethiopian Television, Unesco, ITU.

(5) Source: Ethipian Television.

*Source:* ITU.

# Gabon

| *Land area (km²):* | *267'667* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Libreville* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 1'167 | 1'197 | 1'226 | 1'262 | 1'300 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 4'484 | 4'612 | 5'071 | 4'557 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 106 | 104 | 105 | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 38'698 | 37'978 | 38'974 | 37'233 | 32'075 |
| Main telephone lines per 100 inhabitants | | | 3.32 | 3.17 | 3.18 | 2.95 | 2.47 |
| Percent of main lines connected to digital exchanges | | % | 97.60 | 97.20 | ... | 80.00 | 100.00 |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | | | ... | ... | ... | 130 | 124 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 9'694 | 8'891 | 120'000 | 258'087 | 279'289 |
| Cellular subscribers per 100 inhabitants | | | 0.83 | 0.74 | 9.79 | 20.45 | 21.48 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 19 | 19 | 22 | 25 | 27 |
| International incoming telephone traffic (minutes) | | 10x6 | 21 | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'113 | 1'062 | 1'062 | 1'152 | ... |
| Subscribers per employee | | | 43 | 44 | 150 | 256 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 109 | 113 | 108 | 156 | 129 |
| Telecommunication revenues as a % of GDP | | % | 2.43 | 2.45 | 2.13 | 3.41 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 8 | 21 | 45 | 4 | 11 |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 48.89 | 51.06 | 51.02 | 51.51 | 53.85 |
| Per cent of households with a radio | (5) | | 71.11 | 72.34 | 72.65 | 75.28 | 76.92 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'000 | 3'000 | 15'000 | 17'000 | 25'000 |
| Internet users per 100 inhabitants | | | 0.17 | 0.25 | 1.22 | 1.35 | 1.92 |

*Notes:* Office des postes et des télécommunications (OPT).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 2000: Measure DHS. ITU estimates.

(5) 2000: Measure DHS. ITU estimates.

*Source:* ITU.

# Gambia

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *10'689* | | | | | | |
| *Local currency:* | *Dalasi* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Banjul* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 1'190 | 1'223 | 1'257 | 1'292 | 1'328 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 417 | 432 | 434 | 391 | 358 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 77 | 77 | 75 | ... | ... |
| Average annual exchange rate per US$ | (2) | | 10.64 | 11.40 | 12.79 | 15.69 | 19.92 |
| Consumer price index (1995=100) | (3) | | 105 | 109 | 110 | 119 | 125 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 25'609 | 29'216 | 33'300 | 35'029 | 38'350 |
| Main telephone lines per 100 inhabitants | | | 2.15 | 2.39 | 2.65 | 2.71 | 2.89 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | (5) | | 24'000 | 16'883 | 13'800 | 10'884 | 10'611 |
| Public payphones | | | 571 | 676 | ... | 595 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (6) | | 5'048 | 5'307 | 5'600 | 55'085 | 100'000 |
| Cellular subscribers per 100 inhabitants | | | 0.42 | 0.43 | 0.45 | 4.26 | 7.53 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (7) | 10x6 | 6 | 6 | 7 | 7 | 14 |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 888 | 928 | 940 | 960 | 1'114 |
| Subscribers per employee | | | 35 | 37 | 41 | 94 | 124 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 26 | 24 | 27 | 27 | 30 |
| Telecommunication revenues as a % of GDP | | % | 6.32 | 5.45 | 6.21 | 6.82 | 8.33 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 12 | 15 | 6 | 7 | 4 |
| Telecommunication investment as a % of GFCF | | % | 16.17 | 19.37 | 8.44 | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (8) | | 11.80 | 12.15 | 12.47 | 12.76 | 12.37 |
| Per cent of households with a radio | | | 67.11 | 69.34 | 70.69 | 71.86 | 72.92 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'500 | 9'000 | 12'000 | 18'000 | 25'000 |
| Internet users per 100 inhabitants | | | 0.21 | 0.74 | 0.95 | 1.39 | 1.88 |

*Notes:* Gambia Telecommunications Co. Ltd. (GAMTEL).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 2000: Estimates.

(5) 2000: Estimate.

(6) 2000: Estimate.

(7) 2001-02: Telegeography.

(8) Source: 1998 derived from National Household Poverty Survey Report. Other years: ITU estimate.

*Source:* ITU.

# Ghana

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *238'305* | | | | | | |
| *Local currency:* | *Cedi* | | | *Year ending 31.12* | | | |
| *Capital:* | *Accra* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 19'162 | 19'678 | 20'212 | 20'930 | 21'674 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 7'474 | 7'710 | 4'689 | 4'380 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'671 | 1'660 | 1'196 | ... | ... |
| Average annual exchange rate per US$ | (2) | | 2'314.15 | 2'669.30 | 5'455.06 | 7'170.76 | 7'932.70 |
| Consumer price index (1995=100) | (3) | | 215 | 242 | 302 | 402 | 461 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 133'426 | 158'555 | 237'178 | 242'122 | 274'341 |
| Main telephone lines per 100 inhabitants | | | 0.70 | 0.81 | 1.17 | 1.16 | 1.27 |
| Percent of main lines connected to digital exchanges | | % | 95.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | ... | 106'723 | 128'103 | 154'782 | ... |
| Public payphones | | | 1'815 | 3'044 | 3'180 | 4'299 | 4'998 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 41'753 | 70'026 | 130'045 | 193'773 | 449'435 |
| Cellular subscribers per 100 inhabitants | | | 0.22 | 0.36 | 0.64 | 0.93 | 2.07 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (5) | 10x6 | 29 | 34 | 44 | 47 | 58 |
| International incoming telephone traffic (minutes) | | 10x6 | 101 | 123 | 166 | 139 | 153 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 3'469 | 3'606 | 3'777 | 3'959 | 4'833 |
| Subscribers per employee | | | 50 | 63 | 97 | 110 | 150 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 138 | 170 | 89 | 127 | 128 |
| Telecommunication revenues as a % of GDP | | % | 1.85 | 2.20 | 1.90 | 2.90 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 24 | 87 | ... | 38 | 59 |
| Telecommunication investment as a % of GFCF | | % | 1.43 | 5.23 | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (6) | | 20.60 | 22.72 | 21.69 | 21.35 | 21.40 |
| Per cent of households with a radio | | | 50.20 | 52.57 | 52.92 | 54.94 | 57.01 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (7) | | 6'000 | 20'000 | 30'000 | 40'000 | 170'000 |
| Internet users per 100 inhabitants | | | 0.03 | 0.10 | 0.15 | 0.19 | 0.78 |

*Notes:* Ghana Telecom. National Communications Authority (NCA).

(1) Source: UN.
(2) Source: IMF.
(3) Source: IMF.
(4) 2002: NCA.
(5) 2000: GT figures only.
(6) MIH.
(7) 2001: Ghana Telecom estimate.

*Source:* ITU.

# Guinea

| *Land area (km²):* | *245'855* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Conakry* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 7'328 | 7'411 | 7'495 | 7'580 | 7'665 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 3'589 | 3'431 | 3'012 | 2'885 | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 1'236.83 | 1'387.40 | 1'746.87 | 1'950.56 | 1'975.84 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 15'213 | 21'064 | 24'311 | 25'490 | 25'989 |
| Main telephone lines per 100 inhabitants | | | 0.21 | 0.28 | 0.32 | 0.34 | 0.34 |
| Percent of main lines connected to digital exchanges | | % | 98.80 | 99.00 | 99.00 | 99.00 | 92.00 |
| Waiting list for main lines | | | 1'320 | 1'718 | 1'230 | 1'420 | ... |
| Public payphones | | | 538 | 812 | 850 | 927 | 1'241 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 21'567 | 25'182 | 42'112 | 55'670 | 90'772 |
| Cellular subscribers per 100 inhabitants | | | 0.29 | 0.34 | 0.56 | 0.73 | 1.18 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (3) | 10x6 | 16 | 12 | 18 | 19 | 8 |
| International incoming telephone traffic (minutes) | | 10x6 | 13 | 14 | 18 | 12 | 49 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 816 | 831 | 810 | 806 | 780 |
| Subscribers per employee | | | 45 | 56 | 82 | 101 | 150 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 21 | 32 | 28 | 29 | ... |
| Telecommunication revenues as a % of GDP | | % | 0.60 | 0.94 | 0.92 | 0.99 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 26 | 9 | 5 | 1 | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 9.01 | 9.08 | 9.11 | 9.13 | 9.47 |
| Per cent of households with a radio | | | 54.04 | 56.02 | 56.01 | 56.00 | 55.97 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 500 | 5'000 | 8'000 | 15'000 | 35'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.07 | 0.11 | 0.20 | 0.46 |

*Notes:* Société des Télécommunications de Guinée (SOTELGUI).

(1) Source: UN. SOTELGUI. ITU estimate.

(2) Source: IMF.

(3) 1998: Growth due to non official telephone booth and start of cellular services.

(4) 1999: Census. ITU estimates.

*Source:* ITU.

# Guinea-Bissau

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *36'125* | | | | | | |
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Bissau* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 1'148 | 1'175 | 1'202 | 1'227 | 1'253 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 206 | 224 | 215 | 199 | 217 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 239 | 238 | 258 | 267 | 265 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 8'079 | 6'098 | 11'123 | 9'901 | 11'197 |
| Main telephone lines per 100 inhabitants | | | 0.70 | 0.52 | 0.93 | 0.81 | 0.89 |
| Percent of main lines connected to digital exchanges | | % | 94.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 3'030 | 3'531 | 5'098 | ... | ... |
| Public payphones | | | 128 | 106 | 203 | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | — | — | — |
| Cellular subscribers per 100 inhabitants | | | — | — | — | — | — |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 2 | 2 | 3 | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 4 | 5 | 9 | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 237 | 228 | 243 | ... | ... |
| Subscribers per employee | | | 34 | 27 | 46 | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | ... | 17.83 | 20.43 | 22.86 | 25.74 |
| Per cent of households with a radio | (5) | | 26.07 | 26.26 | 26.74 | 27.14 | 27.53 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 300 | 1'500 | 3'000 | 4'000 | 5'000 |
| Internet users per 100 inhabitants | | | 0.03 | 0.13 | 0.25 | 0.33 | 0.40 |

*Notes:* Companhia de Telecomunicaçoes da Guiné-Bissau (Guiné-Telecom).

(1) Source: UN.

(2) UN operational rate of exchange, end of period.

(3) Source: IMF.

(4) ITU estimates.

(5) ITU estimates.

*Source:* ITU.

# Kenya

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *582'644* | | | | | | |
| *Local currency:* | *Shilling* | | | *Year ending 30.06* | | | |
| *Capital:* | *Nairobi* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 27'860 | 28'687 | 30'669 | 31'293 | 31'500 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 11'465 | 10'649 | 10'356 | 11'396 | 12'309 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'886 | 1'610 | 1'530 | 1'567 | 1'614 |
| Average annual exchange rate per US$ | (2) | | 60.37 | 70.33 | 76.18 | 78.56 | 78.75 |
| Consumer price index (1995=100) | (3) | | 129 | 137 | 150 | 159 | 162 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 288'251 | 290'000 | 291'706 | 309'379 | 321'482 |
| Main telephone lines per 100 inhabitants | | | 1.03 | 1.01 | 0.95 | 0.99 | 1.02 |
| Percent of main lines connected to digital exchanges | | % | 60.30 | 64.70 | 66.91 | 67.90 | 76.00 |
| Waiting list for main lines | | | 114'124 | 120'574 | 134'103 | 133'981 | 110'066 |
| Public payphones | | | 8'203 | 8'962 | 9'026 | 9'159 | 9'604 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (5) | | 10'756 | 23'757 | 127'404 | 600'000 | 1'187'122 |
| Cellular subscribers per 100 inhabitants | | | 0.04 | 0.08 | 0.42 | 1.92 | 3.77 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (6) | 10x6 | 29 | 28 | 24 | 24 | 24 |
| International incoming telephone traffic (minutes) | (7) | 10x6 | 75 | 64 | 57 | 62 | 36 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (8) | | 18'831 | 19'829 | 20'025 | 19'337 | 18'756 |
| Subscribers per employee | | | 16 | 16 | 21 | 47 | 80 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 320 | 318 | 307 | 483 | 622 |
| Telecommunication revenues as a % of GDP | | % | 2.79 | 2.99 | 2.96 | 4.24 | 5.05 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 76 | 64 | 52 | 51 | 45 |
| Telecommunication investment as a % of GFCF | | % | 4.03 | 3.96 | 3.40 | 3.23 | 2.76 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (9) | | 13.00 | 14.02 | 15.04 | 16.06 | 17.08 |
| Per cent of households with a radio | (10) | | 63.10 | 89.01 | 90.77 | 89.15 | 87.18 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 15'000 | 35'000 | 100'000 | 200'000 | 400'000 |
| Internet users per 100 inhabitants | | | 0.05 | 0.12 | 0.33 | 0.64 | 1.27 |

*Notes:* Communications Commission of Kenya (CCK).

(1) Source: UN; ITU estimate. 1999: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) 1999: Estimate.

(5) 2000, 2002: Dec.

(6) 2002: Dec.

(7) 2002: Dec.

(8) 2000: Estimates for the fixed telecom operator and two cellular operators.

(9) Figures exclude the receivers that might have found their way into the country from outside Kenya and are not recorded as licensed. 2000: MIH.

(10) Figures exclude the receivers that might have found their way into the country from outside Kenya and are not recorded as licensed.

*Source:* ITU.

# Lesotho

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *30'344* | | | | | | |
| *Local currency:* | *Loti* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Maseru* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 2'062 | 2'108 | 2'153 | 2'160 | 2'167 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 890 | 911 | 899 | 814 | 716 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 436 | 434 | 383 | 324 | 217 |
| Average annual exchange rate per US$ | (2) | | 5.53 | 6.11 | 6.94 | 8.61 | 10.54 |
| Consumer price index (1995=100) | (3) | | ... | 135 | 143 | 133 | 177 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 21'000 | 21'600 | 22'200 | 21'382 | 28'603 |
| Main telephone lines per 100 inhabitants | | | 1.02 | 1.02 | 1.03 | 0.99 | 1.32 |
| Percent of main lines connected to digital exchanges | | % | 99.00 | 99.00 | 99.00 | 100.00 | 100.00 |
| Waiting list for main lines | (5) | | 20'000 | 18'000 | 19'000 | 19'326 | 21'051 |
| Public payphones | (6) | | 280 | 350 | 367 | 384 | 1'818 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 9'831 | 12'000 | 21'600 | 57'000 | 96'843 |
| Cellular subscribers per 100 inhabitants | | | 0.48 | 0.57 | 1.00 | 2.64 | 4.47 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 34 | 36 | ... | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 425 | 357 | 349 | 349 | 359 |
| Subscribers per employee | | | 73 | 94 | 126 | 225 | 349 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 12 | 11 | 12 | 16 | 14 |
| Telecommunication revenues as a % of GDP | | % | 1.32 | 1.24 | 1.28 | 2.03 | 1.95 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 1 | 1 | 1 | 22 | 7 |
| Telecommunication investment as a % of GFCF | | % | 0.19 | 0.31 | 0.29 | 6.68 | 3.25 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | ... | ... | ... | 16.20 | 17.09 |
| Per cent of households with a radio | | | ... | ... | ... | 27.78 | 28.87 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 200 | 1'000 | 4'000 | 5'000 | 21'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.05 | 0.19 | 0.23 | 0.97 |

*Notes:* Telecomm Lesotho (TCL), Lesotho Telecommunications Authority (LTA).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 1999-2000: estimates. From 2001: December.

(5) From 2001: Dec. LTA.

(6) From 2001: Dec.

*Source:* ITU.

# Liberia

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *111'370* | | | | | | |
| *Local currency:* | *Dollar* | | | *Year ending 31.12* | | | |
| *Capital:* | *Monrovia* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 2'666 | 2'930 | 3'154 | 3'108 | 3'238 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | ... | 442 | 541 | 535 | 562 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | | | 41.51 | 41.90 | 40.95 | 48.58 | 61.75 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (2) | | 6'500 | 6'600 | 6'700 | 6'800 | 6'900 |
| Main telephone lines per 100 inhabitants | | | 0.24 | 0.23 | 0.21 | 0.22 | 0.21 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | ... | ... | ... |
| Waiting list for main lines | | | ... | 2'400 | ... | ... | ... |
| Public payphones | | | ... | ... | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | 1'500 | 2'000 | ... |
| Cellular subscribers per 100 inhabitants | | | — | — | 0.05 | 0.06 | ... |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 5 | 5 | 5 | 6 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | ... | ... | ... | ... | ... |
| Subscribers per employee | | | ... | ... | ... | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | ... | ... | ... | ... | ... |
| Per cent of households with a radio | | | ... | ... | ... | ... | ... |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 100 | 300 | 500 | 1'000 | ... |
| Internet users per 100 inhabitants | | | — | 0.01 | 0.02 | 0.03 | ... |

*Notes:* Liberia Telecommunications Corporation (LTC).
(1) Source: UN.
(2) 1998-2002: Estimate.

*Source:* ITU.

# Libya

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *1'759'540* | | | | | | |
| *Local currency:* | *Dinar* | | | | *Year ending 31.12* | | |
| *Capital:* | *Tripoli* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 5'511 | 5'471 | 5'605 | 5'580 | 5'555 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 32'672 | 30'737 | 35'338 | 28'190 | 19'355 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 3'582 | 3'339 | 4'562 | 3'538 | 2'650 |
| Average annual exchange rate per US$ | (2) | | 0.39 | 0.46 | 0.50 | 0.61 | 1.27 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (3) | | 500'000 | 550'000 | 605'000 | 660'000 | ... |
| Main telephone lines per 100 inhabitants | | | 9.07 | 10.05 | 10.79 | 11.83 | ... |
| Percent of main lines connected to digital exchanges | | % | 70.00 | 70.00 | ... | ... | ... |
| Waiting list for main lines | | | ... | 80'000 | ... | ... | ... |
| Public payphones | | | 450 | 450 | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 20'000 | 30'000 | 40'000 | 50'000 | 70'000 |
| Cellular subscribers per 100 inhabitants | | | 0.36 | 0.55 | 0.71 | 0.90 | 1.26 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 43 | 43 | 43 | 45 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 14'000 | 14'000 | 14'000 | ... | ... |
| Subscribers per employee | | | 37 | 41 | 46 | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | ... | ... | 95.06 | ... | ... |
| Per cent of households with a radio | | | ... | 90.79 | ... | ... | ... |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | ... | 7'000 | 10'000 | 20'000 | 125'000 |
| Internet users per 100 inhabitants | | | ... | 0.13 | 0.18 | 0.36 | 2.25 |

*Notes:* General Post and Telecommunication Company (GDPT).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) 1998-2000: Estimate.

(4) 2002: OBS.

*Source:* ITU.

# Madagascar

| *Land area (km²):* | *594'180* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Antananarivo* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 14'222 | 14'650 | 15'085 | 15'492 | 15'911 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 3'740 | 3'721 | 3'878 | 4'530 | 4'400 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 492 | 537 | 628 | 811 | 708 |
| Average annual exchange rate per US$ | (2) | | 5'441.40 | 6'283.77 | 6'767.48 | 6'588.49 | 6'831.96 |
| Consumer price index (1995=100) | (3) | | 133 | 146 | 164 | 175 | 203 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 47'193 | 50'226 | 54'995 | 58'399 | 59'491 |
| Main telephone lines per 100 inhabitants | | | 0.33 | 0.34 | 0.36 | 0.38 | 0.37 |
| Percent of main lines connected to digital exchanges | | % | 98.00 | 98.70 | 98.90 | 80.21 | 90.62 |
| Waiting list for main lines | (4) | | 16'930 | 7'337 | 255 | 1'724 | 1'842 |
| Public payphones | (5) | | 340 | 452 | 459 | 767 | 962 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 12'784 | 35'752 | 63'094 | 147'500 | 163'010 |
| Cellular subscribers per 100 inhabitants | | | 0.09 | 0.24 | 0.42 | 0.95 | 1.02 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 9 | 10 | 9 | 10 | 7 |
| International incoming telephone traffic (minutes) | | 10x6 | 16 | 20 | 23 | 22 | 19 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 2'888 | 2'879 | 2'663 | 2'491 | 2'387 |
| Subscribers per employee | | | 21 | 30 | 44 | 83 | 93 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 53 | 54 | 80 | 107 | 96 |
| Telecommunication revenues as a % of GDP | | % | 1.41 | 1.46 | 2.06 | 2.35 | 2.18 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 60 | 29 | 11 | ... | ... |
| Telecommunication investment as a % of GFCF | | % | 12.19 | 5.36 | 1.78 | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 6.32 | 7.00 | 7.14 | 7.42 | 7.86 |
| Per cent of households with a radio | | | 38.60 | 39.52 | 39.10 | 39.37 | 40.85 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 9'000 | 25'000 | 30'000 | 35'000 | 55'000 |
| Internet users per 100 inhabitants | | | 0.06 | 0.17 | 0.20 | 0.23 | 0.35 |

*Notes:* Direction des Télécommunications

(1) Source: Institut National de la Statistique. ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) Waiting list in largest city.

(5) Public call offices.

*Source:* ITU.

# Malawi

| *Land area (km²):* | *94'081* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Kwacha* | | | *Year ending 31.12* | | | |
| *Capital:* | *Lilongwe* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 9'934 | 10'133 | 10'335 | 10'386 | 10'437 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'845 | 1'783 | 1'737 | 1'705 | 2'008 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 194 | 224 | 215 | 218 | 184 |
| Average annual exchange rate per US$ | (2) | | 31.07 | 44.09 | 59.54 | 72.20 | 76.69 |
| Consumer price index (1995=100) | (3) | | 195 | 282 | 366 | 465 | 534 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 37'371 | 41'562 | 46'444 | 54'607 | 73'100 |
| Main telephone lines per 100 inhabitants | | | 0.38 | 0.41 | 0.45 | 0.53 | 0.70 |
| Percent of main lines connected to digital exchanges | | % | 64.00 | 65.00 | 92.00 | 92.00 | 96.00 |
| Waiting list for main lines | | | 31'554 | 31'554 | 22'554 | 20'075 | 17'430 |
| Public payphones | | | 509 | 541 | 541 | 571 | 564 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 10'500 | 22'500 | 49'000 | 55'730 | 86'047 |
| Cellular subscribers per 100 inhabitants | | | 0.11 | 0.22 | 0.47 | 0.54 | 0.82 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 11 | 10 | 15 | 24 | 34 |
| International incoming telephone traffic (minutes) | | 10x6 | 10 | 10 | 9 | 19 | 25 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (4) | | 4'800 | 5'000 | 2'914 | 3'180 | 3'218 |
| Subscribers per employee | | | 10 | 13 | 33 | 35 | 49 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 33 | ... | 30 | 34 | 32 |
| Telecommunication revenues as a % of GDP | | % | 1.78 | ... | 1.75 | 1.98 | 1.61 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 1.01 | 1.03 | 1.06 | 2.28 | 2.31 |
| Per cent of households with a radio | | | 49.91 | 49.91 | 54.82 | 54.81 | 55.65 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'000 | 10'000 | 15'000 | 20'000 | 27'000 |
| Internet users per 100 inhabitants | | | 0.02 | 0.10 | 0.15 | 0.19 | 0.26 |

*Notes:* Malawi Telecommunications Limited (MTL), Malawi Communications Regulatory Authority (MACRA).

(1) Source: UN; ITU estimate. 1998: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) Until 1999: Including post. Break in comparability.

(5) 2000: MIH.

*Source:* ITU.

# Mali

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *1'240'142* | | | | | | |
| *Local currency:* | *CFA franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Bamako* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 9'790 | 10'006 | 10'226 | 10'400 | 10'629 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 2'921 | 2'928 | 2'645 | 3'006 | 3'385 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 517 | 508 | 510 | 591 | 629 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 111 | 109 | 109 | 114 | 120 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 27'063 | 33'778 | 39'223 | 51'071 | 56'603 |
| Main telephone lines per 100 inhabitants | | | 0.28 | 0.34 | 0.38 | 0.49 | 0.53 |
| Percent of main lines connected to digital exchanges | | % | 93.00 | 98.00 | 98.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | | | 983 | 1'739 | 2'365 | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 4'473 | 6'387 | 10'398 | 45'340 | 52'639 |
| Cellular subscribers per 100 inhabitants | | | 0.05 | 0.06 | 0.10 | 0.44 | 0.50 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 12 | 13 | 14 | 15 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | 57 | 61 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'325 | 1'353 | 1'357 | 1'364 | 1'533 |
| Subscribers per employee | | | 24 | 30 | 37 | 71 | 71 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 59 | 67 | 60 | 59 | 92 |
| Telecommunication revenues as a % of GDP | | % | 2.01 | 2.30 | 2.25 | 1.97 | 2.71 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 23 | 16 | 17 | 18 | ... |
| Telecommunication investment as a % of GFCF | | % | 4.45 | 3.19 | 3.29 | 3.00 | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 11.74 | 12.70 | 13.02 | 14.25 | 14.80 |
| Per cent of households with a radio | (5) | | 61.77 | 63.49 | 65.08 | 69.81 | 71.15 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'000 | 6'277 | 15'000 | 20'000 | 25'000 |
| Internet users per 100 inhabitants | | | 0.02 | 0.06 | 0.15 | 0.19 | 0.24 |

*Notes:* Société des Télécommunications du Mali (SOTELMA).

(1) Source: UN; Other years: ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) ITU estimates.

(5) 2001: Measure DHS. ITU estimates.

*Source:* ITU.

# Mauritania

| *Land area (km²):* | *1'030'700* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Ouguiya* | | | *Year ending 31.12* | | | |
| *Capital:* | *Nouakchott* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 2'419 | 2'483 | 2'548 | 2'614 | 2'682 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 983 | 947 | 916 | 940 | 978 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 135 | ... | 117 | 212 | 218 |
| Average annual exchange rate per US$ | (2) | | 188.48 | 209.51 | 238.92 | 255.63 | 272.00 |
| Consumer price index (1995=100) | (3) | | 118 | 123 | 127 | 133 | 138 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 15'030 | 16'525 | 18'969 | 24'856 | 31'529 |
| Main telephone lines per 100 inhabitants | | | 0.62 | 0.67 | 0.74 | 0.95 | 1.18 |
| Percent of main lines connected to digital exchanges | | % | 99.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 10'346 | 47'780 | ... | ... | ... |
| Public payphones | | | 758 | 893 | 883 | 2'671 | 3'664 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | 15'300 | 110'463 | 247'238 |
| Cellular subscribers per 100 inhabitants | | | — | — | 0.60 | 4.23 | 9.22 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 6 | 8 | 9 | 10 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 9 | 10 | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 454 | 480 | 720 | ... | ... |
| Subscribers per employee | | | 33 | 34 | 48 | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 28 | 29 | 25 | 40 | 66 |
| Telecommunication revenues as a % of GDP | | % | 2.88 | 3.02 | 2.75 | 4.28 | 6.73 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 6 | 4 | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | 4.12 | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 18.98 | 19.14 | 19.38 | 19.97 | 20.53 |
| Per cent of households with a radio | (5) | | 50.23 | 50.03 | 50.59 | 50.46 | 50.30 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 1'000 | 3'000 | 5'000 | 7'000 | 10'000 |
| Internet users per 100 inhabitants | | | 0.04 | 0.12 | 0.20 | 0.27 | 0.37 |

*Notes:* Office des Postes et des Télécommunications (OPT).

(1) Source: 2000: census results.Other years: ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) Source: RFI.

(5) 2000: Measure DHS. ITU estimates.

*Source:* ITU.

# Mauritius

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *1'865* | | | | | | |
| *Local currency:* | *Rupee* | | | *Year ending 31.12* | | | |
| *Capital:* | *Port Louis* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 1'160 | 1'174 | 1'194 | 1'200 | 1'210 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 4'164 | 4'265 | 4'553 | 4'526 | 4'790 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 962 | 1'178 | 1'069 | 1'009 | 1'021 |
| Average annual exchange rate per US$ | (2) | | 23.99 | 25.19 | 26.25 | 29.13 | 29.96 |
| Consumer price index (1995=100) | (3) | | 122 | 130 | 135 | 143 | 152 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 245'367 | 257'099 | 280'885 | 306'773 | 327'225 |
| Main telephone lines per 100 inhabitants | | | 21.16 | 21.89 | 23.53 | 25.56 | 27.03 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 24'970 | 29'052 | 18'914 | 9'916 | 13'518 |
| Public payphones | | | 2'401 | 2'803 | 2'925 | 2'981 | 2'920 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 60'448 | 102'119 | 180'000 | 272'416 | 348'137 |
| Cellular subscribers per 100 inhabitants | | | 5.21 | 8.70 | 15.08 | 22.70 | 28.76 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 28 | 31 | 35 | 36 | 37 |
| International incoming telephone traffic (minutes) | | 10x6 | 39 | 47 | 51 | 56 | 63 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'839 | 1'770 | 1'838 | 1'859 | 1'811 |
| Subscribers per employee | | | 166 | 203 | 251 | 312 | 373 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 120 | 122 | 145 | 144 | 163 |
| Telecommunication revenues as a % of GDP | | % | 2.89 | 2.85 | 3.18 | 3.19 | 3.41 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 43 | 50 | 54 | 66 | 59 |
| Telecommunication investment as a % of GFCF | | % | 4.48 | 4.21 | 5.10 | 6.58 | 5.76 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 70.18 | 75.34 | 87.28 | 93.00 | 93.00 |
| Per cent of households with a radio | | | 82.81 | 85.27 | 87.28 | 90.00 | 90.00 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (5) | | 30'000 | 55'000 | 87'000 | 106'000 | 125'000 |
| Internet users per 100 inhabitants | | | 2.59 | 4.68 | 7.29 | 8.83 | 10.33 |

*Notes:* Mauritius Telecom.

(1) Source: UN; Mauritius Statistics. 2000: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) Licences. Source: Mauritius Broadcasting Corporation.

(5) 2002: CSO. Age 12+.

*Source:* ITU.

# Mayotte

| *Land area (km²):* | *376* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *French Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Mamoudzou* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 137 | 142 | 148 | 154 | 160 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | | | 5.90 | 6.17 | 7.15 | ... | ... |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (2) | | 12'200 | 9'661 | 10'000 | 10'000 | 10'000 |
| Main telephone lines per 100 inhabitants | | | 8.92 | 6.79 | 6.75 | 6.49 | 6.24 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 1'177 | ... | ... | ... | ... |
| Public payphones | | | 253 | 253 | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | — | — | 21'700 |
| Cellular subscribers per 100 inhabitants | | | — | — | — | — | 13.54 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 70 | 26 | ... | ... | ... |
| Subscribers per employee | | | 174 | 372 | ... | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | 8 | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | — | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 53.00 | 55.00 | 57.00 | 59.00 | 61.30 |
| Per cent of households with a radio | | | ... | ... | ... | ... | ... |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | ... | ... | ... | ... | ... |
| Internet users per 100 inhabitants | | | ... | ... | ... | ... | ... |

*Notes:* France Télécom.
(1) Source: UN; ITU estimate.
(2) From 2001: estimate.

*Source:* ITU.

# Morocco

| *Land area (km²):* | *659'970* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Dirham* | | | *Year ending 31.12* | | | |
| *Capital:* | *Rabat* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population (1) | | 10x3 | 27'692 | 27'867 | 28'705 | 29'170 | 29'643 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 35'817 | 35'264 | 33'322 | 33'910 | 36'096 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 7'886 | 8'357 | 8'036 | 7'555 | 8'270 |
| Average annual exchange rate per US$ (2) | | | 9.60 | 9.80 | 10.63 | 11.30 | 11.02 |
| Consumer price index (1995=100) (3) | | | 107 | 108 | 110 | 110 | 113 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 1'393'355 | 1'471'000 | 1'425'000 | 1'191'335 | 1'127'447 |
| Main telephone lines per 100 inhabitants | | | 5.03 | 5.28 | 4.96 | 4.08 | 3.80 |
| Percent of main lines connected to digital exchanges | | % | 99.50 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 17'896 | 14'000 | 5'022 | ... | ... |
| Public payphones (4) | | | 31'617 | 38'845 | 46'843 | 61'000 | 77'813 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 116'645 | 369'174 | 2'342'000 | 4'771'739 | 6'198'670 |
| Cellular subscribers per 100 inhabitants | | | 0.42 | 1.32 | 8.16 | 16.36 | 20.91 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 181 | 220 | 245 | 270 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 467 | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 14'150 | 14'068 | 14'511 | 16'200 | 13'089 |
| Subscribers per employee | | | 107 | 131 | 260 | 368 | 560 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 773 | 868 | 1'169 | 1'345 | 1'549 |
| Telecommunication revenues as a % of GDP | | % | 2.16 | 2.46 | 3.51 | 3.97 | 4.29 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 132 | 237 | 593 | 735 | 644 |
| Telecommunication investment as a % of GFCF | | % | 1.67 | 2.84 | 7.38 | 9.72 | 7.79 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television (5) | | | 75.51 | 76.89 | 76.76 | 76.58 | 76.07 |
| Per cent of households with a radio (6) | | | 86.94 | 87.93 | 88.08 | 89.09 | 89.24 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 40'000 | 50'000 | 200'000 | 400'000 | 700'000 |
| Internet users per 100 inhabitants | | | 0.14 | 0.18 | 0.70 | 1.37 | 2.36 |

*Notes:* Office National des Postes et Télécommunications (ONPT).

(1) Source: UN; Direction de la Statistique; ITU estimate. 1994: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) Including public call offices and privately-operated telephone centres.

(5) From 1999: ONE.

(6) ITU estimate.

*Source:* ITU.

# Mozambique

| *Land area (km²):* | *784'754* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Metical* | | | *Year ending 31.12* | | | |
| *Capital:* | *Maputo* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population (1) | | 10x3 | 16'023 | 16'554 | 17'096 | 17'656 | 18'083 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 3'815 | 3'957 | 3'813 | 3'607 | 3'920 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 791 | 1'186 | 859 | 577 | 428 |
| Average annual exchange rate per US$ | (2) | | 12'110.20 | 13'028.60 | 15'447.10 | 20'703.60 | 23'678.00 |
| Consumer price index (1995=100) | (3) | | 162 | 166 | 188 | 205 | 239 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 75'354 | 78'072 | 85'714 | 89'488 | 83'739 |
| Main telephone lines per 100 inhabitants | | | 0.47 | 0.47 | 0.50 | 0.51 | 0.46 |
| Percent of main lines connected to digital exchanges | | % | 99.00 | 99.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 15'692 | 39'686 | 21'332 | 22'424 | 12'658 |
| Public payphones | | | 1'361 | 1'346 | 1'864 | 3'105 | 4'041 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 6'725 | 12'243 | 51'065 | 152'652 | 254'759 |
| Cellular subscribers per 100 inhabitants | | | 0.04 | 0.07 | 0.30 | 0.86 | 1.41 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (4) | 10x6 | 19 | 21 | 22 | 22 | 23 |
| International incoming telephone traffic (minutes) | | 10x6 | 34 | 39 | 26 | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 2'257 | 2'240 | 2'287 | 2'308 | 2'136 |
| Subscribers per employee | | | 36 | 40 | 60 | 105 | 158 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 73 | 94 | 109 | 118 | 128 |
| Telecommunication revenues as a % of GDP | | % | 1.91 | 2.38 | 2.87 | 3.28 | 3.27 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 19 | 34 | 54 | 47 | 59 |
| Telecommunication investment as a % of GFCF | | % | 2.45 | 2.89 | 6.32 | 8.22 | 13.81 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 3.20 | 3.35 | 4.00 | 5.10 | 6.21 |
| Per cent of households with a radio | | | 33.06 | 35.83 | 38.84 | 42.10 | 45.64 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 3'500 | 10'000 | 20'000 | 30'000 | 50'000 |
| Internet users per 100 inhabitants | | | 0.02 | 0.06 | 0.12 | 0.17 | 0.28 |

*Notes:* Telecomunicaçoes de Moçambique (TDM).

(1) Source: UN, INE, ITU estimates.

(2) Source: IMF.

(3) Source: IMF.

(4) Not including mobile generated traffic.

*Source:* ITU.

# Namibia

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *824'293* | | | | | | |
| *Local currency:* | *Namibian Dollar* | | | *Year ending 30.09* | | | |
| *Capital:* | *Windhoek* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 1'690 | 1'734 | 1'780 | 1'827 | 1'875 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 3'399 | 3'387 | 3'352 | 3'175 | 2'856 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 782 | 779 | 643 | 699 | 588 |
| Average annual exchange rate per US$ | (2) | | 5.53 | 6.11 | 6.94 | 8.61 | 10.54 |
| Consumer price index (1995=100) | (3) | | 125 | 136 | 148 | 162 | 180 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 105'877 | 108'193 | 110'176 | 117'398 | 121'413 |
| Main telephone lines per 100 inhabitants | | | 6.26 | 6.24 | 6.19 | 6.43 | 6.48 |
| Percent of main lines connected to digital exchanges | | % | 98.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 7'125 | 5'443 | 2'389 | 2'873 | 2'578 |
| Public payphones | | | 2'163 | 4'181 | 5'300 | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (4) | | 19'500 | 30'000 | 82'000 | 106'600 | 150'000 |
| Cellular subscribers per 100 inhabitants | | | 1.15 | 1.73 | 4.61 | 5.84 | 8.00 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 62 | 62 | 62 | 60 | 61 |
| International incoming telephone traffic (minutes) | | 10x6 | 45 | 41 | 51 | 46 | 52 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'818 | 1'728 | 1'667 | 1'654 | 1'503 |
| Subscribers per employee | | | 69 | 80 | 115 | 135 | 181 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 95 | 113 | 122 | 119 | 120 |
| Telecommunication revenues as a % of GDP | | % | 2.79 | 3.33 | 3.63 | 3.76 | 4.21 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 49 | 21 | 36 | 23 | 9 |
| Telecommunication investment as a % of GFCF | | % | 6.28 | 2.69 | 5.60 | 3.36 | 1.53 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 34.94 | 35.80 | 36.90 | 37.94 | 39.22 |
| Per cent of households with a radio | (6) | | 77.56 | 81.17 | 85.12 | 89.10 | 89.08 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 5'000 | 6'000 | 30'000 | 45'000 | 50'000 |
| Internet users per 100 inhabitants | | | 0.30 | 0.35 | 1.69 | 2.46 | 2.67 |

*Notes:* Namibian Communications Commission (NCC).

(1) Source: UN; ITU estimate. 2001: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) 2002: Dec.

(5) Source: Namibian Broadcasting Corporation (2001), MIH (1998), CSO (1994), other years: ITU estimates.

(6) Source: CSO, NBC, ITU estimates.

*Source:* ITU.

# Niger

| *Land area (km²):* | *1'186'408* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Niamey* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 10'078 | 10'400 | 10'730 | 11'227 | 11'747 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 2'076 | 2'019 | 1'826 | 1'744 | 1'944 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 307 | 201 | 206 | 199 | 254 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 113 | 111 | 114 | 118 | 122 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 18'114 | 18'891 | 19'991 | 21'659 | 22'390 |
| Main telephone lines per 100 inhabitants | | | 0.18 | 0.18 | 0.19 | 0.19 | 0.19 |
| Percent of main lines connected to digital exchanges | | % | 76.75 | 79.75 | 83.09 | 79.70 | ... |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | (4) | | ... | 66 | 56 | 56 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 1'349 | 2'192 | 2'056 | 2'126 | 16'648 |
| Cellular subscribers per 100 inhabitants | | | 0.01 | 0.02 | 0.02 | 0.02 | 0.14 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (5) | 10x6 | 6 | 6 | 6 | 6 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'406 | 1'389 | 1'371 | 1'338 | ... |
| Subscribers per employee | | | 14 | 15 | 16 | 18 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 23 | 15 | 16 | 18 | ... |
| Telecommunication revenues as a % of GDP | | % | 1.08 | 0.73 | 0.89 | 1.05 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (6) | | 2.77 | 2.77 | 4.75 | 5.15 | 5.45 |
| Per cent of households with a radio | (7) | | 33.31 | 33.31 | 33.63 | 32.60 | 32.69 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 300 | 3'000 | 4'000 | 12'000 | 15'000 |
| Internet users per 100 inhabitants | | | — | 0.03 | 0.04 | 0.11 | 0.13 |

*Notes:* Societe Nigerienne des Télécommunications (SONITEL).

(1) Source: UN; ITU estimate. 1988: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) Not including Public Call Offices.

(5) 2001: September.

(6) Source: RFI. ITU estimate.

(7) 1998: Measure DHS. ITU estimates.

*Source:* ITU.

# Nigeria

| *Land area (km²):* | *923'850* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Naira* | | | *Year ending 31.12* | | | |
| *Capital:* | *Lagos* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 106'409 | 108'945 | 113'862 | 116'929 | 120'079 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 131'651 | 35'976 | 48'208 | 51'269 | 49'160 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 21.89 | 92.34 | 101.70 | 111.23 | 120.58 |
| Consumer price index (1995=100) | (3) | | 154 | 162 | 185 | 209 | 236 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 438'619 | 473'316 | 553'374 | 600'321 | 702'000 |
| Main telephone lines per 100 inhabitants | | | 0.41 | 0.43 | 0.49 | 0.51 | 0.58 |
| Percent of main lines connected to digital exchanges | | % | 52.20 | 63.61 | 70.62 | 73.85 | 76.35 |
| Waiting list for main lines | | | 42'000 | ... | ... | ... | ... |
| Public payphones | | | 1'600 | 3'000 | 4'246 | 4'866 | 4'873 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | (5) | | 20'000 | 25'000 | 30'000 | 400'000 | 1'607'931 |
| Cellular subscribers per 100 inhabitants | | | 0.02 | 0.02 | 0.03 | 0.34 | 1.34 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 55 | 58 | 58 | 61 | 87 |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | 205 | 238 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 11'634 | 11'350 | 11'587 | 11'528 | 12'050 |
| Subscribers per employee | | | 39 | 44 | 50 | 87 | 192 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 1'611 | 394 | 355 | 710 | 1'217 |
| Telecommunication revenues as a % of GDP | | % | 1.22 | 1.09 | 0.74 | 1.38 | 2.48 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 641 | 202 | 132 | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (6) | | 25.32 | 25.60 | 25.60 | 25.60 | 25.60 |
| Per cent of households with a radio | | | 54.91 | 62.10 | 62.10 | 62.10 | 62.10 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 30'000 | 50'000 | 80'000 | 115'000 | 420'000 |
| Internet users per 100 inhabitants | | | 0.03 | 0.05 | 0.07 | 0.10 | 0.35 |

*Notes:* Nigerian Telecommunications Plc (NITEL), Nigerian Communications Commission (NCC).

(1) Source: UN.

(2) Source: IMF.

(3) Source: IMF.

(4) From 2001: NCC.

(5) 2001: Estimate.

(6) MIH.

*Source:* ITU.

# Réunion

| *Land area (km²):* | *2'510* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Euro* | | | *Year ending 31.12* | | | |
| *Capital:* | *Saint Denis* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 682 | 706 | 699 | 731 | 744 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'291 | ... | ... | ... | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | | | 5.90 | 6.17 | 7.15 | ... | ... |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (2) | | 242'664 | 268'496 | 280'000 | 300'000 | ... |
| Main telephone lines per 100 inhabitants | | | 35.58 | 38.01 | 40.06 | 41.04 | ... |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | | | 1'065 | 1'124 | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 50'300 | 111'000 | 276'100 | 421'100 | 489'800 |
| Cellular subscribers per 100 inhabitants | | | 7.38 | 15.72 | 39.50 | 57.61 | 65.88 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 11 | 13 | ... | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 791 | 728 | ... | ... | ... |
| Subscribers per employee | | | 370 | 521 | ... | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | 138 | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | — | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 69.31 | 57.71 | 70.85 | 70.27 | 71.54 |
| Per cent of households with a radio | | | 94.29 | 78.12 | 94.84 | 94.59 | 95.75 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (3) | | 9'000 | 10'000 | 130'000 | 150'000 | ... |
| Internet users per 100 inhabitants | | | 1.32 | 1.42 | 18.60 | 20.52 | ... |

*Notes:* Ministère de la Poste, des Télécommunications et de l'Espace.

(1) Source: UN; INSEE; ITU estimate.

(2) 2000-2001: ITU estimate.

(3) France Télécom only.

*Source:* ITU.

# Rwanda

| *Land area (km²):* | *26'330* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Kigali* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population (1) | | 10x3 | 6'604 | 7'235 | 7'733 | 7'949 | 8'171 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 2'009 | 1'896 | 1'754 | 1'663 | 1'716 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 295 | 333 | 315 | 288 | 304 |
| Average annual exchange rate per US$ (2) | | | 312.31 | 333.94 | 389.70 | 442.99 | 475.37 |
| Consumer price index (1995=100) (3) | | | 128 | 125 | 130 | 134 | 137 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 10'825 | 12'651 | 17'568 | 21'500 | 23'189 |
| Main telephone lines per 100 inhabitants | | | 0.16 | 0.17 | 0.23 | 0.27 | 0.28 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 3'540 | 8'000 | ... | ... | ... |
| Public payphones | | | 360 | 400 | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers (4) | | | 5'000 | 11'000 | 39'000 | 65'000 | 110'762 |
| Cellular subscribers per 100 inhabitants | | | 0.08 | 0.15 | 0.50 | 0.82 | 1.36 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 5 | 5 | 5 | 5 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 250 | 300 | 300 | 350 | ... |
| Subscribers per employee | | | 63 | 79 | 189 | 247 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 19 | 18 | 18 | 20 | ... |
| Telecommunication revenues as a % of GDP | | % | 0.93 | 0.95 | 1.00 | 1.21 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | 17 | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | 5.04 | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television (5) | | | 2.15 | 2.45 | 2.40 | 2.49 | 2.48 |
| Per cent of households with a radio (6) | | | 33.33 | 34.36 | 35.34 | 37.43 | 40.69 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 800 | 5'000 | 5'000 | 20'000 | 25'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.07 | 0.06 | 0.25 | 0.31 |

*Notes:* Ministère des transports et des communications.

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 2002: September.

(5) 2000: Census. Other years: ITU estimate.

(6) 2000: Measure DHS. ITU estimates.

*Source:* ITU.

## S. Tomé & Principe

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *964* | | | | | | |
| *Local currency:* | *Dobra* | | | *Year ending 31.12* | | | |
| *Capital:* | *Sao Tome* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 141 | 144 | 149 | 150 | 151 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 41 | 47 | 46 | 48 | 50 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 15 | 19 | 20 | ... | ... |
| Average annual exchange rate per US$ | (2) | | 6'883.24 | 7'118.96 | 7'978.17 | 8'842.11 | 9'088.32 |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 4'295 | 4'526 | 4'614 | 5'441 | 6'240 |
| Main telephone lines per 100 inhabitants | | | 3.05 | 3.15 | 3.10 | 3.63 | 4.13 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 1'354 | 924 | 741 | 1'022 | 648 |
| Public payphones | | | 68 | 68 | 68 | 69 | 81 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | — | — | 1'980 |
| Cellular subscribers per 100 inhabitants | | | — | — | — | — | 1.31 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 1 | 1 | 1 | 1 | 1 |
| International incoming telephone traffic (minutes) | | 10x6 | 1 | 2 | 3 | 4 | 4 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 128 | 122 | 108 | 97 | 95 |
| Subscribers per employee | | | 34 | 37 | 43 | 56 | 87 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 5 | 5 | 6 | 5 | 7 |
| Telecommunication revenues as a % of GDP | | % | 11.19 | 11.11 | 12.01 | 10.60 | 13.80 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 1 | 1 | 1 | 1 | 4 |
| Telecommunication investment as a % of GFCF | | % | 6.31 | 6.89 | 4.59 | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | ... | ... | 23.78 | 32.14 | 35.71 |
| Per cent of households with a radio | | | ... | ... | 40.00 | 53.57 | 53.75 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 400 | 500 | 6'500 | 9'000 | 11'000 |
| Internet users per 100 inhabitants | | | 0.28 | 0.35 | 4.36 | 6.00 | 7.28 |

*Notes:* Companhia Santomense de Telecomuniçaôes s.a.r.l. (CST).
(1) Source: UN; ITU estimate.
(2) Source: IMF.

*Source:* ITU.

# Senegal

| *Land area (km²):* | *196'722* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Dakar* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 9'003 | 9'279 | 9'524 | 9'803 | 10'077 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 4'872 | 4'750 | 4'365 | 4'610 | 5'096 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 943 | 921 | 757 | 816 | 1'045 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 106 | 106 | 107 | 111 | 113 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 139'549 | 165'874 | 205'888 | 237'160 | 224'623 |
| Main telephone lines per 100 inhabitants | | | 1.55 | 1.79 | 2.16 | 2.42 | 2.23 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 24'149 | 23'975 | 24'619 | 9'836 | ... |
| Public payphones | | | 9'444 | 10'829 | 13'491 | 15'727 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 27'487 | 87'879 | 250'251 | 301'811 | 455'645 |
| Cellular subscribers per 100 inhabitants | | | 0.31 | 0.95 | 2.63 | 3.08 | 4.52 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 32 | 36 | 42 | 70 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 97 | 112 | 133 | 157 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'354 | 1'400 | 1'406 | 1'557 | 1'586 |
| Subscribers per employee | | | 123 | 181 | 324 | 346 | 429 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 154 | 168 | 177 | 202 | 234 |
| Telecommunication revenues as a % of GDP | | % | 3.16 | 3.54 | 4.06 | 4.38 | 4.59 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 68 | 89 | 79 | 66 | 109 |
| Telecommunication investment as a % of GFCF | | % | 7.25 | 9.69 | 10.40 | 8.13 | 10.40 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 22.12 | 24.30 | 25.57 | 26.65 | 28.52 |
| Per cent of households with a radio | | | 65.87 | 65.42 | 68.49 | 71.07 | 73.45 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 7'500 | 30'000 | 40'000 | 100'000 | 105'000 |
| Internet users per 100 inhabitants | | | 0.08 | 0.32 | 0.42 | 1.02 | 1.04 |

*Notes:* Société Nationale des Télécommunications du Sénégal (SONATEL).

(1) Source: UN; Other years: ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) Source: RFI.

*Source:* ITU.

# Seychelles

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *404* | | | | | | |
| *Local currency:* | *Rupee* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Victoria* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 79 | 80 | 81 | 82 | 81 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 608 | 624 | 595 | 617 | 699 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 209 | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 5.26 | 5.34 | 5.71 | 5.86 | 5.48 |
| Consumer price index (1995=100) | (3) | | 102 | 109 | 115 | 122 | 122 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 18'750 | 19'635 | 20'621 | 20'874 | 21'747 |
| Main telephone lines per 100 inhabitants | | | 23.78 | 24.42 | 25.42 | 25.49 | 26.91 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | ... | 1'800 | ... | ... | ... |
| Public payphones | | | 238 | 233 | 222 | 179 | 205 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 5'190 | 16'316 | 25'961 | 36'683 | 44'731 |
| Cellular subscribers per 100 inhabitants | | | 6.58 | 20.29 | 32.00 | 44.79 | 55.35 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (4) | 10x6 | 5 | 6 | 7 | 8 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 5 | 5 | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (5) | | 331 | 355 | 370 | 356 | ... |
| Subscribers per employee | | | 72 | 101 | 126 | 162 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 37 | 42 | 40 | ... | ... |
| Telecommunication revenues as a % of GDP | | % | 6.09 | 6.75 | 6.74 | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 6 | 7 | 4 | ... | ... |
| Telecommunication investment as a % of GFCF | | % | 3.02 | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (6) | | 82.07 | 83.68 | 85.71 | 87.62 | 89.02 |
| Per cent of households with a radio | | | 96.20 | 95.26 | 94.39 | 93.56 | 92.85 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (7) | | 2'000 | 5'000 | 6'000 | 9'000 | 11'736 |
| Internet users per 100 inhabitants | | | 2.54 | 6.22 | 7.40 | 10.99 | 14.52 |

*Notes:* Ministry of Information Technology and Communication, Cable and Wireless (Seychelles).

(1) Source: UN; 2002: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) 2001: Data at 31st December 2001.

(5) 1999: Estimate. 2001: Data at 31st December 2001.

(6) ITU estimates.

(7) 2000: ITU estimate. 2001: Data at 31st December 2001.

*Source:* ITU.

# Sierra Leone

| *Land area (km²):* | *72'326* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Leone* | | | *Year ending 31.12* | | | |
| *Capital:* | *Freetown* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 4'689 | 4'769 | 4'850 | 4'932 | 4'952 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 672 | 670 | 636 | 971 | 986 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 38 | 29 | 41 | 160 | 159 |
| Average annual exchange rate per US$ | (2) | | 1'563.62 | 1'804.19 | 2'092.12 | 1'986.20 | 2'099.03 |
| Consumer price index (1995=100) | (3) | | 192 | 257 | 255 | 260 | 252 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 17'407 | 18'230 | 18'980 | 22'745 | 24'000 |
| Main telephone lines per 100 inhabitants | | | 0.37 | 0.38 | 0.39 | 0.46 | 0.48 |
| Percent of main lines connected to digital exchanges | (4) | % | 88.86 | 89.00 | 89.00 | 89.00 | ... |
| Waiting list for main lines | | | 25'000 | ... | ... | ... | ... |
| Public payphones | | | 309 | ... | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | 11'940 | 26'895 | 67'000 |
| Cellular subscribers per 100 inhabitants | | | — | — | 0.25 | 0.55 | 1.35 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 4 | 4 | 5 | 8 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 972 | 963 | 985 | 1'191 | ... |
| Subscribers per employee | | | 18 | 19 | 31 | 42 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 4.07 | 4.10 | 4.22 | 6.69 | 6.69 |
| Per cent of households with a radio | (6) | | 45.73 | 45.98 | 45.89 | 50.02 | 53.32 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 600 | 2'000 | 5'000 | 7'000 | 8'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.04 | 0.10 | 0.14 | 0.16 |

*Notes:* Sierra Leone Telecommunications Company (SIERRATEL).

(1) ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 1999-2001: Estimate.

(5) 2000: CSO. Other years: ITU estimate.

(6) 2000: CSO. Other years: ITU estimate.

*Source:* ITU.

# Somalia

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *630'000* | | | | | | |
| *Local currency:* | *Shilling* | | | *Year ending 31.12* | | | |
| *Capital:* | *Mogadishu* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 9'722 | 9'755 | 9'789 | 9'823 | 9'857 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 7'930.00 | 9'810.00 | 10'280.00 | 22'557.00 | ... |
| Consumer price index (1995=100) | | | ... | ... | ... | ... | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (3) | | 20'000 | 35'000 | 35'000 | 35'000 | 100'000 |
| Main telephone lines per 100 inhabitants | | | 0.21 | 0.36 | 0.36 | 0.36 | 1.01 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | ... | ... | ... |
| Waiting list for main lines | | | ... | ... | ... | ... | ... |
| Public payphones | | | ... | ... | ... | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | — | — | ... | ... | 35'000 |
| Cellular subscribers per 100 inhabitants | | | — | — | ... | ... | 0.36 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| International incoming telephone traffic (minutes) | | 10x6 | ... | ... | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | ... | ... | ... | ... | ... |
| Subscribers per employee | | | ... | ... | ... | ... | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication revenues as a % of GDP | | % | ... | ... | ... | ... | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | ... | ... | ... | 7.76 | 8.45 |
| Per cent of households with a radio | | | ... | ... | ... | 15.53 | 16.90 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 100 | 200 | 500 | 1'000 | 89'000 |
| Internet users per 100 inhabitants | | | — | — | 0.01 | 0.01 | 0.90 |

*Notes:* Ministry of Posts and Telecommunications.

(1) Source: UN; ITU estimate.

(2) UN operational rate of exchange, end of period.

(3) Estimate.

*Source:* ITU.

# South Africa

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *1'184'827* | | | | | | |
| *Local currency:* | *Rand* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Pretoria* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 42'131 | 43'054 | 43'686 | 44'561 | 45'454 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 133'044 | 131'398 | 127'924 | 114'163 | 104'242 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 22'770 | 20'328 | 19'028 | 16'744 | 15'785 |
| Average annual exchange rate per US$ | (2) | | 5.53 | 6.11 | 6.94 | 8.61 | 10.54 |
| Consumer price index (1995=100) | (3) | | 125 | 131 | 138 | 146 | 159 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 5'075'417 | 5'492'838 | 4'961'743 | 4'924'458 | 4'844'000 |
| Main telephone lines per 100 inhabitants | | | 12.05 | 12.76 | 11.36 | 11.05 | 10.66 |
| Percent of main lines connected to digital exchanges | | % | 92.50 | 99.00 | 99.60 | 99.80 | 99.80 |
| Waiting list for main lines | (4) | | 100'000 | 100'000 | 50'000 | ... | ... |
| Public payphones | (5) | | 153'476 | 173'064 | 178'113 | 195'399 | 179'000 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 3'337'000 | 5'188'000 | 8'339'000 | 10'787'000 | 13'702'000 |
| Cellular subscribers per 100 inhabitants | | | 7.92 | 12.05 | 19.09 | 24.21 | 30.14 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 405 | 462 | 495 | 510 | 567 |
| International incoming telephone traffic (minutes) | (6) | 10x6 | 530 | 600 | 615 | 600 | 812 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 61'237 | 55'480 | 50'421 | 45'870 | 41'590 |
| Subscribers per employee | | | 137 | 193 | 264 | 343 | 446 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 6'136 | 6'432 | 6'830 | 6'197 | 5'339 |
| Telecommunication revenues as a % of GDP | | % | 4.61 | 4.90 | 5.34 | 5.43 | 5.12 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 3'039 | 1'948 | 1'744 | 1'394 | 712 |
| Telecommunication investment as a % of GFCF | | % | 13.35 | 9.58 | 9.16 | 8.32 | 4.51 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (7) | | 57.60 | 56.29 | 55.03 | 53.81 | 53.81 |
| Per cent of households with a radio | (8) | | 80.00 | 77.61 | 75.28 | 73.02 | 73.02 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 1'266'000 | 1'820'000 | 2'400'000 | 2'890'000 | 3'100'000 |
| Internet users per 100 inhabitants | | | 3.00 | 4.23 | 5.49 | 6.49 | 6.82 |

*Notes:* Telkom SA Limited (Telkom), Independent Communications Authority of South Africa (ICASA).

(1) Statistics South Africa. 2001: Latest census.

(2) Source: IMF.

(3) Source: IMF.

(4) ITU estimates.

(5) Coinphones, cardphones & table-mounted renter's payphone (Chatterboxes).

(6) ITU estimates.

(7) 1998: Measure DHS. 2001: Census. Other years: ITU estimates.

(8) 1998: Measure DHS. 2001: Census. Other years: ITU estimates.

*Source:* ITU.

# Sudan

| *Land area (km²):* | *2'505'815* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Dinars* | | | *Year ending 31.12* | | | |
| *Capital:* | *Khartoum* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 29'405 | 30'230 | 31'081 | 31'957 | 32'858 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 10'269 | 10'600 | 11'200 | 12'600 | 13'987 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'290 | 1'246 | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 200.80 | 255.70 | 257.01 | 258.07 | 263.31 |
| Consumer price index (1995=100) | (3) | | 400 | 464 | ... | 525 | ... |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 162'225 | 251'420 | 386'775 | 453'000 | 671'842 |
| Main telephone lines per 100 inhabitants | | | 0.55 | 0.83 | 1.24 | 1.42 | 2.04 |
| Percent of main lines connected to digital exchanges | | % | 90.00 | 95.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 340'000 | 355'000 | 405'000 | 444'000 | ... |
| Public payphones | | | 2'850 | 3'400 | 5'250 | 7'350 | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 8'600 | 13'000 | 23'000 | 103'846 | 190'778 |
| Cellular subscribers per 100 inhabitants | | | 0.03 | 0.04 | 0.07 | 0.32 | 0.58 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 18 | 25 | 32 | 36 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 70 | 105 | 156 | 196 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 2'488 | 2'657 | 2'804 | 3'021 | ... |
| Subscribers per employee | | | 69 | 100 | 146 | 184 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 99 | 101 | 131 | 165 | 179 |
| Telecommunication revenues as a % of GDP | | % | 0.97 | 0.96 | 1.17 | 1.31 | 1.28 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 56 | 67 | 93 | 108 | ... |
| Telecommunication investment as a % of GFCF | | % | 4.32 | 5.40 | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 41.50 | 43.49 | 45.49 | 47.73 | 49.50 |
| Per cent of households with a radio | | | 71.60 | 73.60 | 75.60 | 77.99 | 79.60 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 2'000 | 5'000 | 30'000 | 56'000 | 84'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.02 | 0.10 | 0.18 | 0.26 |

*Notes:* Sudan Telecommunications Company Ltd. (Sudatel).

(1) Source: UN; ITU estimates.

(2) Source: IMF.

(3) Source: IMF.

*Source:* ITU.

# Swaziland

| *Land area (km²):* | *17'366* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Lilangeni* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Mbabane* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 952 | 980 | 1'008 | 1'020 | 1'032 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'274 | 1'326 | 1'343 | 1'274 | 1'166 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 301 | 258 | 276 | 230 | ... |
| Average annual exchange rate per US$ | (2) | | 5.53 | 6.11 | 6.94 | 8.61 | 10.54 |
| Consumer price index (1995=100) | (3) | | 123 | 131 | 147 | 155 | 174 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 28'999 | 31'314 | 31'858 | 33'739 | 35'060 |
| Main telephone lines per 100 inhabitants | | | 3.05 | 3.20 | 3.16 | 3.31 | 3.40 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 15'321 | 16'500 | 17'000 | 14'600 | 15'606 |
| Public payphones | | | 832 | 832 | 832 | ... | 1'028 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 4'700 | 14'000 | 33'000 | 55'000 | 68'000 |
| Cellular subscribers per 100 inhabitants | | | 0.49 | 1.43 | 3.27 | 5.39 | 6.59 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 28 | 29 | 27 | 26 | 23 |
| International incoming telephone traffic (minutes) | (4) | 10x6 | 23 | 24 | 23 | 22 | 18 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 457 | 450 | 475 | 465 | 493 |
| Subscribers per employee | | | 74 | 101 | 137 | 191 | 209 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 24 | 33 | 38 | 37 | 35 |
| Telecommunication revenues as a % of GDP | | % | 1.90 | 2.46 | 2.83 | 2.91 | 2.98 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 14 | 13 | 4 | 10 | ... |
| Telecommunication investment as a % of GFCF | | % | 4.73 | 5.00 | 1.36 | 4.13 | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 17.22 | 17.31 | 17.50 | 17.90 | 18.29 |
| Per cent of households with a radio | (6) | | 52.98 | 53.21 | 53.13 | 54.32 | 57.93 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 1'000 | 5'000 | 10'000 | 14'000 | 20'000 |
| Internet users per 100 inhabitants | | | 0.11 | 0.51 | 0.99 | 1.37 | 1.94 |

*Notes:* Swaziland Posts and Telecommunications Corporation (STPC).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) ITU estimates.

(5) ITU estimates.

(6) ITU estimates.

*Source:* ITU.

# Tanzania

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *939'762* | | | | | | |
| *Local currency:* | *Shillings* | | | *Year ending 31.12* | | | |
| *Capital:* | *Dodoma* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 30'837 | 31'731 | 32'650 | 33'596 | 34'444 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 8'383 | 8'636 | 9'027 | 9'453 | 9'699 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'343 | 1'328 | 1'583 | 1'587 | 1'852 |
| Average annual exchange rate per US$ | (2) | | 664.67 | 744.76 | 800.41 | 876.41 | 966.58 |
| Consumer price index (1995=100) | (3) | | 158 | 171 | 181 | 190 | 199 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 121'769 | 149'611 | 173'591 | 148'464 | 161'590 |
| Main telephone lines per 100 inhabitants | | | 0.39 | 0.47 | 0.53 | 0.44 | 0.47 |
| Percent of main lines connected to digital exchanges | | % | 82.27 | 91.00 | 95.00 | 96.00 | 96.00 |
| Waiting list for main lines | | | 37'347 | 29'574 | 14'375 | 7'291 | 7'968 |
| Public payphones | | | 706 | 716 | 780 | 1'592 | 2'000 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 37'940 | 50'950 | 180'200 | 426'964 | 760'000 |
| Cellular subscribers per 100 inhabitants | | | 0.12 | 0.16 | 0.55 | 1.27 | 2.21 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 11 | 11 | 13 | 9 | 12 |
| International incoming telephone traffic (minutes) | | 10x6 | 22 | 29 | 25 | 30 | 40 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 4'575 | 3'717 | 3'650 | 3'571 | 3'514 |
| Subscribers per employee | | | 35 | 54 | 97 | 161 | 262 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 126 | 153 | 174 | 218 | 221 |
| Telecommunication revenues as a % of GDP | | % | 1.50 | 1.77 | 1.92 | 2.31 | 2.28 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 255 | 188 | 22 | 9 | ... |
| Telecommunication investment as a % of GFCF | | % | 18.97 | 14.19 | 1.38 | 0.59 | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 7.58 | 7.34 | 9.15 | 11.41 | 14.24 |
| Per cent of households with a radio | (5) | | 46.51 | 48.24 | 50.03 | 51.90 | 51.90 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 3'000 | 25'000 | 40'000 | 60'000 | 80'000 |
| Internet users per 100 inhabitants | | | 0.01 | 0.08 | 0.12 | 0.18 | 0.23 |

*Notes:* Tanzania Telecommunications Company Ltd (TTCL).

(1) Source: 2002: Census. Other years: ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) MIH. ITU estimates.

(5) 2001: Household Budget Survey. 1998-2000, 2002: ITU estimates.

*Source:* ITU.

# Togo

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *56'785* | | | | | | |
| *Local currency:* | *CFA Franc* | | | *Year ending 31.12* | | | |
| *Capital:* | *Lome* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 4'397 | 4'512 | 4'630 | 4'750 | 4'873 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 1'416 | 1'427 | 1'206 | 1'233 | 1'465 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 217 | 196 | 193 | 209 | 261 |
| Average annual exchange rate per US$ | (2) | | 589.95 | 615.70 | 711.98 | 733.04 | 696.99 |
| Consumer price index (1995=100) | (3) | | 114 | 114 | 117 | 121 | 125 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 31'415 | 38'166 | 42'763 | 48'384 | 51'156 |
| Main telephone lines per 100 inhabitants | | | 0.71 | 0.85 | 0.92 | 1.02 | 1.05 |
| Percent of main lines connected to digital exchanges | | % | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 13'200 | 14'100 | 16'785 | 22'063 | 27'496 |
| Public payphones | (4) | | 132 | 6'011 | 7'625 | 10'654 | 12'257 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 7'500 | 17'000 | 50'000 | 95'000 | 170'000 |
| Cellular subscribers per 100 inhabitants | | | 0.17 | 0.38 | 1.08 | 2.00 | 3.49 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 8 | 8 | 10 | 14 | 18 |
| International incoming telephone traffic (minutes) | | 10x6 | 20 | 22 | 32 | 41 | 58 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 856 | 873 | 875 | 888 | 890 |
| Subscribers per employee | | | 45 | 63 | 106 | 161 | 248 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 39 | 39 | 39 | 39 | 42 |
| Telecommunication revenues as a % of GDP | | % | 2.77 | 2.74 | 3.22 | 3.14 | 2.87 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 18 | 12 | 18 | 23 | 30 |
| Telecommunication investment as a % of GFCF | | % | 8.13 | 6.16 | 9.12 | 10.82 | 11.50 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (5) | | 9.82 | 11.97 | 17.49 | 31.57 | 51.23 |
| Per cent of households with a radio | | | 61.41 | 75.01 | 79.95 | 83.30 | 86.21 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 15'000 | 30'000 | 100'000 | 150'000 | 200'000 |
| Internet users per 100 inhabitants | | | 0.34 | 0.66 | 2.16 | 3.16 | 4.10 |

*Notes:* Societe des Télécommunications du Togo (TOGO TELECOM).

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) From 1999: includes private phone booths.

(5) ITU estimate.

*Source:* ITU.

# Tunisia

| *Land area (km²):* | *164'148* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Dinar* | | | *Year ending 31.12* | | | |
| *Capital:* | *Tunis* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population (1) | | 10x3 | 9'333 | 9'456 | 9'564 | 9'673 | 9'781 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 19'803 | 20'732 | 19'478 | 19'977 | 21'049 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 4'924 | 5'276 | 5'124 | 5'232 | 5'310 |
| Average annual exchange rate per US$ (2) | | | 1.14 | 1.19 | 1.37 | 1.44 | 1.42 |
| Consumer price index (1995=100) (3) | | | 111 | 114 | 117 | 119 | 123 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 752'180 | 850'381 | 955'116 | 1'056'209 | 1'148'586 |
| Main telephone lines per 100 inhabitants | | | 8.06 | 8.99 | 9.99 | 10.92 | 11.74 |
| Percent of main lines connected to digital exchanges | | % | 99.66 | 100.00 | 100.00 | 100.00 | 100.00 |
| Waiting list for main lines | | | 80'731 | 83'723 | 85'878 | 106'404 | 129'518 |
| Public payphones | | | 13'692 | 19'711 | 20'374 | 24'680 | 28'478 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 38'973 | 55'258 | 119'165 | 389'208 | 574'334 |
| Cellular subscribers per 100 inhabitants | | | 0.42 | 0.58 | 1.25 | 4.02 | 5.87 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 115 | 140 | 146 | 174 | 200 |
| International incoming telephone traffic (minutes) | | 10x6 | ... | 274 | 280 | 350 | 399 |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 6'421 | 6'567 | 7'011 | 7'400 | 7'703 |
| Subscribers per employee | | | 123 | 138 | 153 | 195 | 224 |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 351 | 378 | 401 | 520 | 579 |
| Telecommunication revenues as a % of GDP | | % | 1.77 | 1.82 | 2.06 | 2.60 | 2.75 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 157 | 104 | 159 | 213 | 306 |
| Telecommunication investment as a % of GFCF | | % | 3.18 | 1.98 | 3.11 | 4.07 | 5.76 |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | | | 83.32 | 84.44 | 86.79 | 90.55 | 91.68 |
| Per cent of households with a radio | | | 76.00 | 76.39 | 76.45 | 76.39 | 76.52 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 10'000 | 150'000 | 260'000 | 410'000 | 505'500 |
| Internet users per 100 inhabitants | | | 0.11 | 1.59 | 2.72 | 4.24 | 5.17 |

*Notes:* Tunisie Telecom.

(1) Source: UN; ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

*Source:* ITU.

# Uganda

| *Land area (km²):* | *241'038* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Local currency:* | *Shilling* | | | *Year ending 30.06* | | | |
| *Capital:* | *Kampala* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 21'410 | 22'189 | 22'996 | 23'833 | 24'700 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 5'977 | 5'465 | 5'848 | 5'857 | 6'010 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'139 | 1'173 | 1'159 | 1'206 | 1'335 |
| Average annual exchange rate per US$ | (2) | | 1'240.31 | 1'454.83 | 1'644.48 | 1'755.66 | 1'797.55 |
| Consumer price index (1995=100) | (3) | | 115 | 122 | 125 | 128 | 127 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 56'919 | 57'239 | 61'678 | 56'149 | 54'976 |
| Main telephone lines per 100 inhabitants | | | 0.27 | 0.26 | 0.27 | 0.24 | 0.22 |
| Percent of main lines connected to digital exchanges | (5) | % | ... | ... | ... | ... | 80.00 |
| Waiting list for main lines | (6) | | 8'954 | 9'161 | ... | ... | ... |
| Public payphones | (7) | | 1'333 | 1'380 | 3'300 | 3'700 | 3'243 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 30'000 | 56'358 | 126'913 | 283'520 | 393'310 |
| Cellular subscribers per 100 inhabitants | | | 0.14 | 0.25 | 0.55 | 1.19 | 1.59 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | (8) | 10x6 | 6 | 6 | 7 | 7 | ... |
| International incoming telephone traffic (minutes) | (9) | 10x6 | 18 | 19 | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 1'890 | 1'672 | 2'375 | 2'400 | ... |
| Subscribers per employee | | | 46 | 68 | 79 | 142 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 60 | 87 | 86 | 98 | 112 |
| Telecommunication revenues as a % of GDP | | % | 1.00 | 1.59 | 1.47 | 1.67 | 1.87 |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 18 | 55 | ... | ... | ... |
| Telecommunication investment as a % of GFCF | | % | 1.58 | 4.71 | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (10) | | 4.05 | 4.52 | 5.05 | 5.59 | 6.19 |
| Per cent of households with a radio | | | 43.95 | 46.34 | 48.85 | 51.50 | 54.15 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 15'000 | 25'000 | 40'000 | 60'000 | 100'000 |
| Internet users per 100 inhabitants | | | 0.07 | 0.11 | 0.17 | 0.25 | 0.40 |

*Notes:* Uganda Telecommunication Ltd. (UTL), Uganda Communications Commission (UCC).

(1) Source: UN; 2002: Census, Other years: ITU estimates.

(2) Source: IMF.

(3) Source: IMF.

(4) 1999: Including data from MTN.

(5) 1999: August.

(6) 1999: August. Excluding suppressed demands.

(7) 1998-1999: UTL only. From 2000: Including MTN.

(8) Not including traffic with Kenya or Tanzania.

(9) Not including traffic with Kenya or Tanzania.

(10) MIH.

*Source:* ITU.

# Zambia

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *752'617* | | | | | | |
| *Local currency:* | *Kwacha* | | | *Year beginning 1.04* | | | |
| *Capital:* | *Lusaka* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 9'721 | 9'999 | 10'286 | 10'580 | 10'883 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 3'240 | 3'150 | 3'238 | 3'639 | 3'683 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | ... | ... | ... | ... | ... |
| Average annual exchange rate per US$ | (2) | | 1'862.07 | 2'388.02 | 3'110.84 | 3'610.93 | 4'398.59 |
| Consumer price index (1995=100) | (3) | | 222 | 281 | 354 | 430 | 525 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | | | 77'700 | 83'084 | 83'326 | 85'662 | 87'674 |
| Main telephone lines per 100 inhabitants | | | 0.80 | 0.83 | 0.81 | 0.81 | 0.81 |
| Percent of main lines connected to digital exchanges | | % | 73.10 | 75.65 | 75.76 | 80.01 | 83.45 |
| Waiting list for main lines | | | 7'955 | 12'340 | 13'347 | 12'826 | 11'631 |
| Public payphones | | | 554 | 903 | 872 | 875 | 878 |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 8'260 | 28'190 | 98'853 | 121'200 | 139'092 |
| Cellular subscribers per 100 inhabitants | | | 0.08 | 0.28 | 0.96 | 1.15 | 1.28 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 14 | 14 | 13 | 15 | 16 |
| International incoming telephone traffic (minutes) | | 10x6 | 20 | 18 | 30 | 33 | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | | | 3'347 | 3'397 | 3'111 | 3'061 | ... |
| Subscribers per employee | | | 26 | 33 | 59 | 68 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 88 | 82 | 64 | 69 | ... |
| Telecommunication revenues as a % of GDP | | % | 2.72 | 2.62 | 1.98 | 1.90 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 8 | 5 | 8 | 5 | ... |
| Telecommunication investment as a % of GFCF | | % | ... | ... | ... | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (4) | | 20.49 | 21.71 | 23.35 | 24.45 | 25.99 |
| Per cent of households with a radio | (5) | | 49.76 | 52.47 | 55.71 | 58.33 | 61.01 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | | | 3'000 | 15'000 | 20'000 | 25'000 | 52'420 |
| Internet users per 100 inhabitants | | | 0.03 | 0.15 | 0.19 | 0.24 | 0.48 |

*Notes:* Zambia Telecommunications Company Limited (Zamtel).

(1) Source: 2000: Census (CSO); Other years: UN, ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) Source: ZTCL.

(5) Source: 1998, CSO. Other years: Zamtel, ITU estimates.

*Source:* ITU.

# Zimbabwe

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Land area (km²):* | *390'310* | | | | | | |
| *Local currency:* | *Dollar* | | | *Year ending 30.06* | | | |
| *Capital:* | *Harare* | | **1998** | **1999** | **2000** | **2001** | **2002** |
| **DEMOGRAPHY, ECONOMY** | | | | | | | |
| Population | (1) | 10x3 | 11'129 | 11'253 | 11'379 | 11'506 | 11'635 |
| Gross Domestic Product (GDP) (US$) | | 10x6 | 5'908 | 5'613 | 7'437 | 9'203 | 758 |
| Gross Fixed Capital Formation (GFCF) (US$) | | 10x6 | 1'011 | 817 | 1'026 | ... | ... |
| Average annual exchange rate per US$ | (2) | | 23.68 | 38.30 | 44.42 | 55.05 | 1'400.00 |
| Consumer price index (1995=100) | (3) | | 190 | 301 | 470 | 830 | 1'992 |
| **TELEPHONE NETWORK** | | | | | | | |
| Main telephone lines in operation | (4) | | 236'530 | 238'956 | 249'400 | 253'738 | 287'854 |
| Main telephone lines per 100 inhabitants | | | 2.13 | 2.12 | 2.19 | 2.21 | 2.47 |
| Percent of main lines connected to digital exchanges | | % | ... | ... | ... | ... | 82.80 |
| Waiting list for main lines | | | 127'136 | 149'851 | 158'918 | ... | ... |
| Public payphones | (5) | | 2'864 | 2'978 | 3'234 | ... | ... |
| **MOBILE SERVICES** | | | | | | | |
| Cellular mobile telephone subscribers | | | 19'000 | 174'000 | 309'000 | 328'669 | 353'000 |
| Cellular subscribers per 100 inhabitants | | | 0.17 | 1.55 | 2.72 | 2.86 | 3.03 |
| **TRAFFIC** | | | | | | | |
| International outgoing telephone traffic (minutes) | | 10x6 | 53 | 66 | 72 | 78 | ... |
| International incoming telephone traffic (minutes) | | 10x6 | 53 | 59 | ... | ... | ... |
| **STAFF** | | | | | | | |
| Full-time telecommunication staff | (6) | | 7'100 | 7'900 | 4'609 | 4'049 | ... |
| Subscribers per employee | | | 36 | 52 | 121 | 144 | ... |
| **REVENUE AND EXPENSE** | | | | | | | |
| Telecommunication revenues (US$) | | 10x6 | 126 | 116 | 177 | 207 | ... |
| Telecommunication revenues as a % of GDP | | % | 2.13 | 2.06 | 2.38 | 2.25 | ... |
| **CAPITAL EXPENDITURE** | | | | | | | |
| Annual investment in telecommunication (US$) | | 10x6 | 109 | ... | 118 | ... | ... |
| Telecommunication investment as a % of GFCF | | % | 10.82 | ... | 11.50 | ... | ... |
| **BROADCASTING** | | | | | | | |
| Per cent of households with a television | (7) | | 19.77 | 24.50 | 24.50 | 25.50 | 26.50 |
| Per cent of households with a radio | | | 55.36 | 58.64 | 59.94 | 61.19 | 63.80 |
| **INFORMATION TECHNOLOGY** | | | | | | | |
| Internet users | (8) | | 10'000 | 20'000 | 50'000 | 100'000 | 500'000 |
| Internet users per 100 inhabitants | | | 0.09 | 0.18 | 0.44 | 0.87 | 4.30 |

*Notes:* Tel One, Post and Telecommunications Regulatory Authority.

(1) Source: UN; 2002: Census. 1998-2001: ITU estimate.

(2) Source: IMF.

(3) Source: IMF.

(4) 2000: estimates.

(5) "Public call offices".

(6) Before 2000: Including post.

(7) NSO, ITU estimates.

(8) Source: PTC, ZISPA, ITU estimates.

*Source:* ITU.

# TECHNICAL NOTES

**General methodology**
The compound annual growth rate (CAGR) is computed by the formula:

$$[(P_V / P_0)^{(1/n)}]-1$$

where $P_V$ = Present value
$P_0$ = Beginning value
n = Number of periods

The result is multiplied by 100 to obtain a percentage.

United States dollar figures are reached by applying the average annual exchange rate (from the International Monetary Fund, IMF) to the figure reported in national currency. For countries where the IMF rate is unavailable or where the exchange rate typically applied to foreign exchange transactions differs markedly from the official IMF rate, a World Bank conversion rate is used. For the few countries where neither the IMF nor World Bank rates are available, a United Nations end-of-period rate was used.

Group figures are either *totals* or weighted *averages* depending on the indicator. For example, for main telephone lines, the total number of *main telephone lines* for each grouping is shown, while for *main lines per 100 inhabitants* the weighted average is shown. Group figures are shown in bold in the tables. In cases of significant missing data, group totals are not shown. Group growth rates generally refer to countries for which data is available for both years.

**1. Basic indicators**
The data for *Population* are mid-year estimates from national statistical offices or the United Nations (UN). Population *Density* is based on land area data from the UN; the land area does not include any overseas dependencies but does include inland waters. The data for *Gross Domestic Product* (GDP) are generally from the IMF. They are current price data in national currency converted to United States dollars by the method identified above. *Total telephone subscribers* refer to the sum of main telephone lines and cellular mobile subscribers (see below for definitions). *Total telephone subscribers per 100 inhabitants* is calculated by dividing the total telephone subscribers by the population and multiplying by 100. *Effective teledensity* is the higher value of either main telephone lines per 100 inhabitants or cellular subscribers per 100 inhabitants.

**2. Main telephone lines**
This table shows the number of *Main telephone lines* and *Main telephone lines per 100 inhabitants* for the years indicated and corresponding annual growth rates. *Main telephone lines* refer to telephone lines connecting a customer's equipment (e.g., telephone set, facsimile machine) to the Public Switched Telephone Network (PSTN) and which have a dedicated port on a telephone exchange. Note that for most countries, main lines also include public payphones. Many countries also include ISDN channels in main lines (see 9. ISDN). *Main telephone lines per 100 inhabitants* is calculated by dividing the number of main lines by the population and multiplying by 100. *Subscriber lines* is calculated by subtracting the number of ISDN channels from main telephone lines and adding ISDN subscribers.

**3. Waiting list**
The table shows the total number of applications for a connection to a main telephone line that have had to be held over owing to a lack of technical availability. It should be noted that the waiting list refers to applications received; it does not include figures for those who desire a telephone line but have not submitted an application. *Total demand* is obtained by adding main lines in operation and the waiting list. *Satisfied demand* is obtained by dividing the number of main lines by the total demand for main telephone lines (sum of the unmet applications and operating main telephone lines). *Waiting time* shows the approximate number of years applicants must wait for a telephone line. It is calculated by dividing the number of applicants on the waiting list by the average number of main lines added per year over the past three years.

**4. Local telephone network**
*Capacity used* is obtained by dividing the number of main lines in service by the total number of main lines that could be connected to local public

switching exchanges. The *Automatic* per cent is calculated by dividing the number of main lines connected to automatic exchanges by the total number of main lines. The *Digital* per cent is calculated by dividing the number of main lines connected to digital exchanges by the total number of main lines. The percentage of *Residential* lines refers to the number of main lines serving households (i.e. lines that are not used for professional purposes or as public telephone stations) divided by the total number of main lines. *Faults per 100 main lines per year* refer to the number of reported faults per 100 main telephone lines for the year indicated. It is calculated by the total number of reported faults for the year divided by the number of telephone main lines and multiplied by 100. Some countries report this on a monthly basis, so an annual estimate is made by multiplying by 12. The definition of a fault varies among countries: some operators define faults as including malfunctioning customer equipment while others include only technical faults.

**5. Teleaccessibility**

*Total residential main lines* refer to the number of main lines used by households. *Per 100 households* is obtained by dividing the number of residential main lines by the number of households and multiplying by 100. *Percentage of households with a telephone* is based on surveys carried out by national statistical offices. Note that it generally includes main telephone lines and where countries report a combined figure, would also include households with a mobile subscription. *Payphones* refers to the total number of all types of public telephones including coin- and card-operated ones. Some countries include public phones installed in private places. No distinction is made between operational and non-operational payphones. *Per 1000 inhabitants* is obtained by dividing the number of public payphones by the population and multiplying by 1000. *As % of main lines* is obtained by dividing the number of public telephones by the number of main lines.

**6. Telephone tariffs**

The table shows the costs associated with local residential and business telephone service. *Connection* refers to connection charges for basic telephone service. *Monthly subscription* refers to the recurring fixed charge for subscribing to the PSTN. This indicator is not always comparable since some countries include a number of free local calls in the subscription. When subscription charges are reported annually or bi-monthly, they are converted to their corresponding monthly amount. *Local call* refers to the cost of a 3-minute call within the same exchange area using the subscriber's equipment (i.e., not from a public telephone). This is the amount the subscriber must pay for a 3-minute call and not the average price for each 3-minutes. Any taxes involved in these three charges are included to improve comparability. The *Subscription as a % of GDP per capita* shows cost of an annual residential telephone subscription as a percentage of Gross Domestic Product per capita.

**7. Mobile cellular subscribers**

*Mobile cellular subscribers* refer to users of portable telephones subscribing to an automatic public mobile telephone service using cellular technology that provides access to the PSTN. *Per 100 inhabitants* is obtained by dividing the number of cellular subscribers by the population and multiplying by 100. *Prepaid subscribers* refers to the total number of mobile cellular subscribers using prepaid cards. *Population coverage* measures the percentage of inhabitants that are within range of a mobile cellular signal whether or not they are subscribers. This is calculated by dividing the number of inhabitants within range of a mobile cellular signal by the total population. *As a % of total telephone subscribers* is obtained by dividing the number of cellular subscribers by the total number of telephone subscribers (sum of the main telephone lines and the cellular subscribers.

**8. Prepaid cellular tariffs**

*Connection charge* refers to the initial, one-time charge for a new subscription. *Per minute local call* refers to the price of a one-minute peak and off-peak rate local call from a mobile cellular telephone. When there are different rates, the price of a call to the same mobile network is used. *Cost of local SMS* is the price of sending a national Short Message Service (SMS) message from a mobile handset.

**9. ISDN and ADSL**

*ISDN subscribers* refers to the number of subscribers to Integrated Services Digital Networks. It includes both basic rate and primary rate interface subscribers. *B-channel equivalents* converts the number of ISDN subscriber lines into their equivalent voice channels. The number of basic rate subscribers is multiplied by two and the

number of primary rate subscribers is multiplied by 23 or 30 depending on the standard implemented. *B-channels per 1000 inhabitants* is the number of B-channel equivalents divided by the population and multiplied by 1000. *B-channels as % of main lines* is the number of B-channel equivalents divided by the number of main telephone lines.

**10. International telephone traffic**

*Outgoing international telephone traffic* refers to total telephone traffic measured in minutes that originated in the specified country with a destination outside the country. *As % of bothway* refers to outgoing traffic divided by total traffic (incoming and outgoing). *Minutes per inhabitant* is obtained by dividing outgoing international minutes by the number of inhabitants in the country. *Minutes per subscriber* is obtained by dividing outgoing international minutes by the number of main lines. *International telephone circuits* refers to the number of links (voice channel equivalents) with other countries for establishing telephone communications.

**11. Telecommunication staff**

*Telecommunication staff* refers to the total number of staff (part-time staff converted to full-time equivalents) employed by telecommunication enterprises providing public telecommunication services. In some cases where posts and telecommunication organisations are combined, no breakdown of telecommunication staff is available. Note that the figure would generally not include sub-contract staff. *% female* refers to the number of full time telecommunication staff that are female divided by the total number of employees. *Subscribers per employee* is computed by dividing total telephone subscribers by the number of employees. Caution should be used in interpreting this figure as some countries may subcontract a proportion of work, in which case the number of main lines per employee would be overstated. *Mobile staff* refers to the total number of staff employed by mobile cellular network operators. This refers to mobile operators building infrastructure and not staff employed by resellers. *Mobile subscribers per employee* is calculated by dividing total mobile cellular subscribers by the number of mobile staff.

**12. Telecommunication revenue**

This table shows the revenues (turnover) received from providing telecommunication services in each country. United States dollar values are obtained by the method described earlier. Data may not be strictly comparable due to a number of factors. First, it is assumed that the data relate to revenues of all operators providing service in the country. This is not unequivocally known and may be impossible to determine since there may be no legal requirement for all operators to provide financial information, or operators may be part of a parent company that only provides consolidated accounts. The data does not always include revenues from cellular mobile telephone, radio paging or data services in some developing nations if these services are not provided by the main fixed-link operator. Second, the operators may have subsidiaries with financial activities unrelated to telecommunication services that may be included. Third, in the case of countries where posts and telecommunications are combined, a perfect allocation of revenues is not always possible. Fourth, there are definition and accounting differences among countries.

*Total telecommunication revenue* consists of all telecommunication revenues earned during the financial year under review. *% mobile revenue* is the share of mobile communication revenue. *Per inhabitant* shows current revenues divided by the number of inhabitants in the country. *Per telephone subscriber* is obtained by dividing revenues by total telephone subscribers (fixed plus mobile). *Per employee* is obtained by dividing revenues by employees. For some countries, no breakdown between postal and telecommunication staff is available and the figure may thus be unrealistically low. *As a % of GDP* shows telecommunication revenues divided by national Gross Domestic Product.

**13. Telecommunication investment**

Investment refers to the annual expenditure associated with acquiring ownership of property and plant used for telecommunication services and includes land and buildings. *Total telecom investment* shows total current investments for the year indicated; the United States dollar figure is arrived at by the method described above. *Per inhabitant* is obtained by dividing the annual investment by the population. *Per telephone subscribers* is obtained by dividing investment by total telephone subscribers. *As a % of revenue* is obtained by dividing annual investment by telecommunication revenues. *As a % of GFCF* shows telecommunications investment divided by

Gross Fixed Capital Formation (GFCF). For some countries where GFCF is not available, Gross Domestic Investment is used. This is similar to GFCF except that it does not include changes in inventories which tend to comprise a small proportion of GFCF.

**14. Equipment trade**

This table shows *telecommunication equipment imports* and *exports*. The data come from the United Nations in United States dollar values. They correspond to the Standard Industrial Trade Classification (SITC, Revision 2 or latest) categories 764.1 Line telephony / telegraphy, 764.3 Transmission apparatus, 764.81 Radio-telephony / telegraphy receivers and 764.91 Parts and accessories. *Trade balance* shows exports minus imports for the latest year available.

**15. Information technology**

*Internet hosts* refer to the number of computers directly connected to the worldwide Internet network. Note that Internet host computers are identified by a two-digit country code or a three-digit code generally reflecting the nature of the organization using the Internet computer. The number of hosts is assigned to economies based on the country code although this does not necessarily indicate that the host is actually physically located in the economy. In addition, all other hosts for which there are no country code identification are assigned to the United States. Therefore the number of Internet hosts shown for each country can only be considered an approximation. Data on Internet host computers are from Internet Software Consortium and RIPE (Réseaux IP Européens). Internet *Users* is based on nationally reported data. In some cases, surveys have been carried out that give a more precise figure for the number of Internet users. However surveys differ across countries in the age and frequency of use they cover. The reported figure for Internet users—which may refer to only users above a certain age—is divided by the total population to obtain *users per 100 inhabitants*. Countries that do not have surveys generally base their estimates on derivations from reported Internet Service Provider subscriber counts, calculated by multiplying the number of subscribers by a multiplier. *PCs* shows the estimated number of Personal Computers (PCs), both in absolute numbers and in terms of PCs per 100 inhabitants. The figures for PCs come from the annual questionnaire supplemented by other sources.

**16. Internet tariff**

The table shows the costs associated with 20 hours dial-up use per month. If broadband prices are cheaper, these are used instead. Data are generally those of the largest Internet Service Provider (ISP) and incumbent telephone company as they list the prices. *ISP charge* refers to the Internet monthly subscription plus extra charges once free hours have been used up. *Telephone usage charge* refers to the amount payable to the telephone company for local telephone charges while logged on. This includes usage charges but does not include the telephone line rental. *Total Internet price* refers to the sum of telephone usage charges and ISP charges. *As % of GNI per capita* shows cost of 20 hours use per month as a percentage of Gross National Income.

**17. Internet**

*Internet subscribers* refers to the number of dial-up, leased line and broadband Internet subscribers. *Broadband subscribers* refer to the sum of DSL, cable modem and other broadband subscribers. Although there exist various definitions of *broadband*, it may be defined as sufficient bandwidth to permit combined provision of voice, data and video. Speed should be greater than 128 kbps in at least one direction. *As % of total subscribers* is calculated by dividing the total number of broadband subscribers by the total number of Internet subscribers. *International bandwidth* refers to the amount of international Internet bandwidth measured in Mega Bits Per Second (Mbps). Data for Internet bandwidth come from ITU's annual questionnaire supplemented with data from TeleGeography. *Bits per inhabitant* is calculated by dividing the international Internet bandwidth by the population.

**18. Broadcasting**

*Radio households* represent the number of households that have a radio receiver. (See the discussion under television households regarding licenses that would also be applicable to radio). *As % of total households* is calculated by dividing the number of radio households by total households. Radio *population coverage* refers to the percentage of the population that could receive terrestrial-based radio programming transmissions from where they live. *Television households* is the number of households that have television receivers. Note that for some countries, the number

of licenses (i.e. system where television sets must be registered) is used as a proxy for television households. Since households may not register, the number of licenses may understate the true number especially if there is widespread avoidance of the licensing system. *Population coverage* refers to the percentage of the population that can receive a terrestrial broadcast signal.

**19. Multichannel TV**

*Cable TV subscribers* are those who subscribe to a multi-channel television service delivered by a fixed-link connection, usually coaxial or fibre optic cable. However, some countries also report subscribers using wireless technology. In addition, some countries also report the number of households cabled to community antenna systems re-broadcasting free-to-air channels because of poor reception. *As % of TV households* is calculated by dividing the number of cable TV subscribers by the number of TV households. *Home satellite antennas* shows the number of households with access to a multi-channel television service delivered by satellite. This figure includes both Direct-to-the-home (DTH) service and Satellite Master Antenna Television (SMATV) which serves several households in the same building. SMATV serving households in different buildings is counted as cable TV. *Cable modem Internet subscribers* refer to Internet subscribers via a cable TV network. *As % of cable TV subscribers* is calculated by dividing the number of cable modem Internet subscribers by the total cable TV subscribers and multiplying by 100.

**20. Projections**

*Main telephone lines, total and per 100 inhabitants,* and *cellular subscribers, total and per 100 inhabitants,* show the 2002 figures for these items and the estimated figure for the year 2005. The estimated number of lines in the year 2005 is a projection based on historical growth rates over the last three years. The estimated number of *mobile cellular subscribers* for the year 2005 is generally derived from the 2002 growth rate. The 2002 growth rate is halved each year to arrive at the forecast for 2005. In some cases values have been adjusted (e.g. 2002 growth rate exceptionally high, additional suppliers to enter market, etc.).

**21. UN MDG ICT Indicators**

The Millennium Declaration acknowledges that ICTs are an important tool to achieve its overall goals; ICTs can help alleviate poverty, improve the delivery of education and health care, make government services more accessible, and much more. Target 18 of Goal 8 calls upon the Declaration's adherents to: "*In cooperation with the private sector make available the benefits of new technologies, specifically information and communications*." Three indicators were chosen to measure ICT availability in countries: *main telephone lines per 100 inhabitants and mobile cellular subscribers per 100 inhabitants, personal computers per 100 inhabitants* and *Internet users per 100 inhabitants*. Definition of these indicators are discussed in earlier sections of the technical notes.

**22. Digital Access Index (DAI)**

The *ITU's Digital Access Index (DAI)* is a new index, which measures the overall ability of individuals in a country to access and use new ICTs. The DAI is built around four fundamental factors that impact a country's ability to access ICTs: infrastructure, affordability, knowledge and quality. A fifth factor, actual usage of ICTs, is important for matching the theory of the index with the reality in a country. The inclusion of usage also captures other aspects not explicitly accounted for in the other four factors. Eight indicators are used to represent the five factors. Each indicator is divided by a "goalpost" the maximum value established for that indicator. Each indicator is then summed to obtain an overall index score.

***Methodological issues***

The variables selected for the DAI must be made comparable before they are combined. This is done by converting the variables into indicators, generally by dividing them by the population. The indicators are then "normalized", a process, which transforms the indicators into a value between zero and 1, so they can be added or averaged. "Goalposts" (i.e. minimum and maximum values that may be achieved) are used to normalize each country's data. Care must be taken in choosing the goalposts to avoid the index becoming outdated. If the goalpost is surpassed, the index must either assign a value of 1 to the variables or increase the goalpost, requiring all previous years to be recalculated.

Normalizing telecommunication variables is more difficult than for other kinds of data since the values change so frequently with technological development. Variables such as *mobile subscribers per 100 inhabitants* can now reach

levels greater than the total population, making it difficult to establish long-term goalposts. Also, as technology changes, new ICTs emerge. For example an index designed five years ago most probably would not have included broadband. The definition of high-speed today could be too slow for applications ten years from now. At the same time, some technologies can reach a peak or go into decline.

The goalposts for the DAI are designed partly through logic and partly through examining existing values. This was influenced by the objective that countries should be able to achieve a perfect ranking. It was also assumed that countries could and do start from zero in any variable (e.g. a country that does not yet have a mobile cellular network) so this was established as a minimum goalpost.

A single index value is computed for each of the five DAI categories. Weights must be assigned to each indicator for categories that have multiple indicators. The logic behind the weights chosen for multiple indicator categories is described below.

The *infrastructure* category consists of the two indicators *main telephone lines per 100 inhabitants* (teledensity) and *mobile cellular subscribers per 100 inhabitants* (mobidensity), both of which come from the ITU World Telecommunication Indicators database. In order to enhance comparability, main telephone lines are defined as fixed telephone subscribers plus payphones. This means that Integrated Services Digital Network (ISDN) subscribers rather than channels are included.[1] The goalpost for teledensity has been set at 60. The highest observed value was 69.3 back in 1998; since then teledensity has been declining due to mobile substitution as well as less need for second lines due to broadband. The goalpost for mobidensity has been set at 100. Though this figure has already been exceeded as noted above, this is mainly due to inactive prepaid accounts and second mobile phones. A mobidensity of over 100 implies that all adults (and many youth) would have at least one mobile phone. Teledensity and mobidensity are given equal weight (50 per cent) in computing the infrastructure category value. The reason is that even though in most countries there are now more mobile subscribers than fixed telephone lines, most Internet access is still via fixed lines. At the same time, mobile phones can be used to provide Internet access and this is likely to grow in the future.

The *affordability* category is compiled from the price of twenty hours of monthly Internet access divided by monthly per capita gross national income (GNI). The cheaper of dial-up or broadband is used. The Internet price data were collected by the ITU during the third quarter of 2003 using information from the largest Internet service provider (ISP) in each country, and incumbent telephone operators. The tariffs are converted to the United States dollar equivalent using the 2002 annual average exchange rate. The GNI per capita income data come from the World Bank.[2] National data is used for economies for which World Bank data is not available. Subtracting the proportion of monthly income that Internet tariffs consume from 1 creates an *affordability indicator*. The logic behind this conversion is to create an indicator where a high value is desirable so that it is consistent with the other indicators. The goalpost for this indicator is 1, a situation where the Internet would be free. On the other hand, where the affordability indicator is negative (e.g. prices are more than per capita income), no points are awarded since a person cannot spend more on Internet access than they earn.

The *knowledge* index is computed from the adult literacy rate and the gross school enrolment. Adult literacy is defined by the UNDP as "*The percentage of people aged 15 and above who can, with understanding, both read and write a short, simple statement related to their everyday life.*"[3] Overall school enrolment refers to the gross rate and is defined as the number of students in primary, secondary and tertiary schools divided by the population of that school age. The figure can exceed 100 due to repeaters or those older or younger than the official school age being enrolled. These data are from the UNDP and are used in its

[1] ISDN is a technology that increases the capacity of a standard telephone line. Basic rate ISDN converts a telephone line into two lines or "channels" whereas primary rate adds 30 channels.

[2] World Bank. "GNI per capita 2002." Available from: http://www.worldbank.org/data/databytopic/GNIPC.pdf; accessed November 11, 2003

[3] UNDP. *Human development Report 2003*. "Technical Note." Available from: http://www.undp.org/hdr2003/pdf/hdr03_backmatter_2.pdf; accessed November 11, 2003.

Human Development Index (HDI). The goalposts (both 100) and weighting (two thirds for literacy and one third for school enrolment) correspond to the HDI methodology.

The *quality* index consists of two indicators, bits per capita and broadband subscribers per 100 inhabitants, both from the World Telecommunication Indicators database. Bits per capita are computed by dividing the international Internet bandwidth by the population of the country. There are some definitional issues with international Internet bandwidth. This includes what value to assign when the bandwidth is not symmetrical (e.g. the incoming bandwidth is greater than the outgoing). Some countries add the incoming and outgoing bandwidth while others use one or the other. Another point is that international bandwidth may not be as relevant in countries that have a large amount of domestic content. This category of countries would tend to have less need for international bandwidth and this will be reflected in a lower score. The goalpost for bits per capita is set at 10'000, a considerable amount considering not all of the population will be accessing the Internet at the same time. Because the international Internet bandwidth per capita varies tremendously and is arguably more important at initial stages of Internet development—when not much local content is available—the value is transformed using a logarithmic function. If the data were not transformed, the value would be close to zero for many developing nations because of the high goalpost. The goalpost for broadband subscribers per 100 inhabitants is set at 30, a value implying that all households would have a connection. Each indicator is given equal weight in the category.

The *usage* index consists of Internet users per 100 inhabitants with the data from the World Telecommunication Indicators database. The goalpost is set at 85. The reason is that it is unrealistic to assume that all inhabitants will use the Internet. The question of at what age the Internet becomes relevant is difficult to answer. Although some surveys compile the number of Internet users from the age of two it seems questionable how many very small children could use the Internet effectively. Also, the limit of the number of Internet users per 100 inhabitants will vary depending on the age structure of the country. The value of 85 is an estimate of the average percentage of the worldwide population aged ten and over.

# COUNTRY PAGES

These tables show annual data for the last five years for each economy. The *Land area* (in square kilometres), name of the *Local currency* and name of the *Capital* city are shown at the top left. The period to which the data refer is shown at the top right.

## Definitions

### DEMOGRAPHY, ECONOMY

*Population:* The data for *population* are generally mid-year estimates from the World Bank or United Nations. In some cases, data are from national statistical agencies.

*Gross Domestic Product (GDP) (US$)*: The data for *Gross Domestic Product* (GDP) are generally from the International Monetary Fund (IMF). They are current price data in national currency converted to United States dollars using average annual exchange rates. GDP is the sum of final expenditures on goods and services in the domestic economy.

*Gross Fixed Capital Formation (GFCF) (US$)*: The data for *Gross Fixed Capital Formation* (GFCF) are generally from the International Monetary Fund (IMF). They are current price data in national currency converted to United States dollars using average annual exchange rates. GFCF is expenditures made by business and government for additions to fixed assets.

*Average annual exchange rate per US$*: Number of units of country's currency per United States dollar averaged over one year. Rates are based on market, official or primary rates and are generally from the IMF.

*Consumer price index (1995=100)*: The most frequently used indicator of inflation reflecting changes in the cost of acquiring a fixed basket of goods and services by the average consumer. The data show the change since 1995 and are from the IMF.

### TELEPHONE NETWORK

*Main telephone lines in operation*: A telephone line connecting the subscriber's terminal equipment to the public switched network and which has a dedicated port in the telephone exchange equipment. This term is synonymous with the term "main station" or "Direct Exchange Line" (DEL) which are commonly used in telecommunication documents and is generally comparable with the terms "access line" or "subscriber."

*Main telephone lines per 100 inhabitants*: Calculated by dividing the number of main lines by the population and multiplying by 100.

*Percent of main lines connected to digital exchanges:* This percentage is obtained by dividing the number of main lines connected to digital telephone exchanges by the total number of main lines.

*Waiting list for main lines*: Unmet applications for connection to the Public Switched Telephone Network (PSTN) which have had to be held over owing to a lack of technical facilities (equipment, lines, etc.).

*Public payphones*: Total number of all types of public telephones, including coin and card operated and public telephones in call offices.

### MOBILE SERVICES

*Cellular mobile telephone subscribers*: Users of portable telephones subscribing to an automatic public mobile telephone service which provides access to the Public Switched Telephone Network (PSTN) using cellular technology. This includes analogue and digital cellular systems.

*Cellular mobile telephone subscribers per 100 inhabitants*: Obtained by dividing the number of cellular subscribers by the population and multiplying by 100.

## TRAFFIC

*International outgoing telephone traffic (minutes)*: Refers to total telephone traffic measured in minutes that originated in the specified country with a destination outside the country.

*International incoming telephone traffic (minutes)*: Refers to total telephone traffic measured in minutes that originated outside the specified country with a destination inside the country.

## STAFF

*Full-time telecommunication staff*: Refers to the total number of staff (part-time staff converted to full-time equivalents) employed by telecommunication enterprises providing public telecommunication services. In some cases where posts and telecommunication organizations are combined, no breakdown of telecommunication staff is available. Note that the figure would generally not include sub-contract staff.

*Subscribers per employee*: Computed by dividing total telephone subscribers by the number of employees. Caution should be used in interpreting this figure as some countries may subcontract a proportion of work, in which case the number of main lines per employee would be overstated.

## REVENUE AND EXPENSE

*Telecommunication revenues (US$)*: Revenue (turnover) consists of telecommunication service earnings during the financial year under review received from providing telecommunication services in each country. US$ figures are arrived at by dividing the national currency data by the annual average exchange rate. Data may not be strictly comparable due to a number of factors. First, it is assumed that the data relate to revenues of all public telecommunication operators providing service in the country. This is not unequivocally known and may be impossible to determine since there may be no legal requirement for all operators to provide financial information, or operators may be part of a parent company that only provides consolidated accounts. The data does not usually include revenues from cellular mobile telephone, radio paging or data services if these services are not provided by the main fixed-link operator. Second, the operators may have subsidiaries with financial activities unrelated to telecommunication services that may be included. Third, in the case of countries where posts and telecommunications are combined, a perfect allocation of revenues is not always possible. Fourth, there are definition and accounting differences among countries.

*Telecommunication revenues as a % of GDP*: Shows current telecommunication revenues divided by national Gross Domestic Product.

## CAPITAL EXPENDITURE

*Annual investment in telecommunication (US$)*: The annual investment for acquiring property and plant. US$ value arrived at by dividing the national currency figure by the annual average exchange rate. The term investment means the expenditure associated with acquiring the ownership of property (including intellectual and non-tangible property such as computer software) and plant. These include expenditure on initial installations and on additions to existing installations where the usage is expected to be over an extended period of time. Also referred to as “capital expenditure”.

*Telecommunication investment as a % of GFCF*: Telecommunications investment divided by Gross Fixed Capital Formation (GFCF). For some countries where GFCF is not available, Gross Domestic Investment is used. This is similar to GFCF except that it does not include changes in inventories which tend to comprise a small proportion of GFCF.

## BROADCASTING

*Per cent of households with a radio*: Calculated by dividing the number of households that have a radio receiver by total number of households and multiplying by 100. (See the note under television equipped households regarding licenses that would also be applicable to radio).

*Per cent of households with a television*: Calculated by dividing the number of households that have television receivers by total number of households and multiplying by 100. Note that for some countries, the number of licenses (i.e. system where television sets must be registered) is used as a proxy for television households. Since households may not register, the number of licenses may understate the true number especially if there is widespread avoidance of the licensing system.

## INFORMATION TECHNOLOGY

*Internet users*: The number of Internet users based on nationally reported data. In some cases, surveys have been carried out that give a more precise figure for the number of Internet users. However surveys differ across countries in the age and frequency of use they cover.

*Internet users per 100 inhabitants*: Calculated by dividing the number of Internet users by the population and multiplying by 100.

# AFRICAN TELECOMMUNICATION ORGANIZATIONS

# Africa Telecommunication Organizations

Ministries and regulators responsible for telecommunication and main facilities-based providers of local and national and international long distance telephone service and mobile cellular service are shown below. Situation at 20 April 2004.

1 = Local telephone service. 2 = National long distance. 3 = International Long Distance. 4 = Mobile cellular.

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Algeria** | Ministère de la Poste et des Technologies de l'Information et de la Communication | *Ministry* | | | | www.postelecom.dz |
| | Autorité de Régulation de la Poste et des Télécommunications (ARPT) | *Regulator* | | | | www.arpt.dz |
| | Algérie Telecom | • | • | • | • | www.algerietelecom.dz |
| | Orascom Telecom Algérie | | | | • | www.djezzygsm.com |
| **Angola** | Ministério dos Correios e Telecomunicações | *Ministry* | | | | Fax: +244 2 33 49 14 |
| | Instituto Angolano das Comunicações (INACOM) | *Regulator* | | | | www.inacom.og.ao |
| | Angola Telecom | • | • | • | | www.angolatelecom.com |
| | Movicel | | | | • | www.movicel.com |
| | Unitel | | | | • | www.unitel.co.ao |
| **Benin** | Ministère de la Communication et de la Promotion des Technologies Nouvelles | *Ministry* | | | | www.communication.gouv.bj |
| | Haute Autorité de la Communication | *Regulator* | | | | Fax: +229 31 59 31 |
| | Office des Postes et des Télécommunications (OPT) | • | • | • | | www.opt.bj |
| | Libercom | | | | • | www.libercom.bj |
| | Telecel Benin | | | | • | Fax: +229 31 66 62 |
| | Spacetel-Benin | | | | • | Fax: +229 31 66 43 |
| **Botswana** | Ministry of Works, Transport and Communication | *Ministry* | | | | www.gov.bw/government/ministry_of_works_transport_and_communications.html |
| | Botswana Telecommunications Authority (BTA) | *Regulator* | | | | www.bta.org.bw |
| | Botswana Telecommunications Corporation (BTC) | • | • | • | | www.btc.bw |
| | Mascom | | | | • | www.mascom.bw |
| | Vista Cellular | | | | • | www.vista.bw |
| **Burkina Faso** | Ministère des Postes et Télécommunications | *Ministry* | | | | www.mpt.bf |
| | Autorité Nationale de Régulation des Télécommunications (ARTEL) | *Regulator* | | | | www.artel.bf |
| | Office national des télécommunications (ONATEL) | • | • | • | • | www.onatel.bf |
| | Celtel Burkina Faso | | | | • | www.bf.celtel.com |
| | Telecel Burkina Faso | | | | • | www.telecelfaso.bf |
| **Burundi** | Ministère des Transports, Postes et Télécommunications | *Ministry* | | | | Fax: +257 22 69 00 |
| | Agence de Régulation et de Contrôle des Télécommunications (ARCT) | *Regulator* | | | | Fax: +257 24 28 32 |
| | Office National des Télécommunications (ONATEL) | • | • | • | | Fax: +257 25 10 10 |
| | Africell | | | | • | Fax: +257 21 88 57 |
| | Spacetel Burundi | | | | • | Fax: +257 24 35 35 |
| | Telecel Burundi | | | | • | Fax: +257 21 23 66 |

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Cameroon** | Ministère des Postes et Télécommunications | *Ministry* | | | | Fax: +237 2 23 31 59 |
| | Agence de Régulation des Télécommunications (ART) | *Regulator* | | | | Fax: +237 2 23 37 48 |
| | Cameroon Telecommunications (Camtel) | • | • | • | | www.camnet.cm |
| | MTN Cameroon | | | | • | Fax: +237 2 23 34 81 |
| | Société Camerounaise de Mobiles (SCM) | | | | • | www.orange.cm |
| **Cape Verde** | Ministério das Infraestruturas e Transportes | *Ministry* | | | | Email: mit@mail.cvtelecom.cv |
| | Direcção Geral das Comunicações | *Regulator* | | | | Fax: +238 61 41 41 |
| | Cabo Verde Telecom | • | • | • | • | www.cvtelecom.cv |
| **Central African Rep.** | Ministère des Postes et des Télécommunications | *Ministry* | | | | Fax: +236 61 23 13 |
| | Société Centrafricaine de Télécommunications (SOCATEL) | • | • | • | | www.socatel.intnet.cf |
| | Caratel | | | | • | www.socatel.intnet.cf/SN%20caratel.htm |
| | Centrafrique Telecom Plus | | | | • | +236 61 44 49 |
| | Telecel | | | | • | +236 61 16 99 |
| **Chad** | Ministère des Postes et des Télécommunications | *Ministry* | | | | Fax: +235 52 15 15 |
| | Société des Télécommunications du Tchad (SOTEL-TCHAD) | • | • | • | | www.tit.td |
| | Celtel Tchad | | | | • | Fax: +235 52 02 33 |
| | Tchad Mobile | | | | • | Fax: +235 52 01 39 |
| **Comoros** | Ministère d'Etat, des Affaires sociales, de la Solidarité, de la Décentralisation, des Postes, des Télécommunications et des Transports internationaux | *Ministry* | | | | Fax: +269 74 42 41 |
| | Société Nationale des Postes et Télécommunications (SNPT) | • | • | • | • | www.snpt.km |
| **Congo** | Ministère des Postes et Télécommunications, chargé des Nouvelles Technologies | *Ministry* | | | | www.gouv.cg |
| | Direction Générale de l'Administration Centrale des Postes et Télécommunications (DGACPT) | *Regulator* | | | | Fax: +242 81 16 92 |
| | Société des Télécommunications du Congo | • | • | • | | Fax: +242 81 07 52 |
| | Celtel Congo | | | | • | Fax: +242 94 88 75 |
| | Cyrtel | | | | • | Fax: +242 41 90 00 |
| | Libertis Telecom | | | | • | Fax: +242 81 44 16 |
| **Côte d'Ivoire** | Ministère des Nouvelles Technologies de l'Information et de la Communication | *Ministry* | | | | Fax: +225 20 34 73 53 |
| | Agence des Télécommunications de Côte d'Ivoire (ATCI) | *Regulator* | | | | www.atci.ci |
| | Côte d'Ivoire Telecom | • | • | • | | www.citelecom.ci |
| | Cora de Comstar | | | | • | www.cora.ci |
| | Loteny Telecom | | | | • | www.telecel.net |
| | Orange Côte d'Ivoire | | | | • | www.orange.ci |

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **D.R. Congo** | Ministère des Postes, des Téléphones et des Télécommunications | *Ministry* | | | | Fax: +243 88 02 332 |
| | Autorité de Régulation de la Poste et des Télécommunications du Congo (ARPTC) | *Regulator* | | | | Email: arptc@starnet.cd |
| | Office Congolais des Postes et des Télécommunications (OCPT) | • | • | • | | Fax: +243 12 21 885 |
| | Celtel Congo (DRC) | | | | • | Fax: +243 90 01 01 |
| | Comcell | | | | • | |
| | SAIT Télécom | | | | • | |
| | Starcel | • | | | • | www.starcel.com |
| | SuperCell | | | | • | Fax: +243 87 13 313 |
| | Vodacom Congo | | | | • | www.africanwireless.com |
| **Djibouti** | Ministère de la Communication et de la Culture, chargé des Postes et Télécommunications | *Ministry* | | | | www.mccpt.dj |
| | Djibouti Télécom | • | • | • | • | www.intnet.dj |
| **Egypt** | Ministry of Communications and Information Technology | *Ministry* | | | | www.mcit.gov.eg |
| | Telecommunication Regulatory Authority (TRA) | *Regulator* | | | | www.tra.gov.eg |
| | Telecom Egypt | • | • | • | | www.telecomegypt.com.eg |
| | Vodafone | | | | • | www.clickgsm.com |
| | MobiNil | | | | • | www.mobinil.com |
| **Equatorial Guinea** | Ministerio de Transportes, Correos y Telecomunicaciones | *Ministry* | | | | Fax: +240 925 15 |
| | Dirección General de Correos y de Telecomunicaciones | *Regulator* | | | | Fax: +240 929 19 |
| | La Sociedad Anonima de Telecomunicaciones de la Republica de Guinea Ecuatorial (GETESA) | • | • | • | • | www.intnet.gq |
| **Eritrea** | Ministry of Transport and Communications | *Ministry* | | | | Email: motcrez@eol.com.er |
| | Communications Department | *Regulator* | | | | Fax: +291 1 126 966 |
| | Telecommunications Services of Eritrea (TSE) | • | • | • | • | www.tse.com.er |
| **Ethiopia** | Ministry of Infrastructure | *Ministry* | | | | Email: motac@telecom.net.et |
| | Ethiopian Telecommunications Agency (ETA) | *Regulator* | | | | www.telecom.net.et/~eta/ |
| | Ethiopian Telecommunications Corporation (ETC) | • | • | • | • | www.telecom.net.et |
| **Gabon** | Ministère de la Communication, de la Poste et des Technologies de l'Information | *Ministry* | | | | Fax: +241 76 34 35 |
| | Agence de Régulation des Télécommunications (ARTEL) | *Regulator* | | | | www.artel.ga |
| | Gabon Télécom | • | • | • | | www.gabontelecom.ga |
| | Celtel Gabon | | | | • | Fax: +241 74 52 86 |
| | Libertis | | | | • | Email: libertis@libertis.ga |
| | Telecel Gabon | | | | • | www.telecel.co.ga |

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Gambia** | Department of State for Communication, Information and Technology | *Ministry* | | | | Email: doscit@gamtel.gm |
| | Gambia Telecommunications Company (GAMTEL) | • | • | • | • | www.gamtel.gm |
| | Africell | | | | • | www.africell.gm |
| **Ghana** | Ministry of Communications and Technology | *Ministry* | | | | www.communication.gov.gh |
| | National Communications Authority | *Regulator* | | | | www.nca.com.gh |
| | Ghana Telecommunications Company | • | • | • | • | www.ghanatel.net |
| | Western Telesystems | • | • | • | | www.wwirelessintl.com/ghan.htm |
| | Capital Telecom | • | | | | Fax: +233 24 77 86 83 |
| | Celltel | | | | • | Fax: +233 24 76 57 38 |
| | Millicom Ghana | | | | • | www.mobitelnet.com |
| | Scancom | | | | • | www.spacefon.com |
| **Guinea** | Ministère de la Communication, des Postes et Télécommunications | *Ministry* | | | | www.guinee.gov.gn |
| | Direction Nationale des Postes et Télécommunications | *Regulator* | | | | Fax: +224 45 31 16 |
| | Société des Télécommunications de Guinée (SOTELGUI) | • | • | • | • | www.sotelgui.net.gn |
| | Spacetel Guinée | | | | • | Fax: +224 79 47 82 |
| | Telecel-Guinea | | | | • | www.intercel.net |
| **Guinea-Bissau** | Secretaria de do Equipamento Social, Transporte e Comunicações | *Ministry* | | | | Email: mes@mail.bissau.net |
| | Instituto das Comunicações da Guiné-Bissau (ICGB) | *Regulator* | | | | www.icgb.org |
| | Companhia de Telecomunicação da Guiné-Bissau | • | • | • | • | www.gtelecom.gw |
| **Kenya** | Ministry of Transport and Communication | *Ministry* | | | | www.statehousekenya.go.ke/government/transport.htm |
| | Communications Commission of Kenya | *Regulator* | | | | www.cck.go.ke |
| | Telkom Kenya | • | • | • | | www.telkom.co.ke |
| | KenCell Communications | | | | • | www.kencell.co.ke |
| | Safaricom | | | | • | www.safaricom.co.ke |
| **Lesotho** | Ministry of Communications | *Ministry* | | | | www.lesotho.gov.ls/mninfor.htm |
| | Lesotho Telecommunications Authority | *Regulator* | | | | www.lta.org.ls |
| | Telecom Lesotho | • | • | • | • | www.telecom.co.ls |
| | Econet Ezi-Cel | | | | • | ls.econetwireless.com |
| | Vodacom Lesotho | | | | • | www.vodacom.co.ls |
| **Liberia** | Ministry of Posts and Telecommunications | *Ministry* | | | | Fax: +231 22 60 00 |
| | Liberia Telecommunications Corporation (LTC) | • | • | • | | Fax: +231 22 80 00 |
| | Lonestar Cell | | | | • | |
| **Libya** | General Directorate of Posts and Telecommunications (GDPT) | *Ministry* | | | | Fax: +218 21 360 41 02 |
| | General Post and Telecommunication Company (GPTC) | • | • | • | | Fax: +218 21 360 14 30 |
| | El Madar Telephone | | | | • | Fax: +218 21 360 22 02 |

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Madagascar** | Ministère des télécommunications, des postes et de la communication | *Ministry* | | | | www.mtpc.gov.mg |
| | Office Malagasy d'Etudes et de Régulation des Télécommunications (OMERT) | *Regulator* | | | | www.omert.mg |
| | Telecom Malagasy (TELMA) | • | • | • | | www.telma.net |
| | Intercel Madagascar | | | | • | Fax: +261 30 23 808 05 |
| | Madacom | | | | • | www.madacom.com |
| | Orange Madagascar | | | | • | www.orange.mg |
| **Malawi** | Ministry of Information | *Ministry* | | | | www.sdnp.org.mw/min-information |
| | Malawi Communications Regulatory Authority (MACRA) | *Regulator* | | | | www.macra.org.mw |
| | Malawi Telecommunications Limited (MTL) | • | • | • | | www.mtlonline.net |
| | Celtel Malawi | | | | • | www.mw.celtel.com |
| | Telekom Networks Malawi | | | | • | www.telekommalawi.com |
| **Mali** | Ministère de la Communication et des Nouvelles Technologies de l'Information | *Ministry* | | | | Fax: +223 222 83 19 |
| | Comité de Régulation des Télécommunications (CRT) | *Regulator* | | | | Fax: +223 223 14 94 |
| | Société des Télécommunications du Mali (SOTELMA) | • | • | • | • | www.sotelma.ml |
| | Ikatel | | | | • | www.ikatel.net |
| | Malitel | | | | • | www.malitel.com |
| **Mauritania** | Ministère de l'Intérieur, des Postes et Télécommunications | *Ministry* | | | | www.setn.mr |
| | Autorité de Régulation | *Regulator* | | | | www.are.mr |
| | Société Mauritanienne des Télécommunications (Mauritel) | • | • | • | | www.mauritel.mr |
| | Mauritel Mobiles | | | | • | www.mauritelmobiles.mr |
| | Mattel | | | | • | www.mattel.mr |
| **Mauritius** | Ministry of Information Technology and Telecommunications | *Ministry* | | | | ncb.intnet.mu/mitt.htm |
| | Information and Communication Technologies Authority (ICTA) | *Regulator* | | | | www.icta.mu |
| | Mauritius Telecom | • | • | • | | www.mauritiustelecom.com |
| | Cellplus | | | | • | www.gocellplus.com |
| | Emtel | | | | • | www.emtel-ltd.com |
| **Mayotte** | Secrétariat à l'Industrie | *Ministry* | | | | |
| | France Télécom | • | • | • | | Fax: +262 40 42 18 |
| | SRR (Mayotte Télécom Mobile), | | | | • | |
| **Morocco** | Ministère de l'Industrie, du Commerce et des Télécommunications | *Ministry* | | | | www.mcinet.gov.ma |
| | Agence Nationale de Réglementation des Télécommunications (ANRT) | *Regulator* | | | | www.anrt.net.ma |
| | Itissalat Al Maghrib - Maroc Telecom | • | • | • | • | www.iam.net.ma |
| | Méditel | | | | • | www.meditel.ma |

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Mozambique** | Ministério dos Transportes e Comunicações | *Ministry* | | | | www.mtc.gov.mz |
| | Instituto Nacional das Comunicações de Moçambique (INCM) | *Regulator* | | | | www.incm.gov.mz |
| | Telecomunicações de Moçambique (TDM) | • | • | • | | www.tdm.mz |
| | Telecomunicações Móveis de Moçambique (TMM) | | | | • | www.mcel.co.mz |
| | Vodacom Mozambique | | | | • | www.vodacom.co.mz |
| **Namibia** | Ministry of Works, Transport and Communication | *Ministry* | | | | www.grnnet.gov.na/Nav_frames/Gov_launch.htm |
| | Namibian Communications Commission (NCC) | *Regulator* | | | | www.ncc.org.na |
| | Telecom Namibia | • | • | • | | www.telecom.na |
| | Mobile Telecommunications (MTC) | | | | • | www.mtc.com.na |
| **Niger** | Ministère de la Communication | *Ministry* | | | | Fax: +227 72 23 36 |
| | Direction de la Réglementation des Postes et Télécommunications (DRPT) | *Regulator* | | | | Email: drpt@intnet.ne |
| | Société Nigérienne des Télécommunications (SONITEL) | • | • | • | • | www.intnet.ne |
| | Celtel Niger | | | | • | Email: info@ne.celtel.com |
| **Nigeria** | Ministry of Communications | *Ministry* | | | | www.nigeria.gov.ng/ministries/communications.htm |
| | Nigerian Communications Commission | *Regulator* | | | | www.ncc.gov.ng |
| | Nigerian Telecommunications plc (NITEL) | • | • | • | • | Fax: +234 9 523 0091 |
| | Globacom | • | • | • | • | |
| | Private Telecom Operators (PTOs)[1] | • | | | | |
| | Econet Wireless Nigeria | | | | • | www.econet-nigeria.com |
| | MTN Nigeria | | | | • | www.mtnonline.com |
| **Réunion** | Secrétariat à l'Industrie | *Ministry* | | | | www.reunion.drire.gouv.fr |
| | France Télécom | • | • | • | | www.espacereunion.com/run/web/agence.php |
| | Orange Réunion | | | | • | www.orange.re |
| | Société Réunionnaise du Radiotéléphone (SRR) | | | | • | www.srr.fr |
| **Rwanda** | Ministère des infrastructures | *Ministry* | | | | Fax: +250 85755 |
| | Agence rwandaise de régulation des services d'utilité publique | *Regulator* | | | | Fax: +250 87063 |
| | Rwandatel | • | • | • | | www.rwandatel.rw |
| | MTN RwandaCell | | | | • | www.mtnrwandacell.co.rw |
| **S. Tomé & Principe** | Ministère des Travaux Publics, Infrastructures et Ressources Naturelles | *Ministry* | | | | Fax: +239 2 22 824 |
| | Companhia Santomense de Telecomunicações (CST) | • | • | • | • | www.cstome.net |

[1] In addition, a number of so-called Private Telecommunication Operators (PTOs) have been licensed to provide local fixed line service.

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Senegal** | Ministère de l'Information de la Coopération Panafricaine dans les Nouvelles Technologies et de la Communication | *Ministry* | | | | Fax: +221 821 45 04 |
| | Agence de régulation des télécommunications (ART) | *Regulator* | | | | www.art-telecom-senegal.org |
| | Société Nationale des Télécommunications du Sénégal (SONATEL) | • | • | • | • | www.sonatel.sn |
| | Sentel GSM | | | | • | www.sentel.sn |
| **Seychelles** | Ministry of Information Technology and Communication | *Ministry* | | | | www.virtualseychelles.sc/gover/mitc.htm |
| | Cable and Wireless (Seychelles) | • | • | • | • | www.cwseychelles.com |
| | Telecom Seychelles (Airtel) | • | • | • | • | www.airtel.sc |
| **Sierra Leone** | Ministry of Transport and Communication | *Ministry* | | | | Fax: +232 22 227 337 |
| | Sierra Leone Telecommunications Company (SierraTel) | • | • | • | | www.sierratel.sl |
| | Celtel Sierra Leone | | | | • | Fax: +232 22 221 150 |
| | Millicom Sierra Leone | | | | • | www.buzzsl.com |
| **Somalia** | Ministry of Posts and Telecommunications | *Ministry* | | | | Fax: +971 4 228 8456 |
| | Barakaat Globetelecompany | | | | • | |
| | Nationlink | | | | • | www.nationlinks.net |
| | Telsom Mobile Somalia | | | | • | www.telcom-somalia.com/telsom/home.html |
| **South Africa** | Ministry of Communications | *Ministry* | | | | www.gov.za |
| | Independent Communications Authority of South Africa (ICASA) | *Regulator* | | | | www.icasa.org.za |
| | Telkom | • | • | • | | www.telkom.co.za |
| | Cell C | | | | • | www.cellc.net |
| | Mobile Telephone Networks (MTN) | | | | • | www.mtn.co.za |
| | Vodacom | | | | • | www.vodacom.co.za |
| **Sudan** | Ministry of Information and Communications | *Ministry* | | | | Fax: +249 11 772 555 |
| | National Telecommunications Corporation (NTC) | *Regulator* | | | | www.ntc-sudan.org |
| | Sudan Telecommunications Company (Sudatel) | • | • | • | | www.sudatel.net |
| | MobiTel | | | | • | www.sdn-mobitel.com |
| **Swaziland** | Ministry of Tourism, Environment and Communications | *Ministry* | | | | www.gov.sz/home.asp?pid=422 |
| | Swaziland Posts and Telecommunications Corporation (SPTC) | • | • | • | | www.sptc.co.sz |
| | MTN Swaziland | | | | • | www.swazimtn.sz |

| COUNTRY | ORGANIZATION | 1 | 2 | 3 | 4 | WEBSITE |
|---|---|---|---|---|---|---|
| **Tanzania** | Ministry of Communications and Transport | *Ministry* | | | | www.moct.go.tz |
| | Tanzania Communications Regulatory Authority (TCRA) | *Regulator* | | | | www.tcc.go.tz |
| | Tanzania Telecommunications Company Limited (TTCL) | • | • | • | | Fax: +255 22 211 3232 |
| | Zanzibar Telecom (ZANTEL) | • | • | • | • | Fax: +255 24 223 4850 |
| | Celtel Tanzania | | | | • | www.celtel.co.tz |
| | MIC Tanzania (Mobitel) | | | | • | www.mobitel.co.tz |
| | Vodacom Tanzania | | | | • | www.vodacom.co.tz |
| **Togo** | Ministère de l'Equipement, des Mines, de l'Energie et des Postes et Télécommunications | *Ministry* | | | | Email: mmetpt@togotel.net.tg |
| | Autorité de Réglementation des Secteurs de Postes et de Télécommunications (ART&P) | *Regulator* | | | | www.artp.tg |
| | Société des Télécommunications du Togo (Togo Telecom) | • | • | • | | www.togotel.net.tg |
| | Togo Cellulaire | | | | • | www.togocel.tg |
| | Telecel Togo | | | | • | www.telecel.tg |
| **Tunisia** | Ministère des Technologies de la Communication et du Transport | *Ministry* | | | | www.infocom.tn |
| | Tunisie Telecom | • | • | • | • | www.tunisietelecom.tn |
| | Orascom Telecom | | | | • | www.orascomtunisie.com |
| **Uganda** | Ministry of Works, Housing and Communications | *Ministry* | | | | www.miniworks.go.ug |
| | Uganda Communications Commission (UCC) | *Regulator* | | | | www.ucc.co.ug |
| | Uganda Telecom | • | • | • | • | www.utl.co.ug |
| | MTN Uganda | • | • | • | • | www.mtn.co.ug |
| | Celtel Uganda | | | | • | www.celtel.co.ug |
| **Zambia** | Ministry of Communications and Transport | *Ministry* | | | | www.communication.gov.zm |
| | Communications Authority | *Regulator* | | | | www.caz.gov.zm |
| | Zambia Telecommunications Company Limited (Zamtel) | • | • | • | • | www.zamtel.zm |
| | Celtel Zambia | | | | • | Fax: +260 1 250 595 |
| | Telecel | | | | • | Fax: +260 2 761 100 |
| **Zimbabwe** | Ministry of Transport and Communications | *Ministry* | | | | Fax: +263 4 726 661 |
| | Postal and Telecommunications Regulatory Authority (POTRAZ) | *Regulator* | | | | www.potraz.gov.zw |
| | TelOne | • | • | • | | www.telone.co.zw |
| | Econet | | | | • | www.econet.co.zw |
| | NetOne | | | | • | www.netone.co.zw |
| | Telecel | | | | • | www.telecel.co.zw |