



**GUIDING MANUAL
FOR THE COLLECTION OF SUPPLY-SIDE DATA ON
TELECOMMUNICATIONS/ICT 2019**

CA (2019)

Communications Authority of Kenya

CA Centre

Waiyaki Way, Westlands, Nairobi-Kenya

All rights reserved. No part of this publication may be reproduced without prior consent from Communications Authority of Kenya. This publication contains extracts from the “*ITU Handbook for the Collection of Administrative Data on Telecommunications/ICT*” (2011), used with permission from the International Telecommunications Union.

INTRODUCTION

The Communications Authority of Kenya (CA) is the regulatory Authority for the ICT industry in Kenya with responsibilities in telecommunications, e-commerce, broadcasting and postal/courier services. CA is also responsible for managing the country's numbering and frequency spectrum resources, administering the Universal Service Fund (USF) as well as safeguarding the interests of users of ICT services.

The Authority has compiled most of the indicators and definitions contained in this manual based on the already existing publication by the International Telecommunication Union (ITU) titled "*ITU Handbook for the Collection of Administrative Data on Telecommunications/ICT*" (2011), available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx> (the "*ITU Handbook*"). The *ITU Handbook* contains over 80 internationally agreed telecommunication indicators for monitoring trends and developments in the ICT sector.

The *ITU Handbook* serves as a guide providing international statistical standards for collecting and analysing data with regard to the ICT sector. The indicators therein are revised from time to time by a team of statistical experts from ITU member states with an aim of ensuring they are harmonized and aligned to current developments in the ICT industry.

However, the Authority has independently modified some of the indicators and their respective definitions with an intention of meeting regional and local data needs.

The CA collects ICT sector data on a quarterly basis, annual and on *ad hoc* basis as per the information needs of users in the industry. The quarterly sector statistics reports it publishes rely on data provided by service providers in the communications sector as per the license conditions issued by the Authority.

The Authority is committed to enhancing the availability, quality, comparability, usability and relevance of these statistics, with a view to supporting evidence-based policy making and decision-making. This manual has been prepared to guide all data providers with an aim of promoting mutual understanding on the definitions of ICT indicators. The Authority's interpretation shall prevail where these definitions may result to multiple interpretations.

INDICATOR	DEFINITION
MOBILE CELLULAR SUBSCRIPTIONS	
Mobile Cellular Telephone Subscriptions (Prepaid/ Post-Paid)	<p><i>Mobile-cellular telephone subscriptions</i> refer to the number of subscriptions to a public mobile-telephone service that provide access to the Public Switched Telephone Network (PSTN) using cellular technology. The indicator includes (and is split into) the number of post-paid subscriptions and the number of active prepaid accounts. The indicator applies to all mobile-cellular subscriptions that offer communication services.</p> <p>Only active subscriptions should be included (those used at least once in the last three months and have generated revenue through making or receiving a call or carrying out a non-voice activity such as sending or receiving an SMS, accessing the Internet, Airtime top-up, transacting using mobile money and mobile banking).</p> <p>Activities that do not result to revenue generation such as balance enquiry, unanswered calls, and password resets, amongst other free services, do not qualify a customer account as active.</p>
Prepaid Subscriptions	<p><i>Prepaid Subscriptions</i> refers to the total number of mobile-cellular telephone subscriptions that use prepaid refills. These are subscriptions where, instead of paying an on-going monthly fee, users purchase blocks of usage time. Only active subscriptions should be included (those used at least once in the last three months for making or receiving a call or carrying out a non-voice activity such as sending or reading an SMS, accessing the Internet, mobile money and mobile banking).</p> <p>Activities that do not result to revenue generation such as balance enquiry, unanswered calls, and password resets, amongst other free services, do not qualify a customer account as active.</p>
Contract/Post-Paid Subscriptions	<p><i>Contract/Post-Paid Subscriptions</i> refers to the total number of mobile-cellular subscriptions where subscribers are billed after their use of mobile services, at the end of each month. The post-paid service is provided on the basis of a prior arrangement with a mobile- cellular operator. Typically, the subscriber’s contract specifies a limit or allowance of minutes, text messages etc. The subscriber will be billed at a flat rate for any usage equal to or less than that allowance and any usage above that limit incurs extra charges. Theoretically, a subscriber in this situation has no limit on use of mobile services and, as a consequence, unlimited credit.</p> <p>Only active subscriptions should be included (those used at least once in the last three months for making or receiving a call or carrying out a non-voice activity such as sending or reading an SMS, accessing the Internet, mobile money and mobile banking).</p> <p>Activities that do not result to revenue generation such as balance enquiry, unanswered calls, and password resets, amongst other free services, do not qualify a customer account as active.</p>

Machine-to-Machine (M2M) Mobile Subscriptions	<p>Machine to Machine mobile-network subscriptions (M2M subscriptions) refers to the number of mobile-cellular machine- to-machine subscriptions that are assigned for use in machines and devices (cars, smart meters, consumer electronics) for the exchange of data between networked devices, and are not part of a consumer subscription.</p> <p>For instance, SIM-cards in personal navigation devices, smart meters, trains and automobiles should be included. Mobile dongles and tablet subscriptions should be excluded. <i>Only active subscriptions are counted</i></p>
Mobile VoIP Subscriptions	<p>Mobile VoIP subscriptions refer to the number of voice-over-Internet protocol (VoIP) mobile subscriptions. It is also known as voice over mobile broadband (VoB).</p> <p>It excludes software-based VoIP applications (e.g. VoIP with Skype using computer-to-computer or computer-to-telephone). Those VoIP subscriptions that do not imply a recurrent monthly fee should only be counted if they have generated inbound or outbound traffic within the past three months.</p> <p>VoIP subscribers have their own telephone number and are able to call and be called by other telephone subscribers at any time. The key distinction between a VoIP service and a software-based VoIP application (such as Skype) is that the former includes a telephone number, is always connected, can both make and receive telephone calls to and from other telephone subscribers, and does not require the intermediation of a computer.</p>
Mobile Cellular Numbers Ported	<p>Mobile-cellular numbers ported refers to the number of mobile porting transactions that have been carried out during the reference period.</p> <p>This indicator refers to the ability of mobile-cellular subscribers to keep their telephone number if they switch service providers. In other words, it refers to the number of transactions whereby mobile-cellular numbers have been transferred from one mobile-cellular operator to another mobile-cellular operator for users who change mobile-cellular operators and have requested to keep the same telephone number. The data should refer to actual porting transactions that have been completed, and not pending transactions. The data refer to the number of mobile-cellular telephone numbers that have been ported over the year, and not the cumulative number of porting transactions. The indicator includes porting within the mobile-cellular network. It excludes fixed-telephone number porting, fixed-telephone line to mobile-cellular network number porting and mobile-cellular network to fixed-telephone network number porting</p>
MOBILE MONEY TRANSFER SERVICES	
Active Mobile Money Agents	<p>Active Mobile Money Agents refers to the total number of agent outlets that have facilitated at least one transaction in the past three months (90 days). A mobile money agent is defined as a registered account that can be used to facilitate mobile money services through an agent. An agent is defined as a person or business that is contracted to facilitate mobile transactions for users. This indicator refers to agents and not to the number of agent outlets.</p>

Active Mobile Money Subscriptions	<p><i>Active Mobile Money Subscriptions</i> refers to the total number of mobile money customer accounts that have used the service to make any transactions that involve the movement of value and generated revenue (such as to cash-in, cash-out, bill payments, airtime top-ups, etc.) at least once in the last three months. Only those accounts that were used to make transactions that involve the movement of value within 3 months before the reference period should be counted as active.</p> <p>Transactions that do not involve the movement of value, such as balance enquiry and password resets, amongst other free services, do not qualify a customer account as active.</p> <p>Subscribers who perform over the counter transactions but have not been registered should not be counted.</p> <p>Mobile insurance service and mobile banking accounts should not be counted as registered mobile money accounts, as they are different services,</p>
Value of Customer to Business Transfers (Ksh.)	<p><i>Value of Customer to Business Transfers (C2B)</i> refers to the amount of money in Kenya Shillings moved from a customer account to a business account to pay for goods and services using mobile money payment platforms such as Pay Bill, Buy Goods & Services.</p> <p>Excludes payments made by transferring money from one mobile account to another mobile account (P2P).</p>
Value of Business to Customer Transfers (Ksh.)	<p><i>Value of Business to Customer Transfers (B2C)</i> refers to the amount of money in Kenya Shillings moved from business account (Pay Bill, Buy Goods & Services-Till Numbers accounts) to a customer account (mobile money account).</p> <p>Excludes payments made by transferring money from one mobile account to another mobile account (P2P).</p>
Value of Business to Business Transfers (Ksh.)	<p><i>Value of Business-to-Business Transfers (B2B)</i> refers to the amount of money in Kenya Shillings moved from business account (Pay Bill, Buy Goods & Services-Till Numbers accounts) to another business account.</p> <p>Excludes payments made by transferring money from one mobile account to another mobile account (P2P).</p>
Value of Government to Citizen Transfers (Ksh.)	<p><i>Value of Government to Citizen Transfers (G2C)</i> refers to the amount of money in Kenya Shillings moved from government mobile account (Pay Bill, Buy Goods & Services -Till Numbers accounts) to Citizens mobile accounts.</p>
Value of Citizen to Government Transfers (Ksh.)	<p><i>Value of Citizen to Government Transfers (C2G)</i> refers to the amount of money in Kenya Shillings moved from Citizens mobile accounts to government mobile account (Pay Bill, Buy Goods & Services -Till Numbers accounts) to pay for government services e.g. eCitizen.</p>
Value of Person to Person Transfers (Ksh.)	<p><i>Value of Person-to-Person Transfers (P2P)</i> refers to the amount of money in Kenya Shillings moved from one-customer mobile accounts to other customer mobile accounts.</p>
Value of Mobile Money Deposits (Ksh.)	<p><i>Value of Mobile Money Deposits</i> refers to the amount of money in Kenya Shillings that is deposited to mobile accounts through mobile money agents. This excludes deposits made through mobile banking.</p>

FIXED NETWORK SUBSCRIPTIONS	
Prepaid Terrestrial Fixed Line Subscriptions	<i>Prepaid Terrestrial Fixed Line Subscriptions</i> refers to the active number of analogue fixed-telephone lines that are priced using pay as you go rates. Analogue fixed-telephone lines refer to the number of active lines connecting subscribers' terminal equipment to the PSTN and which have a dedicated port in the telephone-exchange equipment.
Contract/Post-Paid Terrestrial Fixed Line Subscriptions	<i>Contract/Post-Paid Terrestrial Fixed Line Subscriptions</i> refers to the active number of analogue fixed-telephone lines where subscribers are billed at the end of the month.
Fixed Telephone Subscriptions, Residential	<i>Fixed Telephone Subscriptions, Residential</i> refers to the total number of active fixed-telephone (fixed line and fixed wireless) subscriptions that are residential. A household is defined as consisting of one or more people, who may or may not be related to each other, who share accommodation and who make common provision for food. Active subscriptions include all post-paid subscriptions and those prepaid subscriptions that have registered an activity in the past three months.
Fixed Telephone Subscriptions, Commercial	<i>Fixed Telephone Subscriptions, Commercial</i> refers to the total number of active fixed-telephone (fixed line and fixed wireless) subscriptions that are residential. A household is defined as consisting of one or more people, who may or may not be related to each other, who share accommodation and who make common provision for food. Active subscriptions include all post-paid subscriptions and those prepaid subscriptions that have registered an activity in the past three months.
Prepaid Terrestrial Fixed Line Subscriptions	<i>Prepaid Terrestrial Fixed Wireless Subscriptions</i> refers to the active number of analogue fixed wireless -telephone lines that are priced using pay as you go rates. Active lines are those that have registered an activity in the past three months.
Contract/Post-Paid Terrestrial Fixed Line Subscriptions	<i>Contract/Post-Paid Terrestrial Fixed Wireless Subscriptions</i> refers to the active number of analogue fixed wireless -telephone lines where subscribers are billed at the end of the month.
Fixed VoIP Subscriptions	<i>Fixed VoIP subscriptions</i> refer to the number of voice-over-Internet protocol (VoIP) fixed-line subscriptions. It is also known as voice over broadband (VoB), and includes VoIP subscriptions through fixed wireless, DSL, cable, fibre optic and other fixed-broadband Internet platforms that provide fixed telephony using IP. It excludes software-based VoIP applications (e.g. VoIP with Skype using computer-to-computer or computer-to-telephone). Those VoIP subscriptions that do not imply a recurrent monthly fee should only be counted if they have generated inbound or outbound traffic within the past three months.
DATA/INTERNET SUBSCRIPTIONS, BY TECHNOLOGY	

Active Mobile data/internet	<i>Active mobile-broadband subscriptions</i> refer to the sum of standard and dedicated mobile data subscriptions to the public Internet. It covers actual subscribers, not potential subscribers, even though the latter may have broadband enabled-handsets. It means the total number of SIM cards that have accessed the internet in the last three months regardless of data speeds.
Fibre-to-the-home	<i>Fibre-to-the-home</i> refers to all Internet subscriptions using fibre-to-the-home. This should include subscriptions where fibre goes directly to the subscriber's premises. Fibre-to-the-cabinet and fibre-to-the-node are excluded.
Fibre-to-the-office	<i>Fibre-to-the-office</i> refers to all Internet subscriptions using fibre-to-the-office. This should include subscriptions where fibre goes directly to the subscriber's office (s). Fibre-to-the-cabinet and fibre-to-the-node are excluded.
DSL Internet (Dial-up, xDSL)	<i>DSL (Copper) Internet subscriptions</i> refer to the number of Internet subscriptions using digital subscriber line (DSL) services to access the Internet. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. It should exclude very high-speed digital subscriber line (VDSL) subscriptions if these are provided using fibre directly to the premises.
Cable modem	<i>Cable modem Internet subscriptions</i> refer to the number of Internet subscriptions using a cable modem service to access the Internet. A cable modem is a peripheral device used to connect to the Internet. It operates over coax cable TV lines and provides high-speed Internet access.
Fixed Wireless e.g. WiMax, WiFi	<i>Terrestrial fixed wireless subscriptions</i> refer to internet subscriptions using a fixed wireless network such as WiMax to access the internet.
Other Fixed Broadband Subscriptions	<i>Other Fixed Broadband Subscriptions</i> refers to Internet subscriptions using other fixed (wired)-broadband technologies to access the Internet (other than DSL, cable modem, and fibre). This includes technologies such as Ethernet LAN, and internet-over-power line communications. Ethernet LAN subscriptions refer to subscriptions using IEEE 802.3 technology. BPL subscriptions refer to subscriptions using broadband-over-power line services. Users of temporary broadband access (e.g. roaming between PWLAN hotspots), users of WiMAX and those with Internet access via mobile-cellular networks are excluded.
BROADBAND¹ SUBSCRIPTIONS, BY TECHNOLOGY	
Active Mobile-broadband subscriptions (SIM Cards)	<i>Active mobile-broadband subscriptions</i> refer to the sum of active handset-based and computer-based (USB/dongles) SIM Cards that allow access to the public Internet. It covers actual subscribers, not potential subscribers, even though the latter may have broadband-enabled handsets.

¹ Broadband refers to data/internet speeds equal to or greater than 256Kbps

Active Mobile-Broadband, 3G subscriptions	<p><i>Active 3G mobile-broadband subscriptions</i> refer to the sum of active handset-based and computer-based (USB/dongles) SIM Cards that have generated the highest broadband traffic through 3G technologies. It covers actual subscriptions, not potential subscribers, even though the latter may have broadband-enabled handsets.</p> <p>If a subscriber has accessed the internet through 2G, 3G and 4G, the technology where the subscriber has generated the highest traffic will be the one to be counted.</p>
Active Mobile-Broadband, 4G Subscriptions	<p><i>Active 4G mobile-broadband subscriptions</i> refers to the sum of active handset-based and computer-based (USB/dongles) SIM Cards that have generated the highest broadband traffic through 4G technology. It covers actual subscriptions, not potential subscribers, even though the latter may have broadband-enabled handsets.</p> <p>If a subscriber has accessed the internet through 2G, 3G and 4G, the technology where the subscriber has generated the highest traffic will be the one to be counted.</p>
Digital Subscriber Line (DSL) Broadband	<p><i>Digital Subscriber Line (DSL) broadband subscriptions</i> refers to the number of Internet subscriptions using digital subscriber line (DSL) services to access the Internet, at downstream speeds greater than or equal to 256 Kbit/s. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. It should exclude very high-speed digital subscriber line (VDSL) subscriptions if these are provided using fibre directly to the premises.</p>
Fibre to the Home Broadband	<p><i>Fibres to the home broadband subscriptions</i> refer to the number of Internet subscriptions using fibre-to-the-home at downstream speeds equal to, or greater than, 256 Kbit/s. This should include subscriptions where fibre goes directly to the subscriber's premises.</p> <p>Fibre-to-the-cabinet and fibre-to-the-node are excluded.</p>
Fibre to the Office Broadband	<p><i>Fibres to the office broadband subscriptions</i> refer to the number of Internet subscriptions using fibre-to-the-office at downstream speeds equal to, or greater than, 256 Kbit/s. This should include subscriptions where fibre goes directly to the subscriber's enterprise.</p> <p>Fibre-to-the-cabinet and fibre-to-the-node are excluded.</p>
Cable Modem Broadband	<p><i>Cable modem broadband subscriptions</i> refer to the number of Internet subscriptions using a cable modem service to access the Internet, at downstream speeds greater than, or equal to, 256 Kbit/s.</p> <p>Cable modem is a modem attached to a cable television network.</p>
Satellite Broadband	<p><i>Satellite broadband subscriptions</i> refer to the number of satellite Internet subscriptions with an advertised download speed of at least 256 Kbit/s. It refers to the retail subscription technology and not the backbone technology.</p>

Terrestrial Wireless Broadband Subscriptions	<i>Terrestrial wireless broadband subscriptions</i> refer to the number of terrestrial wireless Internet subscriptions with an advertised download speed of at least 256 Kbit/s. This includes fixed WiMAX and fixed wireless subscriptions. It excludes mobile-broadband subscriptions where users can access a service throughout the country wherever coverage is available.
Other (Wired) Broadband Subscriptions	<i>Other (Wired) Broadband Subscriptions</i> refers to Internet subscriptions using other fixed (wired)-broadband technologies to access the Internet (other than DSL, cable modem, and fibre), at downstream speeds equal to, or greater than, 256 Kbit/s. This includes technologies such as Ethernet LAN and broadband-over-power line (BPL) communications. Ethernet LAN subscriptions refer to subscriptions using IEEE 802.3 technology. BPL subscriptions refer to subscriptions using broadband-over-power line services. Users of temporary broadband access (e.g. roaming between PWLAN hotspots), users of WiMAX and those with Internet access via mobile-cellular networks are excluded.
DATA/INTERNET SUBSCRIPTIONS BY SPEEDS	
< 256 Kbps,	Refers to all fixed (wired)-broadband Internet subscriptions with advertised downstream speeds below 256 Kbit/s.
=> 256 Kbps and < 2 Mbps,	Refers to all fixed (wired)-broadband Internet subscriptions with advertised downstream speeds equal to, or than, 256 Kbit/s and less than 2 Mbit/s.
=> 2 Mbps and < 10 Mbps	Refers to all fixed (wired)-broadband Internet subscriptions with advertised downstream speeds equal to, or than, 2 Mbit/s and less than 10 Mbit/s.
=> 10 Mbps and < 30 Mbps	Refers to all fixed (wired)-broadband Internet subscriptions with advertised downstream speeds equal to, or than, 10 Mbit/s and less than 30 Mbit/s.
=> 30 Mbps and < 100 Mbps	Refers to all fixed (wired)-broadband Internet subscriptions with advertised downstream speeds equal to, or than, 30 Mbit/s and less than 100 Mbit/s.
=>100Mbps	Refers to all fixed (wired)-broadband Internet subscriptions with advertised downstream speeds equal to, or than, 100 Mbit/s.
FIXED NETWORK TRAFFIC	
Local Fixed Line -to-Fixed Line Telephone Traffic, in Minutes	<i>Local Fixed Line -to-Fixed Line Telephone Traffic</i> refers to effective (completed) fixed-telephone line voice traffic exchanged within the country. This indicator should be reported in the number of minutes, which should exclude minutes used for dial-up Internet access.
Local Fixed Wireless -to-Fixed Wireless Telephone Traffic, in Minutes	<i>Local Fixed Wireless -to-Fixed Wireless Telephone Traffic</i> refers to effective (completed) fixed-wireless telephone voice traffic exchanged within the country. This indicator should be reported in the number of minutes, which should exclude minutes used for dial-up Internet access.

Fixed to Mobile Telephone Traffic	<p><i>Fixed-to-mobile telephone traffic</i> refers to the total traffic from all fixed-telephone networks to all mobile-cellular networks within the country. The indicator should be reported as the number of minutes of traffic during the reference period.</p> <p>This indicator refers to the effective (completed) volume of traffic in minutes sent from fixed-telephone lines to mobile networks within the country. The treatment of public payphone-to-mobile network traffic should be clarified in a note if it is not covered here.</p>
Fixed (wired)-broadband Internet traffic (Exabyte's)	<p><i>Fixed (wired)-Broadband Internet Traffic</i> refers to traffic generated by fixed-broadband subscribers, measured at the end-user access point. It should be measured by adding up download and upload traffic. Wholesale traffic, walled garden traffic and IPTV and cable-TV traffic should be excluded.</p> <p>This indicator is important for ICT Development Index (IDI).</p>
International Outgoing Fixed-Telephone Traffic, in Minutes	<p><i>International Outgoing Fixed-Telephone Traffic</i> refers to effective (completed) fixed-telephone voice traffic originating in a given country to destinations outside that country. This should include traffic to mobile phones outside the country (fixed to mobile). The indicator should be reported in number of minutes of traffic. It excludes calls originating in other countries.</p> <p>This indicator may not reflect all outgoing international traffic, particularly if calls made using IP telephony are not included (see Methodological issues below). This Indicator may not reflect all incoming international traffic, particularly calls made using IP telephony that are re-routed to appear as local calls.</p> <p>Should exclude VoIP traffic.</p>
International Incoming Fixed-Telephone Traffic, in Minutes	<p><i>International Incoming Fixed-Telephone Traffic</i> refers to effective (completed) fixed-telephone voice traffic originating outside the country with a destination inside the country, irrespective of whether the call was from a fixed or mobile subscriber. It excludes minutes of calls terminating in other countries, but should exclude VoIP traffic.</p>
MOBILE NETWORK TRAFFIC	
Outgoing Mobile Traffic to Same Mobile Network (On-Net), in Minutes	<p><i>Outgoing Mobile Traffic to Same Mobile Network (On-Net)</i> refers to the number of minutes of calls made by mobile subscribers to the same mobile network (within the country). The indicator refers to the number of minutes originating on mobile networks and terminating on the same mobile network (on-net). It does not cover minutes of calls from mobile to fixed or mobile to other mobile networks.</p> <p>On-net traffic should always be counted one way since outgoing is equivalent to incoming</p>
Outgoing Mobile Calls to Same Mobile Network (On-Net)	<p><i>Outgoing Mobile Calls to Same Mobile Network (On-Net)</i> refers to the number of calls made by mobile subscribers to the same mobile network (within the country). The indicator refers to the number of phone calls originating on mobile networks and terminating on the same mobile network (on-net). It does not cover calls from mobile to fixed or mobile to other mobile networks.</p>

<p>Outgoing Mobile Traffic to Other Mobile Networks (Off Net), in Minutes</p>	<p><i>Outgoing Mobile Traffic to Other Mobile Networks (Off Net)</i> refers to the number of minutes of calls made by mobile subscribers to other mobile networks (within the country). The indicator refers to the number of minutes originating on mobile networks and terminating on different domestic mobile networks (off-net). It does not cover minutes of calls from mobile to fixed or mobile to the same mobile networks.</p>
<p>Outgoing Mobile Calls to Other Mobile Networks (Off Net)</p>	<p><i>Outgoing Mobile Calls to Other Mobile Networks (Off Net)</i> refers to the number of calls made by mobile subscribers to other mobile networks (within the country). The indicator refers to the number of phone calls originating on mobile networks and terminating on different domestic mobile networks (off-net). It does not cover calls from mobile to fixed or mobile to the same mobile networks</p>
<p>Outgoing Mobile Traffic to Fixed Networks, in Minutes</p>	<p><i>Outgoing Mobile Traffic to Fixed Networks</i> refers to the number of minutes of calls made from mobile-cellular networks to fixed-line telephone networks within the country. The indicator refers to the number of minutes originating on mobile networks and terminating on fixed-line telephone networks within the country.</p>
<p>Mobile broadband internet traffic (within the country)</p>	<p><i>Mobile-broadband Internet traffic (within the country)</i> refers to broadband traffic volumes originated within the country from 3G networks or other more advanced mobile networks, including 3G upgrades, evolutions or equivalent standards in terms of data transmission speeds. Download and upload traffic should be added up and reported together. Traffic should be measured at the end user access point. Wholesale and walled-garden traffic should be excluded. The traffic should be reported in Exabyte's (1 EB = 1000⁶bytes = 10¹⁸bytes). This data will also yield an indicator on average monthly use per mobile data subscription.</p>
<p>Mobile Voice-Over-Internet Protocol (VoIP) Traffic, in Minutes</p>	<p><i>Mobile VoIP traffic</i> refers to the number of minutes of traffic using managed mobile voice-over-Internet protocol (VoIP) telephony. A managed VoIP service is a publicly available telephone service provided using VoIP for call origination, where the operator controls the quality of service provided. This variable specifies total VoIP traffic (national and international). It should exclude traffic exchanged using software-based VoIP, where the calls originate using computers that do not have an assigned mobile number. This indicator refers to mobile traffic transmitted from mobile broadband subscriptions using a Voice-over-IP (VoIP) service. This is typically part of a bundled service and works over the user's broadband connection with the mobile equipment plugged into the router. The traffic terminates at another mobile subscriber, and is expressed in minutes. It excludes VoIP traffic over applications that require a computer. It measures telephone-to- telephone traffic, and not computer-to-telephone or telephone-to-computer traffic.</p>
<p>Local Mobile SMS Sent</p>	<p><i>Local Mobile SMS sent</i> refers to the total number of mobile short-message service (SMS) messages sent locally. This should exclude messages sent from computers to mobile handsets or to other computers. Also excludes OTT messages e.g WhatsApp.</p>

	<p>This indicator refers to text messages composed on, and sent from, a mobile handset to another mobile handset. It covers all SMS messages sent from mobile handsets to other mobile handsets (peer-to-peer), within the country. It excludes SMS received, value-added SMS, International SMS, premium SMS and SMS sent from web-based services.</p>
Mobile On-net SMS	<p><i>Mobile On-net SMS</i> refers to the local number of messages sent by mobile subscribers to other subscribers within the same mobile network (within the country). The indicator refers to the number of messages originating on a mobile network and terminating on the same mobile network.</p> <p>Only outgoing messages should be considered since in this case outgoing is equivalent to incoming</p>
Mobile Off net SMS	<p><i>Mobile Off net SMS</i> refers to the local number of messages sent by mobile subscribers to other subscribers in a different mobile network (within the country). The indicator refers to the number of messages originating on a mobile network and terminating on a different mobile network.</p> <p>Only outgoing messages should be considered.</p>
INTERNATIONAL TRAFFIC	
Outgoing International Mobile Traffic, in Minutes	<p><i>Outgoing International Mobile Traffic</i> refers to the number of mobile minutes originating in Kenya to any destinations outside the country. This indicator refers to minutes of calls originating on local mobile-cellular networks with a destination abroad, irrespective of whether the call is to a fixed or mobile subscriber. It excludes minutes of calls originating from other countries and roaming minutes.</p>
Incoming International Mobile Traffic, Minutes	<p><i>Incoming International Mobile Traffic</i> refers to the number of incoming minutes (fixed and mobile) received by mobile networks originating in another country. This indicator refers to minutes of calls terminating on mobile-cellular networks with an origination abroad, irrespective of whether the call is from a fixed or mobile subscriber. This should exclude roaming traffic. Any limitations with the indicator (e.g. if calls made using IP telephony appear as local calls) should be specified in a note.</p>
International Incoming Mobile SMS	<p><i>International Incoming SMS</i> refers to the total number of traditional mobile short-message service (SMS) messages received from international destinations. This should exclude messages sent from computers to mobile handsets or to other computers. Also excludes OTT messages e.g WhatsApp This indicator refers to traditional SMS received from other countries. It covers SMS composed on a mobile handset and sent to a mobile handset abroad. It excludes SMS received from users within the country, value-added SMS, premium SMS and SMS sent from web-based services.</p>

International Outgoing Mobile SMS	<p><i>International Outgoing SMS</i> refers to the total number of traditional mobile short-message service (SMS) messages sent to international destinations. This should exclude messages sent from computers to mobile handsets or to other computers. Also excludes OTT messages e.g. WhatsApp.</p> <p>This indicator refers to traditional SMS sent to other countries. It covers SMS composed on a mobile handset and sent to a mobile handset abroad. It excludes SMS received from users within the country, value-added SMS, premium SMS and SMS sent from web-based services.</p>
INTERNATIONAL ROAMING TRAFFIC	
Roaming by home subscribers abroad (outbound roaming), voice-minutes	<p><i>Roaming by home subscribers abroad (outbound roaming)</i> refers to the total call minutes made and received by own customers in foreign networks (outbound roaming), i.e. retail international roaming minutes from own network subscribers roaming on foreign networks abroad. The indicator excludes minutes from users who are not subscribers to domestic mobile networks and are temporarily roaming on domestic mobile networks. It does not refer to international traffic terminating on mobile networks in the country, nor to foreign mobile subscribers generating roaming traffic within the country.</p>
Roaming by foreign subscribers (inbound roaming), voice-minutes	<p><i>Roaming by foreign subscribers (inbound roaming)</i> refers to the total call minutes of visiting (foreign) subscribers making and receiving calls within a country (inbound roaming). It does not refer to international traffic originating on mobile networks in the country, nor to domestic mobile subscribers generating roaming traffic abroad.</p>
Roaming by home subscribers abroad (outbound roaming), SMS	<p><i>Roaming by home subscribers abroad (outbound roaming)</i> refers to the total messages (SMS) sent and received by own customers in foreign networks (outbound roaming). The indicator excludes messages from users who are not subscribers to domestic mobile networks and are temporarily roaming on domestic mobile networks. It does not refer to international messages</p>
Roaming by foreign subscribers (inbound roaming), SMS	<p><i>Roaming by foreign subscribers on home networks (inbound roaming)</i> refers to the total messages (SMS) sent and received by foreign customers in home networks (inbound roaming). The indicator excludes messages from users who are subscribers to domestic mobile networks and are temporarily roaming on domestic mobile networks. It does not refer to international messages</p>
Roaming by home subscribers abroad (outbound roaming), Data (MB)	<p><i>Roaming by home subscribers abroad (outbound roaming), Data (MB)</i> refers to the total data volume in MB consumed by own customers roaming on foreign networks</p>
Roaming by foreign subscribers (inbound roaming), Data (MB)	<p><i>Roaming by foreign subscribers (inbound roaming), Data (MB)</i> refers to the total data volume in MB consumed by foreign customers roaming on home networks</p>

Outgoing Out-bound Voice Roaming Minutes, within EAC Region	<i>Outgoing Out-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes made by own customers while in other East African countries networks.
Outgoing Out-bound SMS, within EAC Region	<i>Outgoing Out-bound Roaming SMS, within EAC Region</i> refers to the total SMS sent by own customers while in other East African countries networks.
Incoming Out-bound Voice Roaming Minutes, within EAC Region	<i>Incoming Out-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes received by own customers while in other East African countries networks.
Incoming Out-bound SMS, within EAC Region	<i>Incoming Out-bound Roaming SMS, within EAC Region</i> refers to the total SMS received by own customers while in other East African countries networks.
Outgoing In-bound Roaming Voice Minutes, within EAC Region	<i>Outgoing In-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes made by foreign customers roaming on local networks.
Outgoing In-bound Roaming SMS, within EAC Region	<i>Outgoing In-bound Roaming SMS, within EAC Region</i> refers to the total SMS sent by foreign customers roaming on local networks.
Incoming In-bound Roaming Voice Minutes, within EAC Region	<i>Incoming In-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes received by foreign customers roaming on local networks.
Incoming In-bound Roaming SMS, within EAC Region	<i>Incoming In-bound Roaming SMS, within EAC Region</i> refers to the total SMS received by foreign customers roaming on local networks.
Outgoing Out-bound Voice Roaming Minutes, within EAC Region	<i>Outgoing Out-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes made by own customers while in other East African countries networks.
Outgoing Out-bound SMS, within EAC Region	<i>Outgoing Out-bound Roaming SMS, within EAC Region</i> refers to the total SMS sent by own customers while in other East African countries networks.
Incoming Out-bound Voice Roaming Minutes, within EAC Region	<i>Incoming Out-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes received by own customers while in other East African countries networks.
Incoming Out-bound SMS, within EAC Region	<i>Incoming Out-bound Roaming SMS, within EAC Region</i> refers to the total SMS received by own customers while in other East African countries networks.

Outgoing In-bound Roaming Voice Minutes, within EAC Region	<i>Outgoing In-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes made by foreign customers roaming on local networks.
Outgoing In-bound Roaming SMS, within EAC Region	<i>Outgoing In-bound Roaming SMS, within EAC Region</i> refers to the total SMS sent by foreign customers roaming on local networks.
Incoming In-bound Roaming Voice Minutes, within EAC Region	<i>Incoming In-bound Roaming Voice Minutes, within EAC Region</i> refers to the total call minutes received by foreign customers roaming on local networks.
Incoming In-bound Roaming SMS, within EAC Region	<i>Incoming In-bound Roaming SMS, within EAC Region</i> refers to the total SMS received by foreign customers roaming on local networks.
Outgoing Out-bound Roaming Voice Minutes, Other Countries	<i>Outgoing Out-bound Roaming Voice Minutes, within Other Countries</i> refers to the total call minutes made by own customers while in other East African countries networks.
Outgoing Out-bound Roaming SMS, within EAC Region Other Countries	<i>Outgoing Out-bound Roaming SMS, within Other Countries</i> refers to the total SMS sent by own customers while in other East African countries networks.
Incoming Out-bound Roaming Voice Minutes, Other Countries	<i>Incoming Out-bound Roaming Voice Minutes, within Other Countries</i> refers to the total call minutes received by own customers while in other East African countries networks.
Incoming Out-bound Roaming SMS, Other Countries	<i>Incoming Out-bound Roaming SMS, within Other Countries</i> refers to the total SMS received by own customers while in other East African countries networks.
Outgoing In-bound Roaming Voice Minutes, Other Countries	<i>Outgoing In-bound Roaming Voice Minutes, within Other Countries</i> refers to the total call minutes made by foreign customers roaming on local networks.
Outgoing In-bound Roaming SMS, Other Countries	<i>Outgoing In-bound Roaming SMS, within Other Countries</i> refers to the total SMS sent by foreign customers roaming on local networks.
Incoming In-bound Roaming Voice Minutes, Other Countries	<i>Incoming In-bound Roaming Voice Minutes, within Other Countries</i> refers to the total call minutes received by foreign customers roaming on local networks.
Incoming In-bound Roaming SMS, Other Countries	<i>Incoming In-bound Roaming SMS, within Other Countries</i> refers to the total SMS received by foreign customers roaming on local networks.
ICT INFRASTRUCTURE COVERAGE	

<p>Land Covered By 2G Mobile Cellular Network</p>	<p><i>Percentage of the Land Area Covered by 2G Mobile-Cellular Network</i> refers to the total 2G mobile-cellular coverage of the land area in per cent. This is calculated by dividing the land area covered by a 2G mobile-cellular signal by the total land area and multiplying by 100</p> <p>This indicator does not measure the percentage of the population covered by a mobile-cellular signal, or the percentage of the population subscribing to a mobile-cellular service. Coverage should refer to 2G mobile-cellular technologies.</p>
<p>Percentage of Population Covered By 2G Mobile Cellular Network</p>	<p><i>Percentage of the Population Covered by 2G Mobile-Cellular Network</i> refers to the percentage of inhabitants within range of a 2G mobile-cellular signal, irrespective of whether or not they are subscribers or users. This is calculated by dividing the number of inhabitants within range of a 2G mobile-cellular signal by the total population and multiplying by 100.</p> <p>This indicator refers to proportion of the population that lives within range of a 2G mobile-cellular network signal, regardless of whether they actually subscribe to the service or use it. The indicator is not the same as the mobile subscription density or penetration.</p>
<p>Percentage of Population Covered By 3G Mobile Cellular Network</p>	<p><i>Percentage of the Population Covered by 3G Mobile Network</i> refers to the percentage of inhabitants that are within range of at least a 3G mobile-cellular signal, irrespective of whether or not they are subscribers. This is calculated by dividing the number of inhabitants that are covered by at least a 3G mobile-cellular signal by the total population and multiplying by 100</p> <p>This indicator captures mobile-broadband coverage, and refers to the proportion of the population that lives within range of at least a 3G mobile-cellular network signal, regardless of whether they actually subscribe to the service or use it. It includes the percentage of the population covered by mobile-cellular technologies such as WCDMA (UMTS) and associated technologies such as HSPA, CDMA2000 and related technologies such as EV-DO, mobile WiMAX 802.16e and LTE.</p> <p>It excludes the percentage of the population covered by a 2G mobile-cellular network, and by GPRS and EDGE technologies.</p>
<p>Percentage of Land Covered By 3G Mobile Cellular Network</p>	<p><i>Percentage of Land Covered by 3G Mobile Network</i> refers to the total 3G mobile-cellular coverage of the land area in per cent. This is calculated by dividing the land area covered by a 3G mobile-cellular signal by the total land area and multiplying by 100</p> <p>This indicator does not measure the percentage of the population covered by a 3G mobile-cellular signal, nor the percentage of the population subscribing to a mobile-cellular service. It includes the percentage of land covered by mobile-cellular technologies such as WCDMA (UMTS) and associated technologies such as HSPA, CDMA2000 and related technologies such as EV-DO, mobile WiMAX 802.16e.</p> <p>It excludes the percentage of land covered by a 2G mobile-cellular network, and by GPRS and EDGE technologies.</p>

<p>Percentage of Population Covered By 4G Mobile Cellular Network</p>	<p><i>Percentage of the Population Covered by 4G Mobile Network</i> refers to the percentage of inhabitants that are within range of 4G mobile-cellular signal, irrespective of whether or not they are subscribers. This is calculated by dividing the number of inhabitants that are covered by 4G mobile-cellular signal by the total population and multiplying by 100.</p> <p>This indicator captures mobile-broadband coverage, and refers to the proportion of the population that lives within range of 4G mobile-cellular network signal, regardless of whether they actually subscribe to the service or use it. It excludes the percentage of the population covered by mobile-cellular technologies such as WCDMA (UMTS) and associated technologies such as HSPA, CDMA2000 and related technologies such as EV-DO, mobile WiMAX 802.16e, 2G mobile-cellular network, and by GPRS and EDGE technologies.</p>
<p>Percentage of Land Covered By At Least a 4G Mobile Cellular Network</p>	<p><i>Percentage of Land Covered by 4G Mobile Network</i> refers to the total 4G mobile-cellular coverage of the land area in per cent. This is calculated by dividing the land area covered by a 4G mobile-cellular signal by the total land area and multiplying by 100</p> <p>This indicator does not measure the percentage of the population covered by a 4G mobile-cellular signal, nor the percentage of the population subscribing to a mobile-cellular service. It excludes the percentage of land covered by mobile-cellular technologies such as WCDMA (UMTS) and associated technologies such as HSPA, CDMA2000 and related technologies such as EV-DO, mobile WiMAX 802.16e, 2G mobile-cellular network, and by GPRS and EDGE technologies.</p>
<p>International Equip/Leased/ Available Internet Bandwidth (Mbps)</p>	<p><i>International Equip/Leased/ Available Internet Bandwidth</i> refers to the total capacity leased by the international gateway providers during the reference period. If capacity is asymmetric (i.e., more incoming than outgoing), the incoming capacity should be provided.</p> <p>Data to be provided by international gateway providers (undersea cable providers and satellite gate way providers) only.</p>
<p>International Internet Bandwidth Sold in Kenya (Mbps)</p>	<p><i>International Internet Bandwidth Sold in Kenya</i> refers to the total internet capacity sold by international gateway providers in Kenya and utilized within the country during the reference period.</p> <p>Data to be provided by international gateway providers (undersea cable providers and satellite gate way providers) only.</p>
<p>International Internet Bandwidth Sold Outside Kenya (Mbps)</p>	<p><i>International Internet Bandwidth Sold Outside Kenya</i> refers to the total internet capacity sold by international gateway providers in Kenya to other countries and utilized outside the country during the reference period.</p> <p>Data to be provided by international gateway providers (undersea cable providers and satellite gate way providers) only.</p>
<p>QUALITY OF SERVICE</p>	

<p>Unsuccessful Call Ratio</p>	<p>An unsuccessful call is a call attempt to a valid (and supposed not busy) number, properly dialled following dial tone, where no ringing tone, or answer, is recognized on the access line of the calling user within 30 seconds from the instant when the address information required for setting up a call is sent from the user equipment.</p> <p>Unsuccessful telephony call ratio is defined as the ratio of unsuccessful calls to the total number of call attempts in a specified time period.</p> <p>The following statistics shall be provided:</p> <p>The percentage of unsuccessful telephony “on-net” (inside the same network) calls (including Mobile to Mobile calls), together with the number of observations made and the accuracy limits for 95 % confidence calculated from this number.</p>
<p>Dropped Call Ratio</p>	<p>The dropped call telephony dropped call ratio is the probability that a successful call attempt is ended during a standard duration of the communication by a cause other than the intentional termination by the calling or called party.</p> <p>Dropped telephony call ratio is defined as the ratio of unintentionally terminated telephony calls to the total of successful call attempts in a specified time period.</p> <p>The following statistics shall be provided:</p> <p>The percentage of dropped telephony “on-net” (inside the same network) calls (including Mobile to Mobile calls), together with the number of observations made and the accuracy limits for 95 % confidence calculated from this number.</p>
<p>Complaints per 100 mobile-cellular subscriptions</p>	<p><i>Complaints per 100 mobile-cellular subscriptions</i> refers to the number of complaints related to the provision of mobile cellular services received in a given year, divided by the total number of active mobile-cellular subscriptions, multiplied by 100. Statistics should include all complaints related to the provision of mobile-cellular services (including voice, SMS and data) received in the given year, regardless of the validity and subject of the complaint. Where the same customer on the same subject, each instance of the complaint make more than one complaint should be counted separately. If a customer complains again before an existing complaint has been closed, then this should not be treated as a separate complaint, but as a continuation of the first unclosed complaint.</p>
<p>Complaints per 100 mobile-broadband subscriptions</p>	<p><i>Complaints per 100 mobile-broadband subscriptions</i> refers to the number of complaints related to the provision of mobile-broadband services received in a given year, divided by the total number of active mobile-broadband subscriptions, multiplied by 100. Statistics should include all complaints related to the provision of mobile-broadband services received in the given year, regardless of the validity and subject of the complaint. Where the same customer on the same subject, each instance of the complaint makes more than one complaint and should be counted separately. If a customer complains again before an existing complaint has been closed, then this should not be treated as a separate complaint, but as a continuation of the first unclosed complaint.</p>

Complaints per 100 fixed (wired)-broadband subscriptions	<p><i>Complaints per 100 fixed (wired)-broadband subscriptions</i> refers to the number of complaints related to the provision of fixed (wired)-broadband services received in a given year, divided by the total number of fixed (wired)-broadband subscriptions, multiplied by 100. Statistics should include all complaints related to the provision of fixed (wired)- broadband services received in the given year, regardless of the validity and subject of the complaint. Where the same customer on the same subject, each instance of the complaint makes more than one complaint and should be counted separately. If a customer complains again before an existing complaint has been closed, then this should not be treated as a separate complaint, but as a continuation of the first unclosed complaint.</p>
Service activation time for fixed (wired)-broadband service (in days)	<p>Service activation time for fixed (wired)-broadband service refers to the time from the date of application to the date of service activation. The average service activation time for all new applications received within the given year should be Provided.</p>
REVENUE AND INVESTMENT	
Revenue from Telecommunication Services	<p><i>Revenue from all telecommunication services</i> refers to revenue earned from retail fixed-telephone, mobile-cellular, Internet and data services offered by telecommunication operators (both network and virtual) providing services within the country during the financial year under review.</p> <p>It includes retail revenues earned from the transmission of TV signals, but excludes revenues from TV content creation. Revenue (turnover) consists of retail telecommunication service earnings (therefore excluding wholesale revenues, such as interconnection revenues) during the financial year under review. Revenues from device sales and rents, VAT and excise taxes should be excluded. Wholesale revenues, such as mobile termination rates, should be excluded.</p>
Annual Investment in Telecommunication	<p><i>Annual investment in telecommunication services</i> refers to the investment during the financial year made by entities providing telecommunication networks and/or services (including fixed, mobile and Internet services, as well as the transmission of TV signals) for acquiring or upgrading fixed assets (usually referred to as CAPEX), less disinvestment owing to disposals of fixed assets. Fixed assets should include tangible assets, such as buildings and networks, and non-tangible assets, such as computer software and intellectual property. The definition closely corresponds to the concept of gross fixed capital formation, as defined in the System of National Accounts 2008.</p> <p>The indicator is a measure of investment made by entities providing telecommunication networks and/or services in the country, and includes expenditure on initial installations and additions to existing installations where the usage is expected to be over an extended period of time. It excludes expenditure on fees for operating licences and the use of radio spectrum.</p>

Annual Foreign Investment in Telecommunications	<p><i>Annual foreign investment in telecommunications</i> refers to investment during the financial year in telecommunication services (including fixed, mobile and Internet services) coming from foreign sources, also referred to as foreign direct investment (FDI). This indicator refers to the investment made by foreign-owned entities in the country. It refers to an entity in one country (“direct investor”) acquiring a direct investment in a telecommunication service provider in another country.</p> <p>The shareholding should be at least ten per cent. Direct investment is measured for the initial transaction as well as subsequent transactions.</p>
EMPLOYMENT	
Technical Permanent Male, Local	<i>Technical Permanent Male, Local</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are technical, male and Kenyan citizen
Technical Permanent Female, Local	<i>Technical Permanent Female, Local</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are technical, female and Kenyan citizen
Technical Permanent Male, Expatriate	<i>Technical Permanent Male, Expatriate</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are technical, male and not Kenyan citizen
Technical Permanent Female, Expatriate	<i>Technical Permanent Female, Expatriate</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are technical, female and not Kenyan citizen
Technical Contract Male, Local	<i>Technical Contract Male, Local</i> refers to the number of staff working in the telecommunications sector on a contract basis that are technical, male and Kenyan citizen
Technical Contract Female, Local	<i>Technical Contract Female, Local</i> refers to the number of staff working in the telecommunications sector on a contract basis that are technical, female and Kenyan citizen
Technical Contract Male, Expatriate	<i>Technical Contract Male, Expatriate</i> refers to the number of staff working in the telecommunications sector on a contract basis that are technical, male and not Kenyan citizen
Technical Contract Female, Expatriate	<i>Technical Contract Female, Expatriate</i> refers to the number of staff working in the telecommunications sector on a contract basis that are technical, female and not Kenyan citizen
Technical Temporary Male, Local	<i>Technical Temporary Male, Local</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are technical, male and Kenyan citizen

Technical Temporary Female, Local	<i>Technical Temporary Female, Local</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are technical, female and Kenyan citizen
Technical Temporary Male, Expatriate	<i>Technical Temporary Male, Expatriate</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are technical, male and not Kenyan citizen
Technical Temporary Female, Expatriate	<i>Technical Temporary Female, Expatriate</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are technical, female and not Kenyan citizen
Non-Technical Permanent Male, Local	<i>Non-Technical Permanent Male, Local</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are not technical, male and Kenyan citizen
Non-Technical Permanent Female, Local	<i>Non-Technical Permanent Female, Local</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are not technical, female and Kenyan citizen
Non-Technical Permanent Male, Expatriate	<i>Non-Technical Permanent Male, Expatriate</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are not technical, male and not Kenyan citizen
Non-Technical Permanent Female, Expatriate	<i>Non-Technical Permanent Female, Expatriate</i> refers to the number of staff working in the telecommunications sector on a permanent basis that are not technical, female and not Kenyan citizen
Non-Technical Contract Male, Local	<i>Non-Technical Contract Male, Local</i> refers to the number of staff working in the telecommunications sector on a contract basis that are not technical, male and Kenyan citizen
Non-Technical Contract Female, Local	<i>Non-Technical Contract Female, Local</i> refers to the number of staff working in the telecommunications sector on a contract basis that are not technical, female and Kenyan citizen
Non-Technical Contract Male, Expatriate	<i>Non-Technical Contract Male, Expatriate</i> refers to the number of staff working in the telecommunications sector on a contract basis that are not technical, male and not Kenyan citizen
Non-Technical Contract Female, Expatriate	<i>Technical Contract Female, Expatriate</i> refers to the number of staff working in the telecommunications sector on a contract basis that are technical, female and not Kenyan citizen
Non-Technical Temporary Male, Local	<i>Non-Technical Temporary Male, Local</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are not technical, male and Kenyan citizen

Non-Technical Temporary Female, Local	<i>Non-Technical Temporary Female, Local</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are not technical, female and Kenyan citizen
Non-Technical Temporary Male, Expatriate	<i>Non-Technical Temporary Male, Expatriate</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are not technical, male and not Kenyan citizen
Non-Technical Temporary Female, Expatriate	<i>Non-Technical Temporary Female, Expatriate</i> refers to the number of staff working in the telecommunications sector on a part-time basis that are not technical, female and not Kenyan citizen

ANNEX 1: TERMS AND ABBREVIATIONS

2G mobile-cellular network	Second generation of mobile communications technology. It differs from its predecessor technologies in that it is a digital cellular technology. It includes standards such as Global system for mobile communications (GSM) and CDMA One.
2.5G mobile-cellular network	Used to refer to General packet radio service (GPRS) mobile communications technology. GPRS is a packet-data technology that allows GSM operators to offer wireless data services at throughput rates of up to 115 Kbit/s.
3G mobile-cellular network	Third generation of mobile communications technology, a group of mobile technologies that have been approved by ITU as IMT-2000. These technologies allow voice, data and video communications. Currently, five standards have been specified as IMT-2000, based on various combinations of mobile technologies: CDMA direct spread (WCDMA), CDMA multicarrier (CDMA2000), CDMA time division (TD-CDMA), TDMA single carrier and FDMA/TDMA and OFDMA TDD WMAN (IEEE 802.16).
Active subscription	A subscription where the system was used and generated revenue at least once during the last three months. Activities that do not result to revenue generation such as balance enquiry and password resets, amongst other free services, do not qualify a customer account as active.
ADSL	Asymmetric digital subscriber line: A modem technology that converts twisted-pair telephone lines into access paths for multimedia and high-speed data communications. The bit rates transmitted in both directions are different.
Bandwidth	A bit-rate measure of available or consumed data communication resources, expressed in bits/second or multiples thereof (kilobits/s, megabits/s, etc.).
Bit	The basic information unit in binary systems.
BPL	Broadband over power line: A technology that allows Internet data to be transmitted over utility power lines. To use BPL, the subscriber needs to use a special broadband modem (phone, cable or satellite) that plugs into an electrical outlet.
Broadband access	Access to the public Internet (through a TCP/IP connection) at downstream speeds greater than, or equal to, 256 Kbit/s.
Byte	8 bits.
Cable modem	A cable modem is a modulator-demodulator device at subscriber locations intended for use in conveying data communications on a cable-television system.
CATV	Cable-television service: Multichannel programming delivered over a coaxial cable for viewing on television sets.
CDMA	Code division multiple access: A digital cellular technology that does not assign a specific frequency to each user; instead, every channel uses the full available spectrum.
CDMA2000	CDMA multicarrier; see 3G mobile-cellular network.

Coaxial cable	A type of wire that consists of a centre wire surrounded by insulation and then a grounded shield of braided wire. The shield minimizes electrical and radio-frequency interference. Coaxial cabling is the primary type of cabling used by the cable-television industry, and is also widely used for computer networks, such as Ethernet.
Leased capacity	Bandwidth put into service but not all of which is used; some is held in reserve for restoration or redundancy.
Dark fiber	Unlit transmission capacity, not in use, in a fibre-optic system.
DEL	Direct exchange line: Equivalent to an analogue fixed-telephone line.
Dial-up Internet	Type of narrowband Internet access that uses a modem to connect to the Internet through a fixed-telephone line; it requires the modem to dial a phone number when Internet access is needed.
DTT	Digital terrestrial television: The technological evolution from analogue to digital terrestrial television, providing capability for significantly more channels.
DTH satellite	Direct-to-home satellite services: Satellite television broadcast services received via a satellite dish.

DSL	Digital subscriber line: A technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines.
EDGE	Enhanced data rates for GSM evolution: A faster version of GSM wireless service enabling data to be delivered at faster rates.
Ethernet (LAN)	Family of computer networking technologies for local area networks (LANs) commercially introduced in 1980. Standardized in IEEE 802.3, Ethernet has largely replaced competing wired LAN technologies.
EV-DO	Evolution data optimized: A telecommunication standard for the wireless transmission of data through radio signals, typically for broadband Internet access; it is part of the CDMA2000 family of standards.
FDI	Foreign direct investment.
Fibre Optic	A flexible, transparent fibre made of very pure glass not much wider than a human hair that acts as a "light pipe" to transmit light between the two ends of the fibre.
FTE	Full-time equivalent: The unit representing the conversion of part-time work to full-time. The preferred method is to convert part-time workers on the basis of hours worked, using an 8-hour workday as full-time.
FTTH	Fibre-to-the-home: Fibre goes directly to the subscriber's premises.
FTTB	Fibre-to-the-building: Fibre connection that terminates no more than 2 metres from an external wall of the subscriber's building, but does not reach the premises.
GB	Gigabyte (one thousand million bytes).
Gbit/s	Gigabits per second (1 000 Mbit/s).
GPRS	General packet radio service mobile communications technology: A packet-data technology that allows GSM operators to offer wireless data services at throughput rates of up to 115 Kbit/s.

GSM	Global system for mobile communications: A standard set to describe technologies for second- generation (or "2G") digital cellular networks.
HHI	Herfindhal-Hirschmann index: An index of market concentration, which consists of the sum of the squares of the market share of the competitors in the relevant market. The index can take the values ranging from 0 to 10 000. A value of 10 000 corresponds to a market entirely controlled by a single firm, and the value decreases as concentration reduces.
HSPA	High speed packet access: An amalgamation of two mobile-telephony protocols that extend and improve the performance of existing WCDMA protocols.
HTTP	Hypertext transfer protocol: The underlying protocol used by the World Wide Web.
ICT	Information and communication technology.
IMT-2000	International Mobile Telecommunications 2000: ITU Recommendations and Radio Regulations for 3G technologies. See also 3G mobile-cellular networks.
Incumbent	A telecommunication entity first established as a regulated monopoly with special and exclusive rights granted by government or a public operator, which enjoyed a <i>de facto</i> monopoly before liberalization.

International calls	Calls originating in a country and terminating abroad. They also include calls from fixed geographic numbers to foreign fixed and mobile numbers.
IPTV	Internet-protocol television: Multimedia services such as television/video/audio/text/graphics/data delivered over an IP-based network managed to support the required level of quality of service, quality of experience, security, interactivity and reliability; it does not include video accessed over the public Internet, for example, by streaming. IPTV services are also generally aimed at viewing over a television set rather than a personal computer.
IP	Internet protocol: The most commonly-used set of rules for dispatching data across a large computer network.
IP telephony	Service that enables the exchange of voice information, primarily in the form of packets, using IP protocols.
ISDN	Integrated services digital network: A network that provides digital connections between user- network interfaces.
ISP	Internet service provider.
ITU	International Telecommunication Union.
KB	Kilobyte.
kbit/s	Kilobits per second (1 kilobit per second = one thousand bits per second).
LAN	Local area network: A wired or wireless computer network that interconnects computers in a limited area such as an office building.
Leased line	A leased line connects two locations for private voice and/or data telecommunication service, either through a dedicated physical cable or a virtual connection.

Lit capacity	Turned on bandwidth in a fibre-optic system – capacity that is ready for use.
LTE	Long-term evolution: A 4G wireless-broadband technology developed by the Third Generation Partnership Project (3GPP), an industry trade group.
Managed VoIP	A publicly available telephone service provided using voice over Internet protocol (VoIP) for call origination whereby the operator controls the quality of service provided.
Mbit/s (or Mbps)	Megabits per second (1 000 Kbit/s).
MMDS	Microwave Multipoint Distribution Systems.
MMS	Multimedia messaging service. An MMS may convey text, graphic and audio content.
Modem	Short for modulator-demodulator, a modem is a device that enables a computer to transmit data over, for example, telephone or cable lines.
MVNO	Mobile virtual network operator, an organization which provides mobile cellular services to its customers, but does not have allocation of spectrum.
Naked DSL	DSL service that does not require a telephone-line rental.
Narrowband Internet access	Access to the public Internet (through a TCP/IP connection) at downstream speeds below 256 Kbit/s.
National calls	All national public voice-telephony calls, including local calls, dial-up calls to the Internet and long- distance calls.
NGN	Next-generation network: A packet-based network able to provide telecommunication services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.

Number portability	Mechanism that allows a user to retain the same directory number, regardless of the service provider subscribed to. Number portability may be limited to specific geographical areas.
Off-net	Refers to a call originating in one mobile network and terminating in a different mobile network.
Off-peak rate	Refers to the discount tariffs offered in some tariff plans for voice and SMS services during certain hours of weekdays. Only off-peak periods before midnight is considered.
On-net	Refers to a call originating and terminating in the same mobile network.
Operator	Service provider in the telecommunication/ICT sector, including fixed- and mobile telephone operators and Internet service providers.
PBX	Private branch exchange: A telephone switching entity-forming part of a private telephone installation that has access to the PSTN.
Postpaid subscription	A subscription where the subscriber is billed after their use of services, typically at the end of each month.
Prepaid subscription	A subscription where, instead of paying an ongoing monthly fee, users purchase blocks of usage time in advance of using the service.

PSTN	Public switched telephone network: A telecommunication network established to provide telephone services for public subscribers, not restricted to a specific user group.
Public Internet exchange	Also referred as Internet exchange point (IXP), public Internet exchange is a physical infrastructure where ISPs connect to exchange traffic directly between their networks.
Roaming	The ability of users to access wireless telecommunication services from a serving network different from the network they have subscribed.
Satellite broadband	Broadband Internet access via a satellite connection.
SIM card	Subscriber Identity module card: An integrated circuit that securely stores the service-subscriber key (IMSI) used to identify a subscriber on mobile-telephony devices (such as mobile phones and computers).
SMATV	Satellite master antenna television.
SMP	Significant market power: A single or joint dominant position in a given market.
SMS	Short message service: A text messaging service component of phone, web or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between fixed-line or mobile-phone devices.
UMTS	Universal mobile telecommunications system: See 3G mobile-cellular network.
Unlit capacity	Dark fibre - capacity not in use in a fibre-optic system.

USB modem	Universal serial bus modem: A modem that can be connected to a computer through a universal serial bus, an external bus standard that supports high data transfer rates.
Used capacity	Bandwidth in a fibre-optic system, which is available to carry traffic.
VDSL	Very high-speed digital subscriber line: A modem technology that enables twisted-pair telephone lines to be used as access paths for multimedia and high-speed data communications. VDSL enables higher bit rates than ADSL in short local loops. These bit rates may or may not be different in both directions.
VoB	Voice over broadband: VoB is the same as managed VoIP.
VoIP	Voice over Internet protocol: refers to managed VoIP and is the same as IP telephony.
WCDMA (or W-CDMA)	Wideband code division multiple access: See 3G mobile-cellular network.
Wi-Fi	Wireless fidelity: A wireless local area network based on the IEEE standard 802.11.
WiMAX	Worldwide interoperability for microwave access: A family of telecommunication protocols that provide fixed and mobile Internet access based on IEEE standard 802.16.
WLAN	Wireless local area network.

WLL	Wireless local loop: The use of a wireless communications link as the "last-mile/first-mile" connection between the subscriber and the telephone exchange.
WSIS	World Summit on the Information Society.
WTIM	World Telecommunication/ICT Indicators meeting.
xDSL	Any of the various types of digital subscriber line technologies.