NATIONAL
COMMUNICATIONS
AUTHORITY

COMMUNICATIONS INDUSTRY REPORT 2023

Communication For Development

ABOUT THE REPORT

The Communications Industry Report (CIR) highlights key developments in the communications industry of Ghana for the year 2023 and further gives information on a five-year trend analysis from 2019 to 2023.

The scope of this report focuses on Mobile Network Operators (MNOs), Fixed Network Operators, Broadband Wireless Access (BWA) Providers, Tower Infrastructure Companies, Television, Radio Broadcasting and other services regulated by the National Communications Authority (NCA).

The report provides critical statistical data for policy makers, telecom analysts, consumers, academia, investors and other stakeholders to support decision-making. It combines concise year-on-year analysis of the trends in the industry with substantial use of tables, graphs and figures for easy understanding. The report is the product of data received from the various authorisation and license holders and other relevant stakeholders in the communications industry including ITU.

The publication of the Communications Industry Report (CIR) is consistent with the National Communications Authority's mandate under Section 26 (2)(a) of the 2008, Electronic Communications Act 775.

About NCA

The National Communications Authority, (NCA), was established by an Act of Parliament, Act 524 in December 1996, which was repealed and replaced by the National Communications Authority Act, 2008 (Act 769). The Authority is the statutory body mandated to license and regulate electronic communication activities and services in the country.

Vision

A world-class communications Regulator that facilitates innovative, reliable and sustainable communication solutions to meet stakeholders' expectations.

Mission

Regulate the communications industry in a forward-looking and transparent manner that promotes fair and sustainable competition, stimulates innovation, encourages investment, protects stakeholders' interests and facilitates universal access to quality communications services for national development.

Tag Line/Slogan – Communications for Development

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Executive Summary

This is the 2023 Annual Communications Industry Report produced by the National Communications Authority of Ghana ("NCA/the Authority"). The Authority recognizes that access to a comprehensive and timely set of ICT/Telecom indicators is vital for the proper regulation of the communications sector. The intention is to use these indicators to benchmark values and inform sector policy decision-making. The data used to compile this report was collected over 12 months ending 31st December 2023.

The data was collected from secondary sources (Licensees and Authorisation Hoilders) as well as through existing administrative data collected by the Authority from relevant stakeholders.

According to the 2023 statistics, mobile voice subscriptions stood at 33.38 million, a reduction from 40.05 million subscriptions in 2022. The penetration rate decreased from 126.05% in 2022 to 102.94% in 2023. Prepaid subscriptions were 32.94 million, representing 98.67% of the total subscriptions while postpaid subscriptions amounted to 0.44 million representing 1.33% of the total mobile subscriptions. Outgoing International Voice traffic reduced from 319.14 million minutes in 2022 to 270.79 million minutes in 2023.

At the end of 2023, MTN's Mobile Data subscriptions represented 80.47% of total Mobile Data Subscriptions. Vodafone ended the year with 13.21% of market share while AT's market share stood at 6.31%. Total Mobile Data Traffic at the end of 2023 was 1.85 billion gigabytes, a 34.82% increase from the previous year's figure of 1.37 billion gigabyte. SMS counts increased by 28.82% from 2.72 billion counts in 2022 to 3.50 billion counts in the year 2023. Average industry tariff for both on-net and off-net voice tariffs was GH 0.14 at the end of 2023.

Fixed voice recorded 314,460 subscriptions in 2023, this represents a 3.50% decline from the 330,016 recorded in 2022. Vodafone's subscriptions constituted 99.27% of total fixed voice subscriptions. MTN and AT subscriptions represented 0.44% and 0.29% market share respectively. Fixed data subscriptions increased from 102,952 in 2022 to 116,860 in 2023. Vodafone subscriptions constituted 68.86% of total fixed data subscriptions, with MTN and AT having 30.85% and 0.30% respectively. Fixed Broadband subscriptions increased from 212,750 in 2020 to 223,278 in 2023. MYN has 64.93% of total fixed broadband subscriptions while Vodafone has 35.07% market share

As at the end of the year 2023, Telesol was the only BWA Operator in the market with a total of 1,431 subscriptions

There were 747 authorised FM stations in Ghana as of the end of 2023. A total of 550 FM stations were in operation whilst 197 stations were not in operation. Out of the total authorized FM stations, 526(73.49%) were Commercial FM stations, 137 (18.34%) were Community FM stations, 31(4.15%) were classified as Public FM station with 25 (3.35%) and 5 (0.67%) being Campus FM and Public (Foreign) FM stations respectively. A total of 175 TV stations were authorised to operate in the country as at the end of 2023, out of which 137 were operational and 38 not operational

The total number of towers owned and managed by the Tower Companies is 4,602 towers, a 13.33% decrease from the 5,310 towers recorded in 2022. The total capacity of submarine cable landing operators in Ghana as at the end of 2023 was 3,796 Gbps an increase of 9.14% from 3,478 Gbps in 2022.

Chapter One

MOBILE CELLULAR SERVICES

1.0 Introduction

This chapter presents an analysis of services provided by the Mobile Network Operators. At the end of 2023, there were three (3) network service providers, namely AT (formerly AirtelTigo), MTN and Vodafone, as compared to four (4) Mobile Network Service providers in 2022. The Chapter further presents a five-year trend analysis on the subscriptions for mobile voice and data, volume of traffic, Short Messaging Service (SMS), Default Tariffs and Mobile Number Portability.

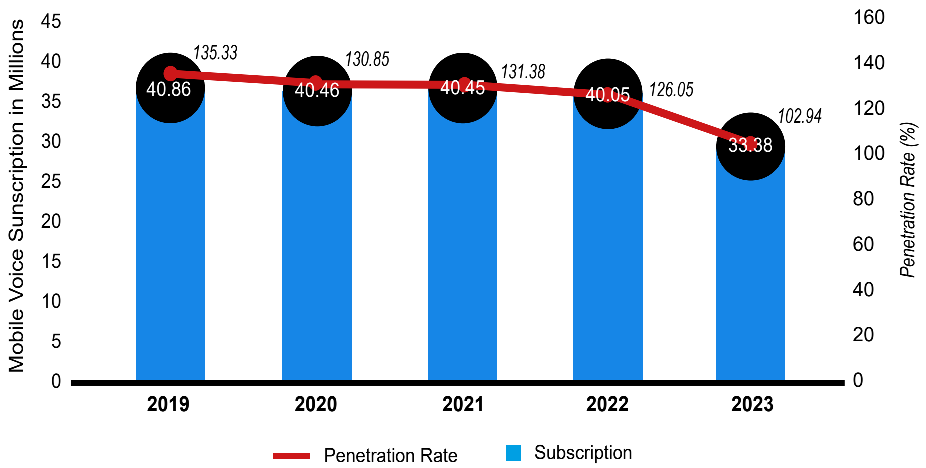
1.1 Mobile Voice Subscriptions and Penetration[1]

Mobile voice subscriptions decreased significantly in the last five years from 40.86 million recorded in 2019 to 33.38 million in 2023, representing a decline in subscriptions by a Compound Annual Growth Rate (CAGR) of negative 4.92percent. The reduction in subscriptions may be partly attributed to consumer behaviour, the SIM Card registration exercise, and Glo Mobile's exit from the telecommunications market.

Mobile voice subscriptions stood at 33.38 million in 2023, a reduction from 40.05 million subscriptions in 2022. This represents a 16.63 percent decline in subscriptions.

The penetration rate also decreased from 135.33 in 2019 to 102.94 percent in 2023.

Figure 1: Mobile Voice Subscriptions and Penetration Rate



Source: NCA, Mobile Network Operators, 2023

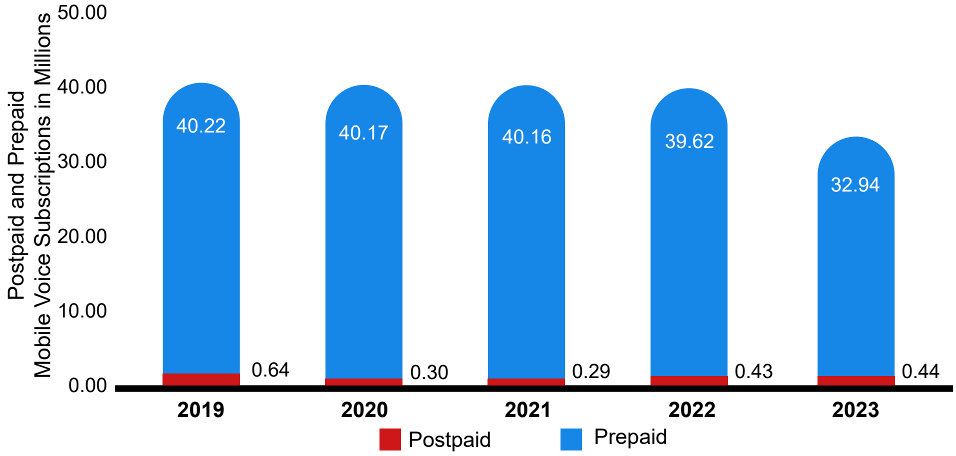
1.2 Prepaid and Postpaid Mobile Voice Subscriptions

Prepaid subscriptions declined from 40.22 million in 2019 to 32.94 million in 2023 whilst Postpaid recorded a decrease in susbcriptions from 0.64 in 2019 to 0.30 in 2021. In 2022 and 2023, Postpaid subcriptions increased from 0.43 million to 0.44 million subscriptions.

In 2023, 32.94 million mobile voice subscriptions were prepaid, representing 98.67 percent of the total mobile voice subscriptions, while postpaid mobile voice subscriptions amounted to 0.44 million, representing 1.33 percent of the total mobile voice subscriptions.

1. Population of Ghana was based on the 2021 Population and Housing Census conducted by Ghana Statistical Service (GSS). The Population was 30,792,608. This was used for the calculation of the penetration rate. The increase in penetration rate, even though there was a decline in subscriptions, is due to the estimated population of 2020 (30,922,666) being higher than the population for 2021 as reported by the Ghana Statistical Service in the 2021 Population and Housing Census (30,792,608).

Figure 2: Distribution of Prepaid and Postpaid Mobile Voice Subscriptions

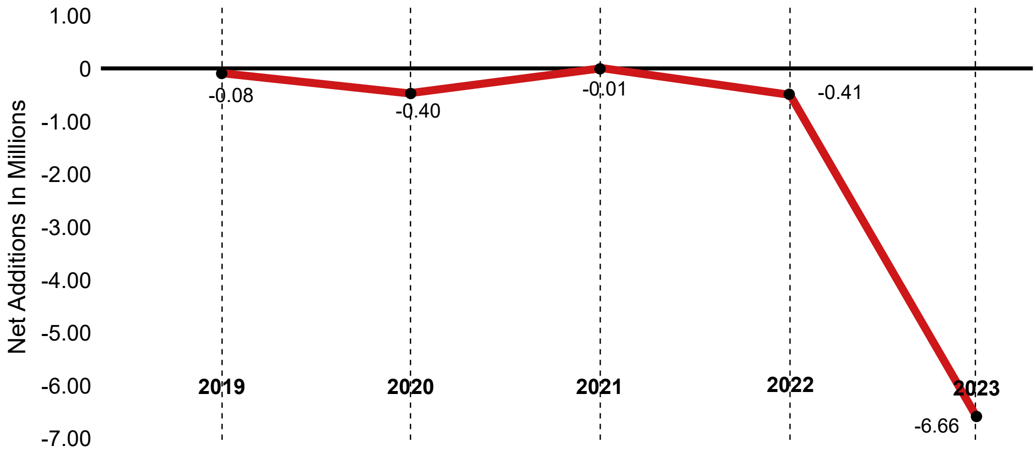


Source: NCA, Mobile Network Operators, 2023

1.3 Net Additions on Mobile Voice Subscriptions

Mobile voice subscriptions recorded a net loss of 7,472,617 from 40,857,077 subscriptions in 2019 to 33,384,460 in 2023.

Figure 3: Net Additions on Mobile Voice Subscriptions



Source: NCA, Mobile Network Operators, 2023

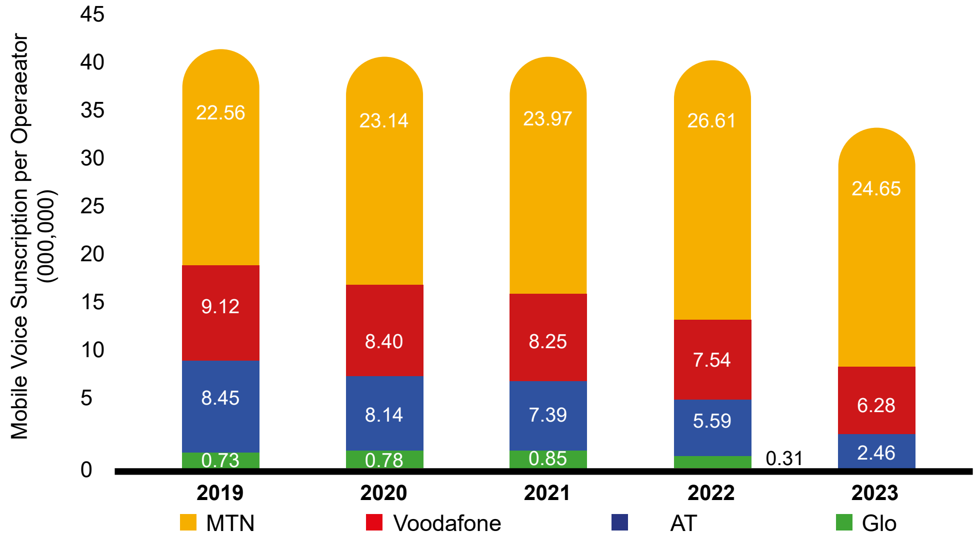
1.4 Mobile Voice Subscriptions per Operator

MTN recorded 24.65 million subscriptions at the end of 2023, representing a decrease of 1,961,263 subscriptions from 26.61 million subscriptions in the previous year. Over the five years, MTN mobile voice subscriptions grew from 22.56 million in 2019 to 24.65 million in the year under review, representing a CAGR of 2.25 percent.

Vodafone had 6.28 million subscriptions in 2023 from 7.54 million subscriptions recorded in 2022, representing a decline in subscriptions by 1,261,985. Vodafone recorded a Compound Annual Growth Rate (CAGR) of negative 8.93 percent with 9.12 million subscriptions in 2019 and 6.28 million subscriptions in 2023.

AT at the end of 2023 had 2.46 million subscriptions representing a decrease of over 3 million subscriptions from 5.59 million in 2022. The five year period saw AT's subscriptions declining from 8.45 million in 2019 to 2.46 million in 2023, representing a negative 26.58 CAGR.

Figure 4: Mobile Voice Subscriptions per Operator

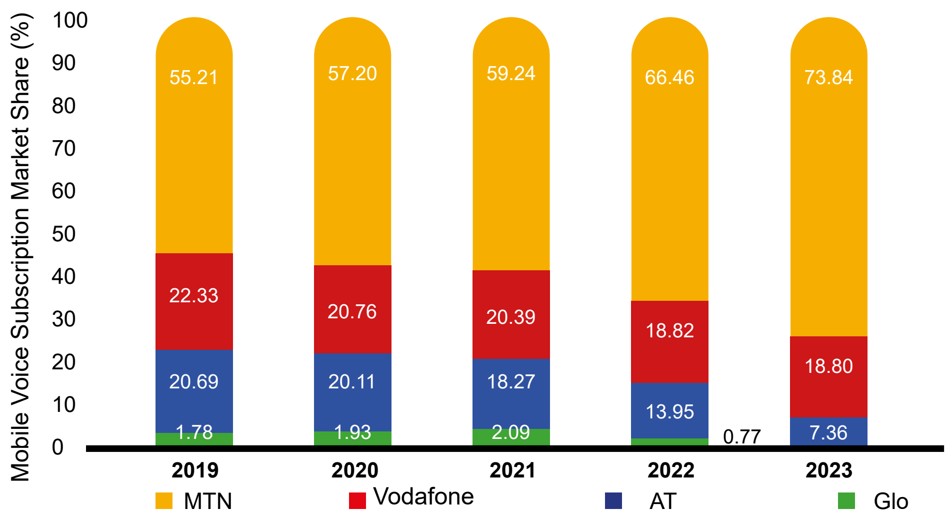


Source: NCA, Mobile Network Operators, 2023

1.5 Market Share (%) per Operator for Mobile Voice Subscriptions

At the end of 2023, MTN voice subscriptions represented 73.84 percent of total Mobile Voice Subscriptions as compared to 66.46 percent in 2022. Vodafone voice subscriptions ended the year with 18.80 percent from 18.82 percent market share in 2022. AT voice subscriptions market share stood at 7.36 percent in 2023 as compared to 13.95 percent in the previous year.

Figure 5: Share of Mobile Voice Subscriptions per Operator (%)



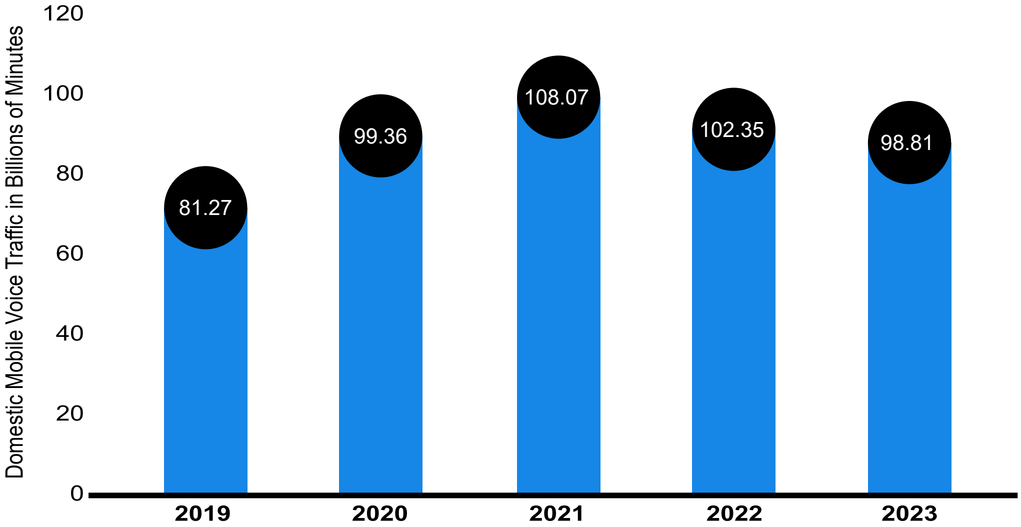
Source: NCA, Mobile Network Operators, 2023

1.6 Total Domestic Mobile Voice Traffic

Year-on–year total domestic mobile voice traffic declined by 3.46 percent from 102.35 billion minutes in 2022 to 98.81 billion minutes in 2023. This was parallel to the decrease in subscriptions from 40.05 million in 2022 to 33.38 million in 2023.

Domestic mobile traffic experienced a Compound Annual Growth Rate (CAGR) of 5.01 percent from 81.27 billion minutes to 98.81 percent in 2023. The volume of traffic increased from 81.27 billion minutes in 2019 to 108.07 billion minutes in 2021 and decreased to 98.81 billion minutes in 2023.

Figure 6: Total Volume of Domestic Voice Traffic in minutes



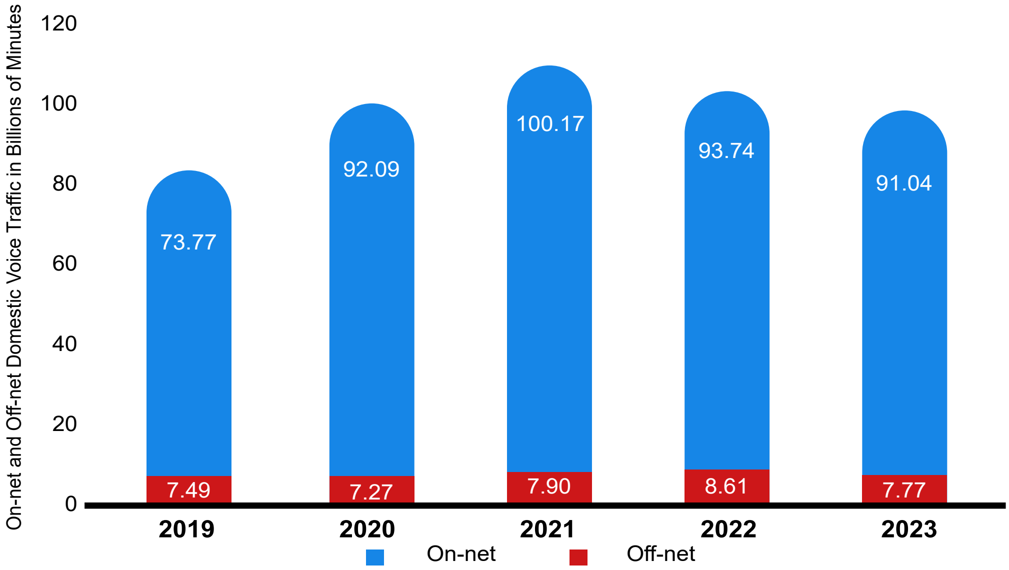
Source: NCA, Mobile Network Operators, 2023

1.7 Domestic Off-net and On-net Mobile Voice Traffic

During the period under review, off net mobile voice traffic decreased by 9.75 percent from 8.61 billion minutes in 2022 to 7.77 billion minutes. Off net mobile voice traffic represents 7.86 percent of the total volume of domestic mobile voice traffic in 2023. Over the five years, off net mobile voice traffic grew from 7.49 billion minutes in 2019 to 7.77 billion minutes in 2023 with a Compound Annual Growth Rate (CAGR) of 0.92 percent.

On net domestic mobile voice traffic decreased from 93.74 billion minutes in 2022 to 91.04 billion minutes in 2023, representing a decline in growth by 2.89 percent. On net domestic Voice traffic represents 92.14 percent of the total domestic traffic generated in 2023. From 2019 to 2023, on net mobile voice traffic grew by a Compound Annual Growth Rate of 5.40 percent from 73.77 billion minutes to 91.04 billion minutes.

Figure 7: On-net and Off-net Domestic Traffic



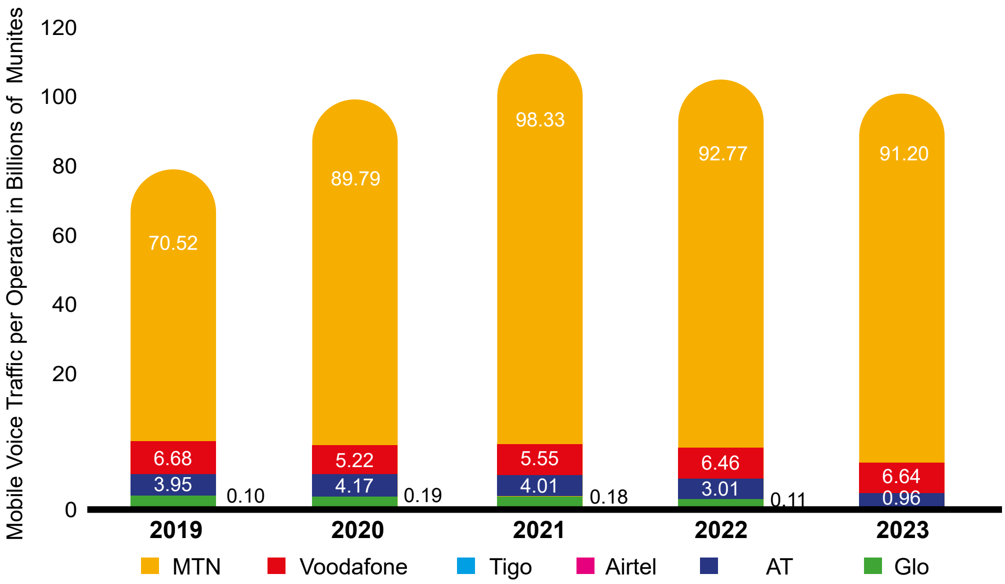
Source: NCA, Mobile Network Operators, 2023

1.8 Domestic Mobile Voice Traffic per Operator (Domestic)

MTN generated 92.30 percent of total mobile voice traffic with 91.20 billion minutes in 2023. This indicates a 1.69 percent decrease in MTN's mobile voice traffic from 92.77 billion minutes. Vodafone generated 6.64 billion minutes of mobile voice traffic, an increase from 6.46 billion minutes recorded in 2022, representing 6.72 percent of the total mobile voice traffic. Over the five year period, Vodafone's mobile voice traffic droped marginally from 6.68 billion minutes in 2019 to 6.64 billion minutes in 2023, with a CAGR of negative 0.15 percent.

AT generated 0.96 billion minutes of traffic in 2023, representing 0.98 percent of total voice traffic as compared to 3.01 billion minutes in 2022. This indicates a negative growth of 67.93 percent year-on-year. The CAGR for the five-year period was negative 29.72 percent.

Figure 8: Domestic Mobile Voice Traffic per Operator

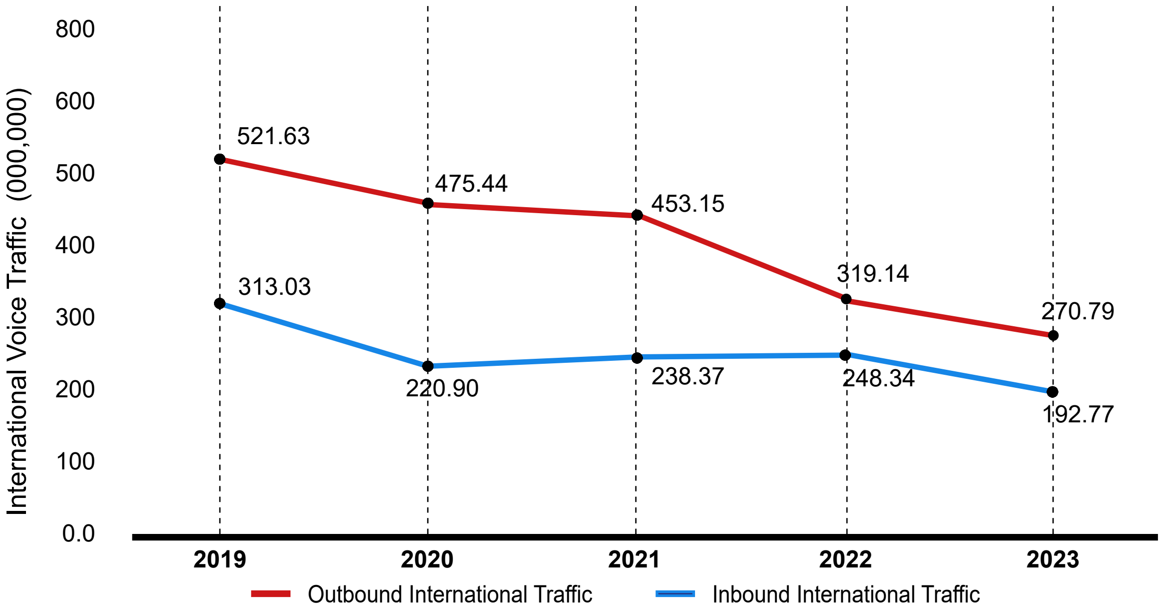


Source: NCA, Mobile Network Operators, 2023

1.9 International Mobile Voice Traffic

Outgoing International Mobile Voice Traffic for the year 2023 was 270.79 million minutes. This is consistent with the continuous decrease in outgoing international voice traffic over the past five years. It reduced from 319.14 million minutes in 2022 to 270.79 million minutes in 2023. Outgoing International Mobile Voice traffic declined by a Compound Annual Growth Rate (CAGR) of 15.15 percent from 521.63 million minutes in 2019 to 270.79 million minutes in 2023
Incoming International Mobile Voice traffic experienced a decline from 313.03 million minutes in 2019 to 192.77 million minutes in 2023, representing a CAGR of negative 11.41 percent over the five-year period. However, there was a steady growth from 220.90 million minutes in 2020 to 248.34 million minutes in 2022.

Figure 9: Distribution of International Voice Traffic

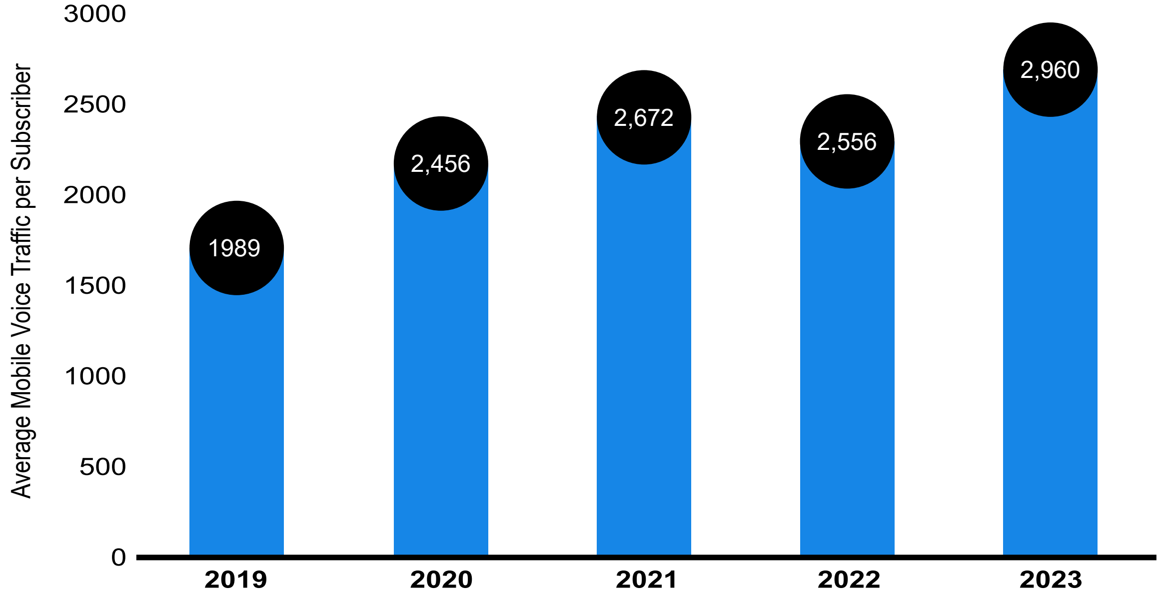


Source: NCA, Mobile Network Operators, 2023

1.10 Yearly Average Domestic Mobile Voice Traffic per Subscription

The average volume of domestic voice traffic generated per subscription increased from 2,556 minutes in 2022 to 2,960 minutes in 2023, representing a 15.80 percent year on year increase. Over the five years, the average domestic voice traffic per subscription rose from 1,989 minutes in 2019 to 2,960 in 2023 with a Compound Annual Growth Rate (CAGR) of 10.45 percent. It rose from 1,989 minutes in 2019 to 2,672 minutes in 2021. Average domestic voice traffic per subscription for the year increased to 2,960 minutes from 2,556 minutes in 2022.

Figure 10: Average Voice Traffic per Subscription



Source: NCA, Mobile Network Operators, 2023

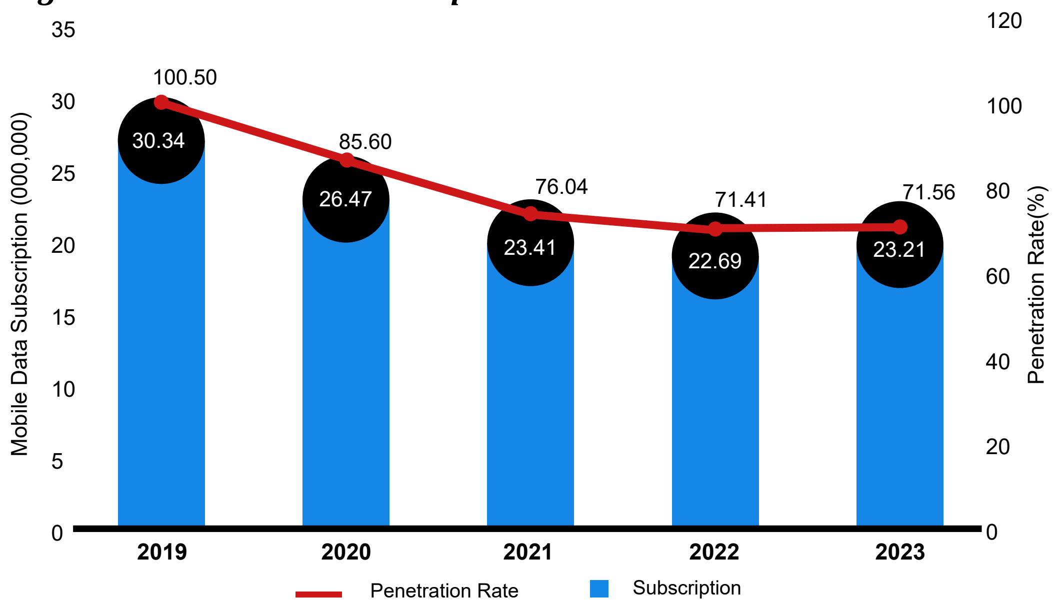
1.11 Mobile Data Subscriptions[2] and Penetration Rate (%)

At the end of 2023, the total mobile data subscriptions stood at 23.21 million from 22.69 million in 2022, representing 2.30 growth rate.

Mobile data subscriptions recorded a continuous decline from 2019 to 2022 but increased insignificantly in 2023. Compound Annual Growth Rate (CAGR) for the five year period was negative 6.48 percent, from 30.34 million in 2019 to 23.21 million in 2023.

The penetration rate increased by 0.51 percent from 71.41 percent in 2022 to 71.56 percent in 2023. Mobile penetration also declined from 100.50 percent in 2019 to 71.56 percent in 2023.

Figure 11: Mobile Data Subscriptions and Penetration Rate



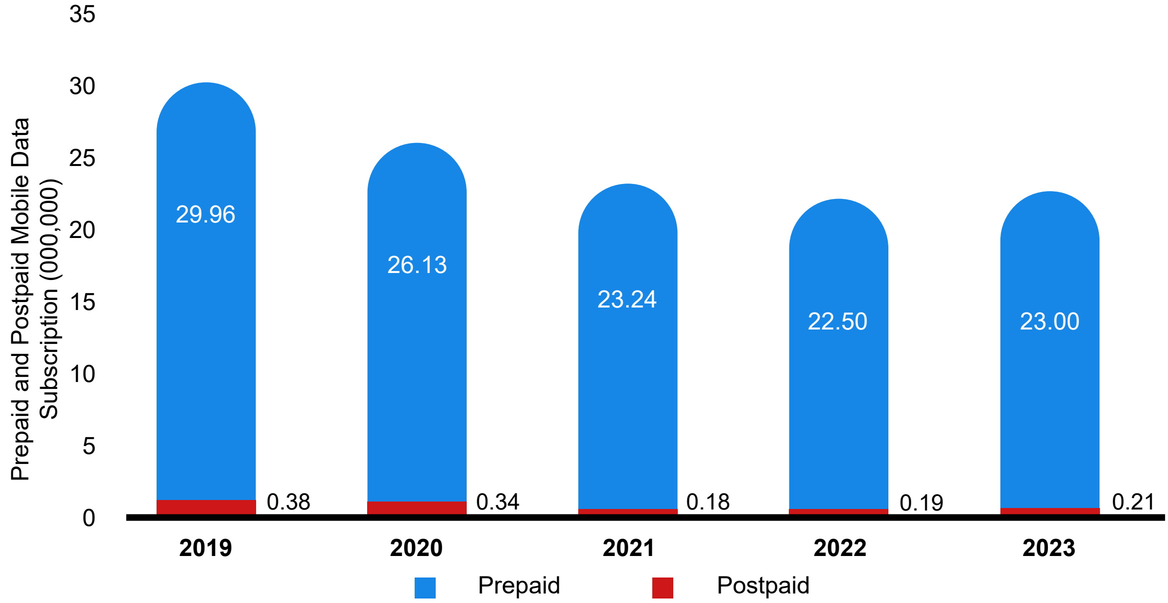
Source: NCA, Mobile Network Operators, 2023

2. The total mobile data subscriptions as at the end of 2022 includes estimation of Glo's subscriptions. This estimation was based on their last submission as at October 2022.

1.12 Postpaid and Prepaid Mobile Data Subscriptions

The mobile data subscriptions are either prepaid or postpaid connections. Mobile prepaid data subscriptions stood at 23.00 million at the end of 2023, which represents 99.08 percent of the total data subscriptions. Postpaid subscriptions also stood at 0.21million subscriptions, representing 0.92 percent of the total mobile data subscriptions.

Figure 12: Distribution of Prepaid and Postpaid Subscriptions



Source: NCA, Mobile Network Operators, 2023

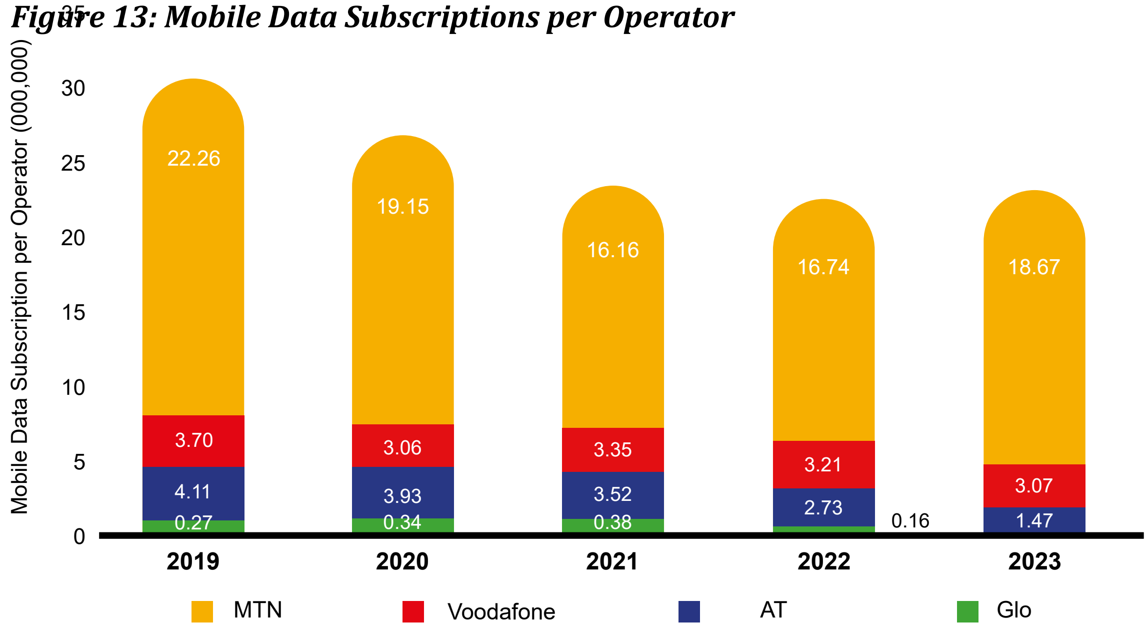
1.13 Mobile Data Subscriptions per Operator

MTN recorded 18.67 million subscriptions at the end of 2023, which indicates a 1.93 million increase compared to 16.74 million in 2022. The year-on-year growth rate was 11.54 percent over the period. From 2019 to 2023, MTN's mobile data subscription fell from 22.26 million in 2019 to 18.68 million recording a Compound Annual Growth Rate (CAGR) of negative 4.29 percent.

Vodafone ended 2023 with 3.07 million subscriptions, indicating a decrease of 0.14 million subscriptions as compared to 3.21 million in 2022, representing negative 4.50 percent growth. Over the five years, Vodafone's subscriptions declined from 3.70 million in 2019 to 3.07 million in 2023. This represents a Compound Annual Growth Rate (CAGR) of negative 4.59 percent.

AT recorded 1.47 million subscriptions at the end of 2023 from 2.73 million in 2022, a 1.27 million decline in subscriptions. Year-on-year, AT's mobile data grew by negative 46.33 percent. AT subscriptions reduced from 4.11 million to 1.47 million in 2023, representing a Compound Annual Growth Rate (CAGR) of negative 22.73 percent.

Figure 13: Mobile Data Subscriptions per Operator

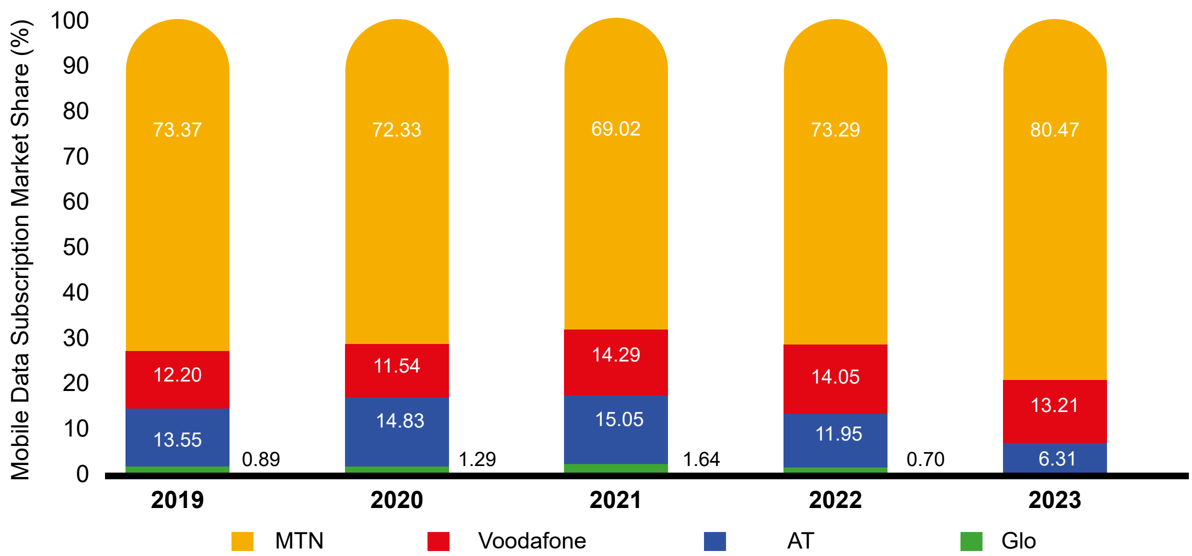


Source: NCA, Mobile Network Operators, 2023

1.14 Market Share (%) per Operator for Mobile Data Subscriptions

At the end of 2023, MTN subscriptions represented 80.47 percent of total mobile data subscriptions, compared to 73.29 percent of the market share in 2022. Vodafone subscriptions also recorded 13.21 percent of the total data subscriptions, representing a decline in market share from 14.05 percent in 2022. AT's market share declined from 11.95 percent in 2022 to 6.31 percent in 2023.

Figure 14: Market Share per Operator



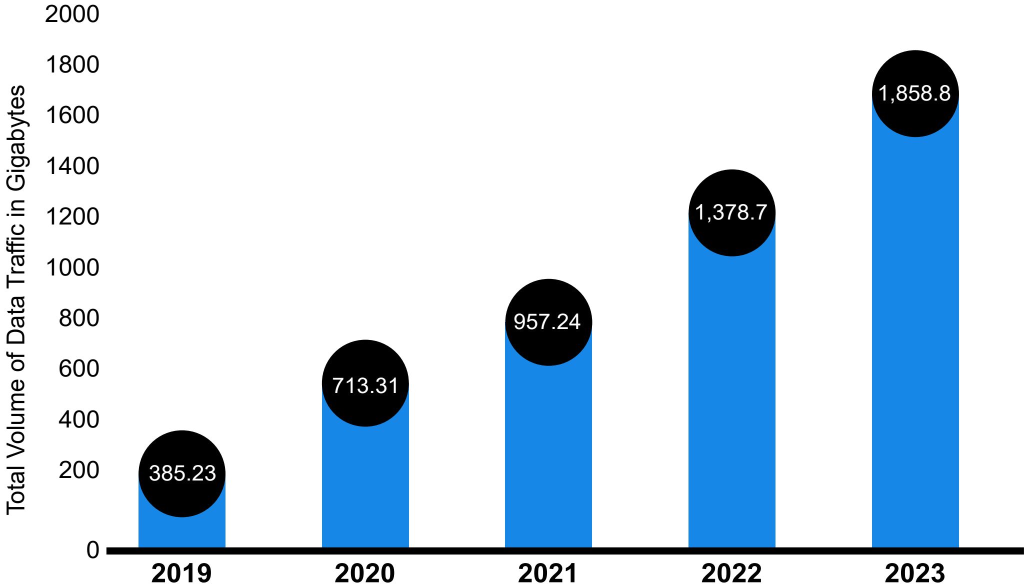
Source: NCA, Mobile Network Operators, 2023

1.15 Mobile Data Traffic

Total Mobile Data Traffic at the end of 2023 was 1,858.81 million gigabytes. This represents a 34.82 percent increase from 1,378.76 million gigabytes in the previous year.

Over the five-year period, the volume of mobile data traffic grew consistently at a Compound Annual Growth Rate of 48.21 percent. Mobile data traffic grew from 385.23 gigabytes in 2019 to1,858.81 gigabytes in 2023.

Figure 15: Volume of Mobile Data Traffic



Source: NCA, Mobile Network Operators, 2023

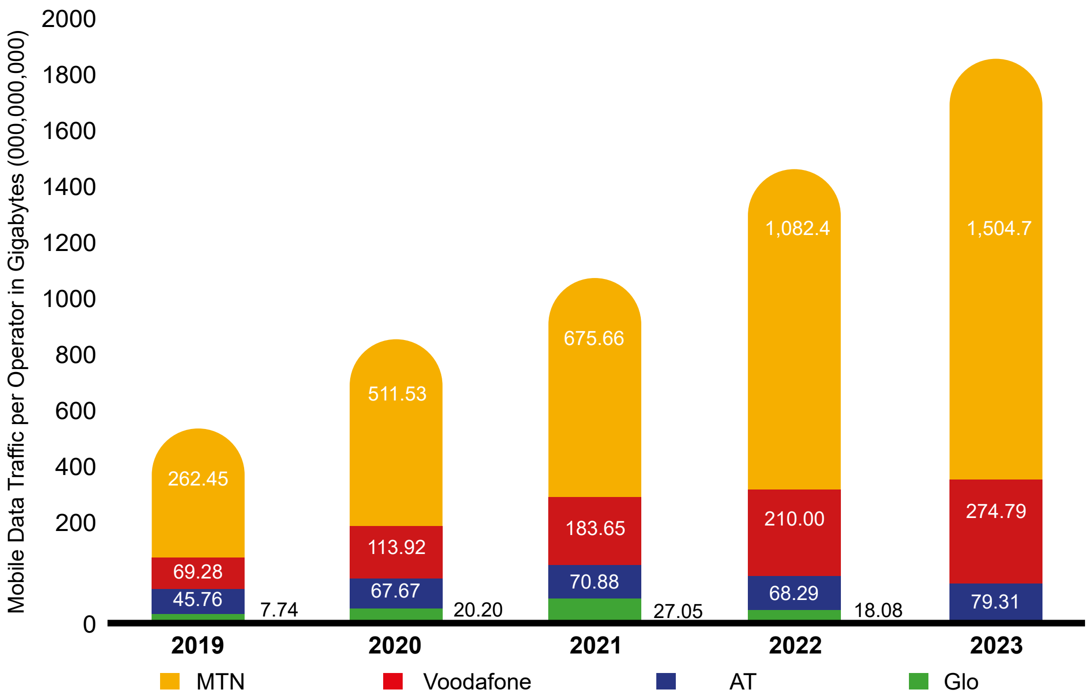
1.16 Mobile Data Traffic per Operator

MTN subscriptions generated 1,504.71 million gigabytes in 2023 compared to 1,082.40 million gigabytes in 2022, representing a growth rate of 39.02 percent. MTN's mobile data traffic rose from 262.45million gigabytes in 2019 to 1,504.71 million gigabytes in 2023 with a Compound Annual Growth Rate (CAGR) of 55.74 percent.

Vodafone year on year mobile data traffic grew by 30.85 percent, from 210.00 million gigabytes in 2022 to 274.79 million gigabytes of traffic in 2023. From 2019 to 2023. Vodafone mobile data grew from 69.27 million gigabytes to 274.79 million gigabytes with a Compound Annual Growth Rate (CAGR) of 41.12 percent.

AT data traffic experienced 16.15 percent growth from 68.29 million gigabytes in 2022 to 79.31 million gigabytes in 2023. It also grew from 45.76 million gigabytes in 2019 to 79.31 million gigabytes in 2023 with a Compound Annual Growth Rate (CAGR) of 14.74 percent.

Figure 16: Mobile Data Traffic per Operator

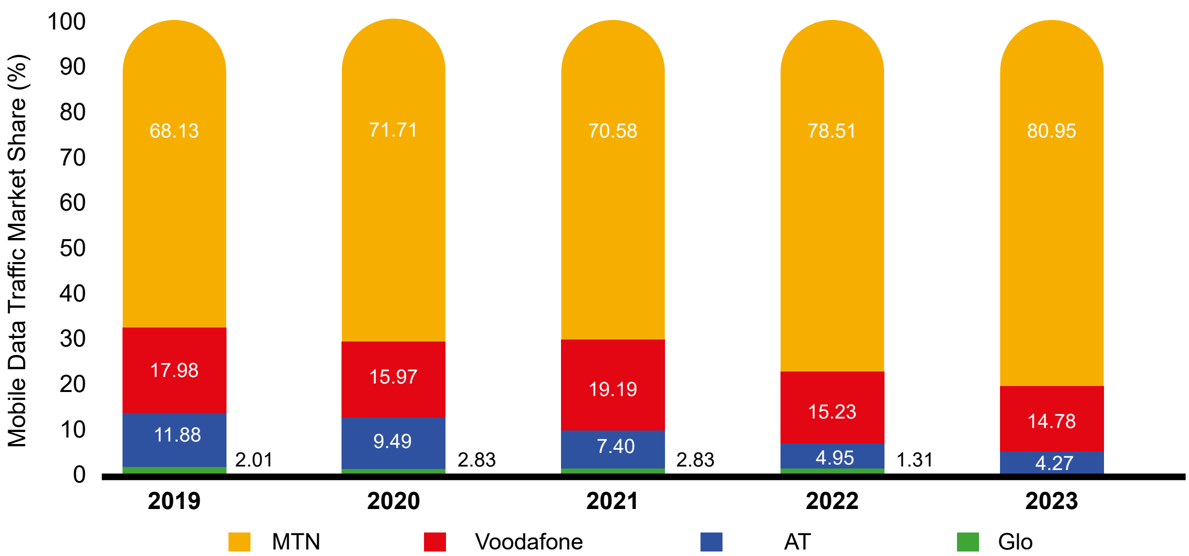


Source: NCA, Mobile Network Operators, 2023

1.17 Market Share (%) of Mobile Data Traffic

In terms of market share, MTN's data traffic represented 80.95 percent in 2023, an increase from 78.51 percent in 2022. Vodafone's market share of mobile data traffic fell from 15.23 percent to 14.78 percent in 2023. AT contributed 4.27 percent of the mobile data traffic in 2023 as compared to 4.95 percent of the market share in 2022.

Figure 17: Market Share (%) of Mobile Data Traffic



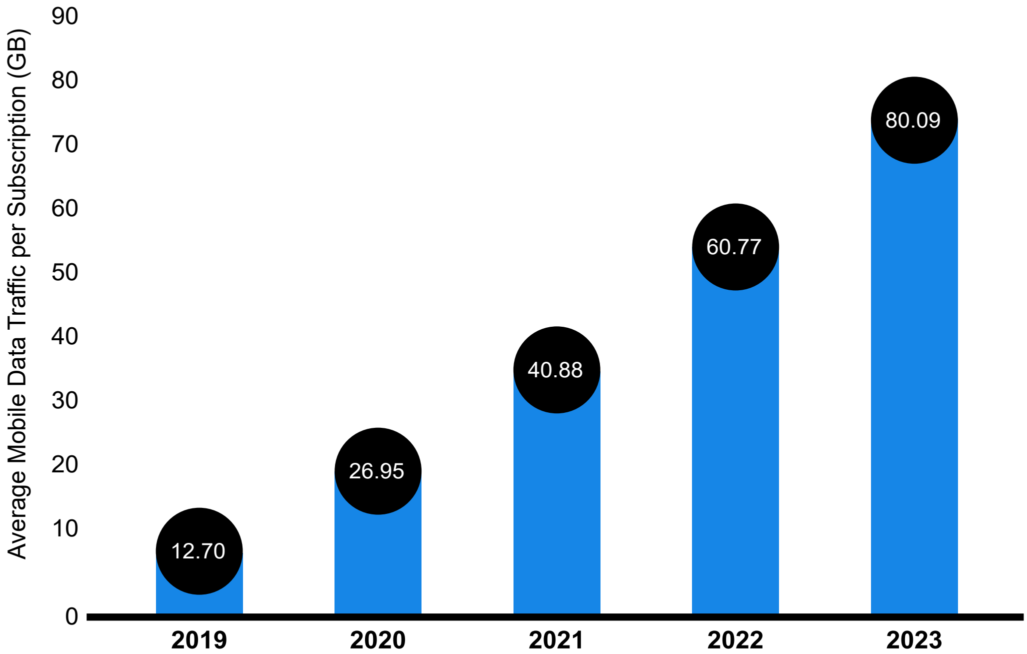
Source: NCA, Mobile Network Operators, 2023

1.17 Average Data Traffic per Subscription

Average mobile data traffic per subscription grew by 31.79 percent from 60.77 gigabytes per subscription in 2022 to 80.09 gigabytes in 2023.

Average mobile data traffic per subscription experienced a continuous rise from 12.70 gigabytes per subscription in 2019 to 80.09 gigabytes per subscription over the five years, with a Compound Annual Growth Rate (CAGR) of 58.48 percent.

Figure 17: Average Data Traffic per Subscription



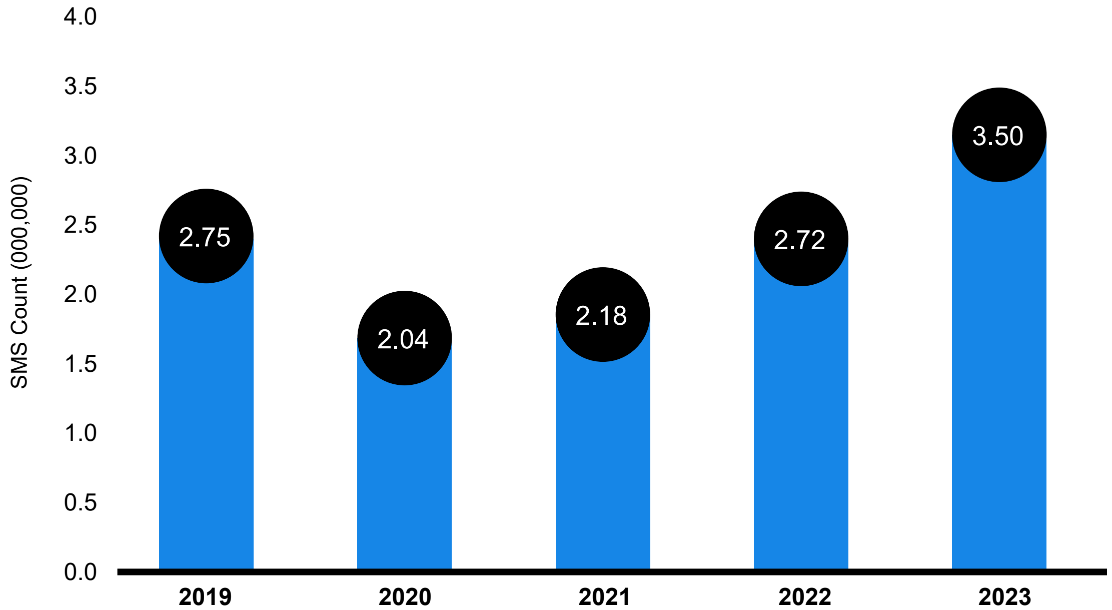
Source: NCA, Mobile Network Operators, 2023

1.18 Total Short Messaging Service (SMS) Counts

Total Short Messaging Service (SMS) counts increased by 28.82 percent to 3.50 billion counts in the year 2023, from 2.72 billion counts recorded in 2022.

Compound Annual Growth Rate over the five-year period was 6.25 percent, increasing from 2.75 billion counts in 2019 to 3.50 billion counts in 2023.

Figure 18: Total SMS Count in Billions



Source: NCA, Mobile Network Operators, 2023

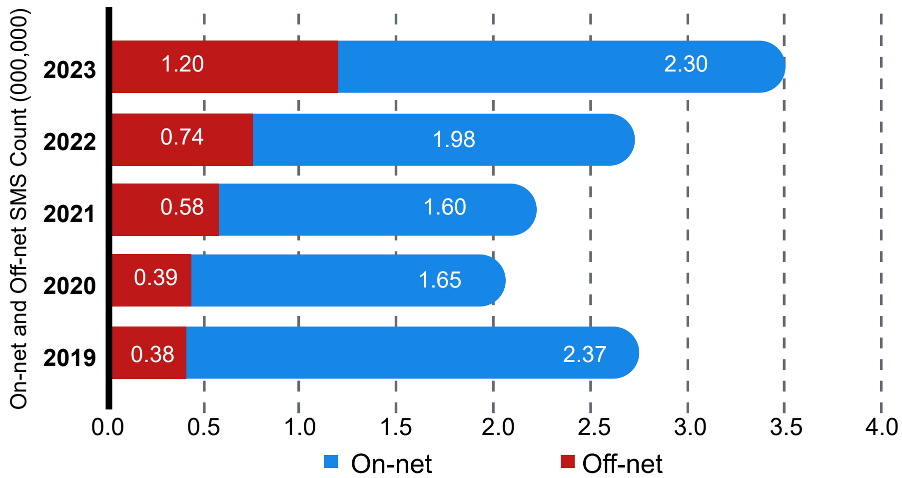
1.19 On-net and Off-net SMS Counts

On net SMS counts recorded an increase from 1.98 billion in 2022 to 2.30 billion in the year under review, representing a 16.54 percent increase in growth. Over the period from 2019 to 2023, on-net SMS counts declined from 2.37 billion to 2.30 billion with a Compound Annual Growth Rate (CAGR) of negative 0.69 percent.

Off-net SMS recorded a 61.53 percent growth from 0.74 billion in 2022 to 1.20 billion in 2023. Off net SMS grew from 0.38 billion in 2019 to 1.20 billion in 2023 with a Compound Annual Growth Rate (CAGR) of 33.20 percent.

On-net SMS accounted for 65.75 percent of the total SMS generated while Off-net SMS accounted for 34.25 percent of the total SMS count.

Figure 19: On-net and Off-net SMS Counts



Source: NCA, Mobile Network Operators, 2023

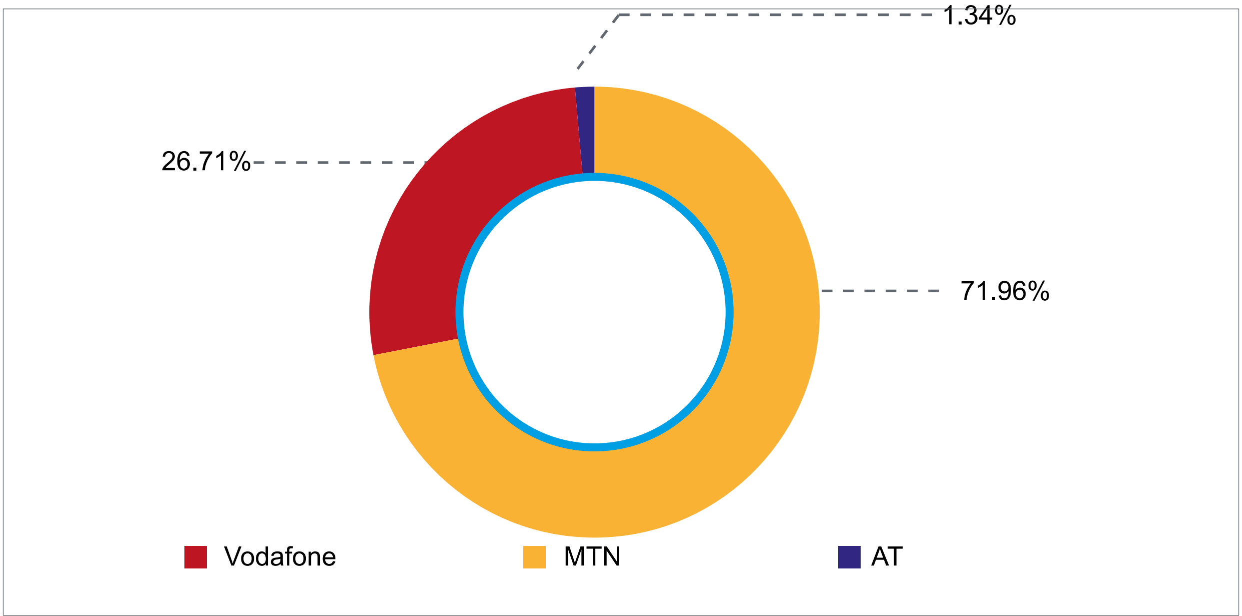
1. 20 Total SMS Count per Operator

MTN recorded 2.52 billion SMS counts in 2023 from 1.97 billion SMS counts in 2022 representing 71.96 percent of the total SMS count. Over the period from 2019 to 2023, MTN's SMS counts increased from 1.40 billion to 2.52 billion with a Compound Annual Growth Rate (CAGR) of 15.82 percent.

Vodafone SMS count was 0.94 billion SMS counts in 2023 from 0.70 billion minutes in 2022, accounting for 26.71 percent of the total SMS counts. Vodafone's SMS count declined from 1.29 billion in 2019 to 0.94 billion in 2023 with a Compound Annual Growth Rate (CAGR) of negative 7.65 percent.

AT subscriptions generated 0.05 billion SMS counts from 0.046 billion SMS counts in the previous year, representing 1.34 percent of the market share. AT SMS counts recorded negative Compound Annual Growth Rate (CAGR) of negative 5.47 percent from 0.06 billion in 2019 to 0.05 billion in 2023.

Figure 20: Market Share of SMS Counts per operator



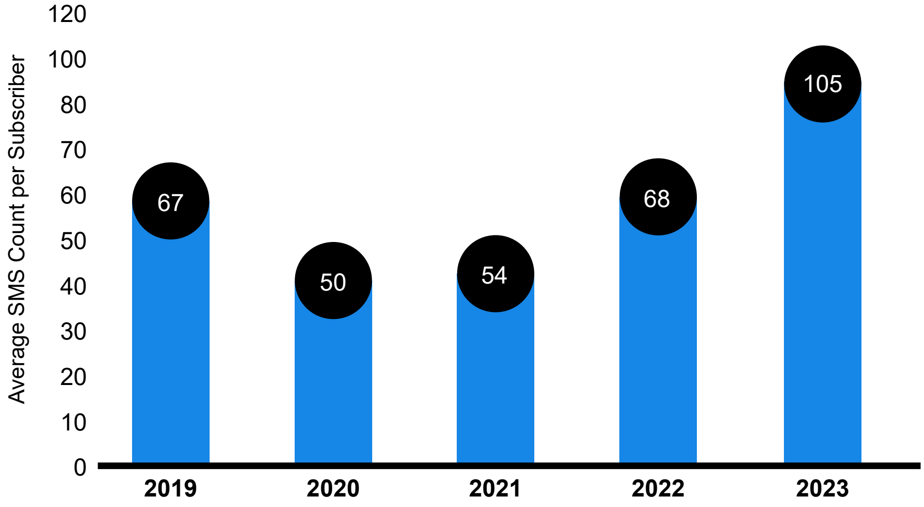
Source: NCA, Mobile Network Operators, 2023

1.21 Average SMS Count per Subscription

In 2023, the average SMS count was 105 from 68 SMS count in 2022, representing a growth rate of 54.53 percent.

The average SMS Count per Subscription rose from 67 SMS counts in 2019 to 105 SMS counts in 2023, at a Compound Annual Growth Rate (CAGR) of 11.75 percent.

Figure 21: Average SMS Count per Subscription

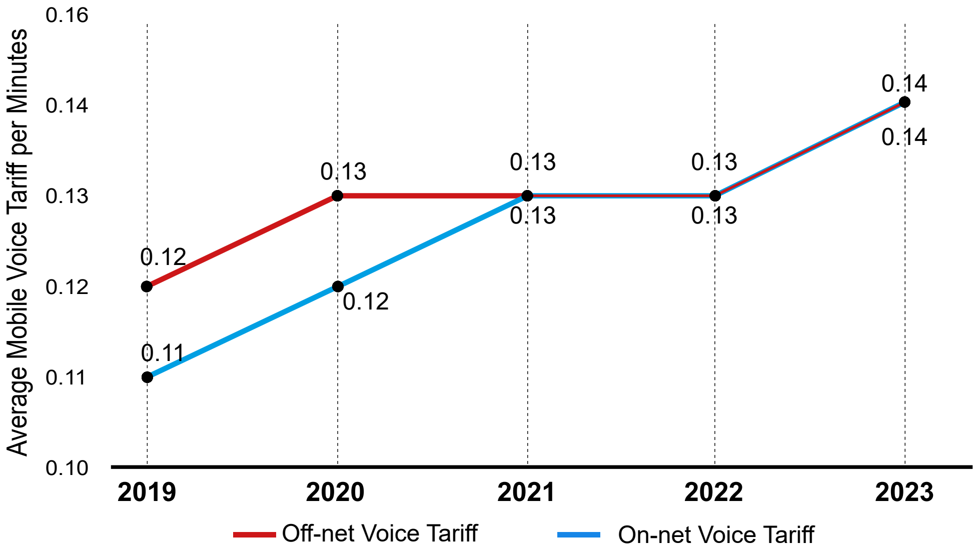


Source: NCA, Mobile Network Operators, 2023

1.22 Default Tariffs on Mobile Services

The average industry tariff for both On-net and off-net default tariffs for mobile voice recorded a marginal increase from GHS 0.13p to GHS 0.14p in the year under review. Prior to this increase, default mobile voice tariffs had been stable at GHS 0.13p for two years in a roll. Over the five-year period, the industry recorded a CAGR of 6.21 percent and 3.93 percent for On-net and Off-net Tariff respectively.

Figure 22: Mobile Voice Service Tariffs



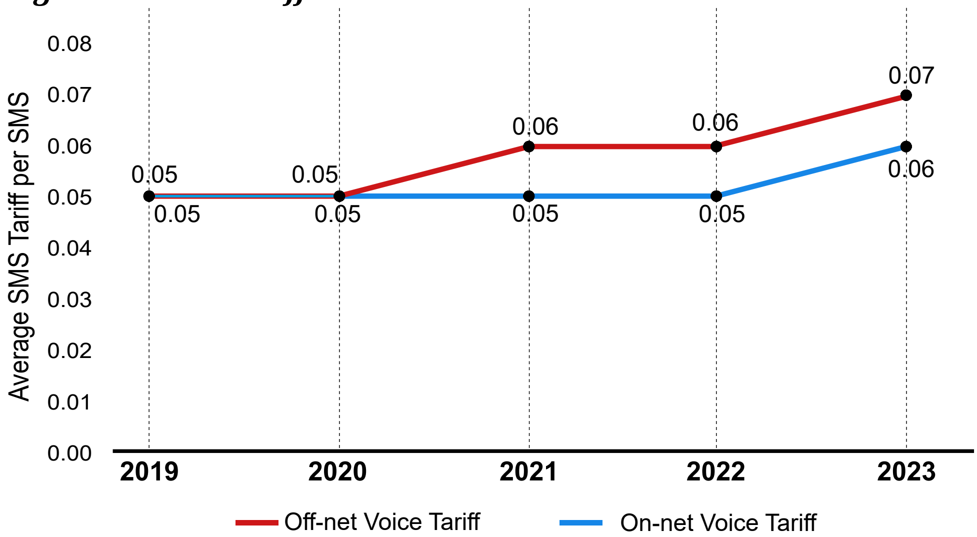
Source: NCA; Mobile Network Operators, 2023

Average SMS Tariffs

Year – on – year average industry off net SMS tariff did not experience changes as compared to the average on net SMS tariff that increased from 0.05p from 2022 to 0.06p in 2023 by 20 percent.

The average industry Off-net SMS tariff has been GHS 0.05p in 2019 over the past four years until it increased to 0.06p in 2023 with a Compound Annual Growth Rate (CAGR) of 4.66 percent.

Figure 23: SMS Tariffs

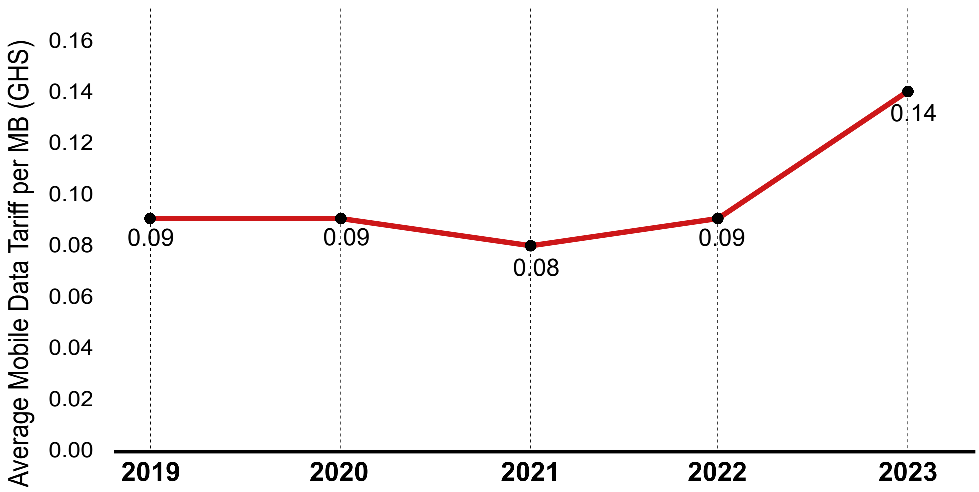


Source: NCA, Mobile Network Operators, 2023

Average Default Mobile Data Tariffs

The average industry mobile data tariff increased from GHS 0.09p/MB in 2022 to GHS 0.14p/MB in 2023, which represents a 57.07 percent growth. Between 2019 and 2023, the cost of data per megabyte increased from GHS 0.09p in 2019 to GHS 0.14p in 2023 with a Compound Annual Growth Rate (CAGR) of 11.68 percent.

Figure 24: Mobile Data Tariff per MB



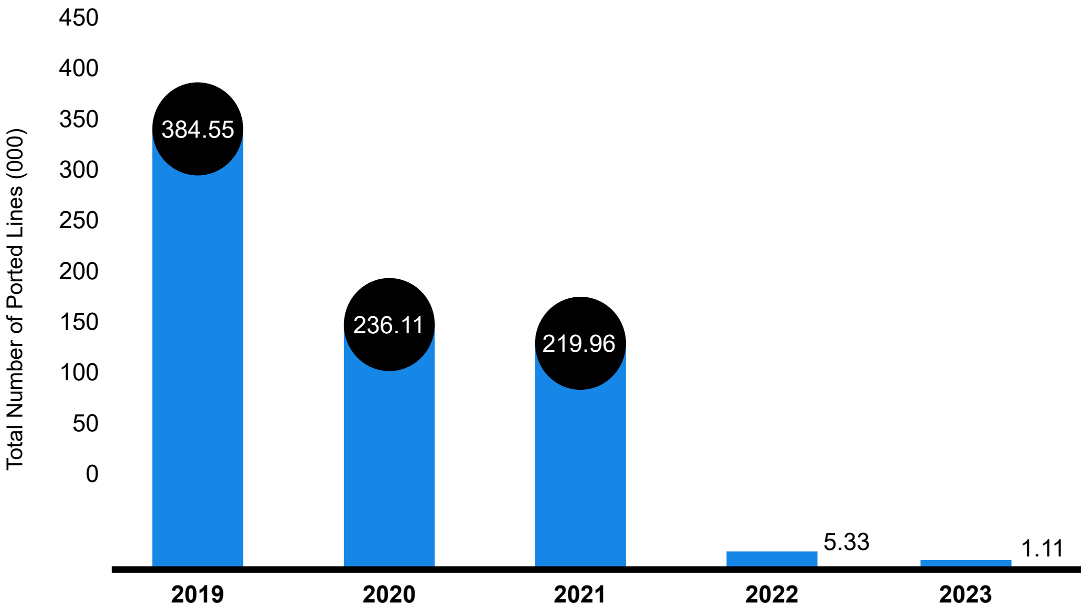
Source: NCA, Mobile Network Operators, 2023

1.24 Mobile Number Portability (MNP)

In the year 2023, a total of 1,113 mobile numbers were ported from one network to the other as compared to 5,333 in the previous year, indicating a 97.6 percent decline in growth.

Over the five year period, total mobile numbers ported decreased from 384,558 in 2019 to 1,113 in 2023, representing a Compound Annual Growth Rate (CAGR) of negative 76.81percent.

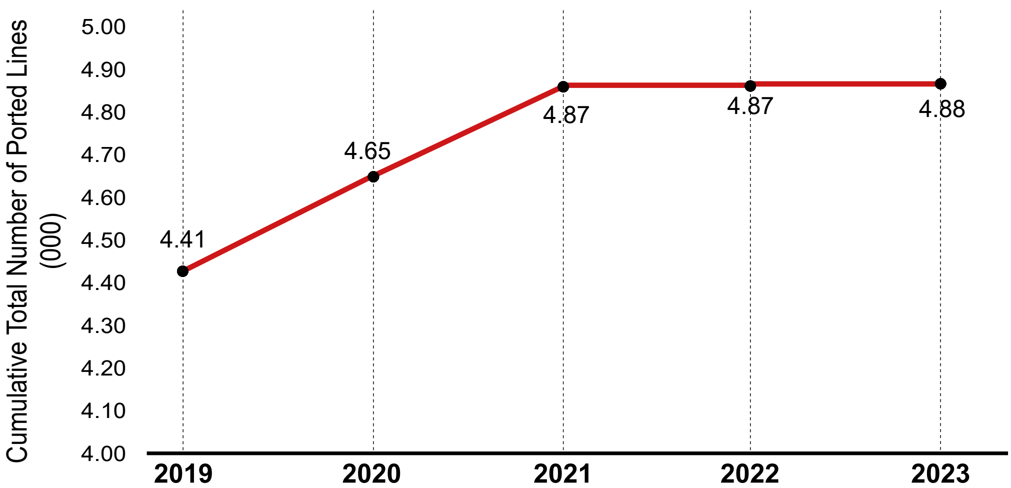
Figure 25: Total Number of Ported Lines



Source: NCA, Mobile Network Operators, 2023

The total number of mobile numbers ported cumulatively since inception in 2011 was 4.87 million at the end of 2023.

Figure 27: Cumulative Mobile Numbers Ported



Source: NCA, Mobile Network Operators, 2023

Net Porting Per Operator

In the year under review, 657 subscriptions ported onto the MTN network and 166 subscriptions ported out leaving a net port of 491 subscriptions on the network.

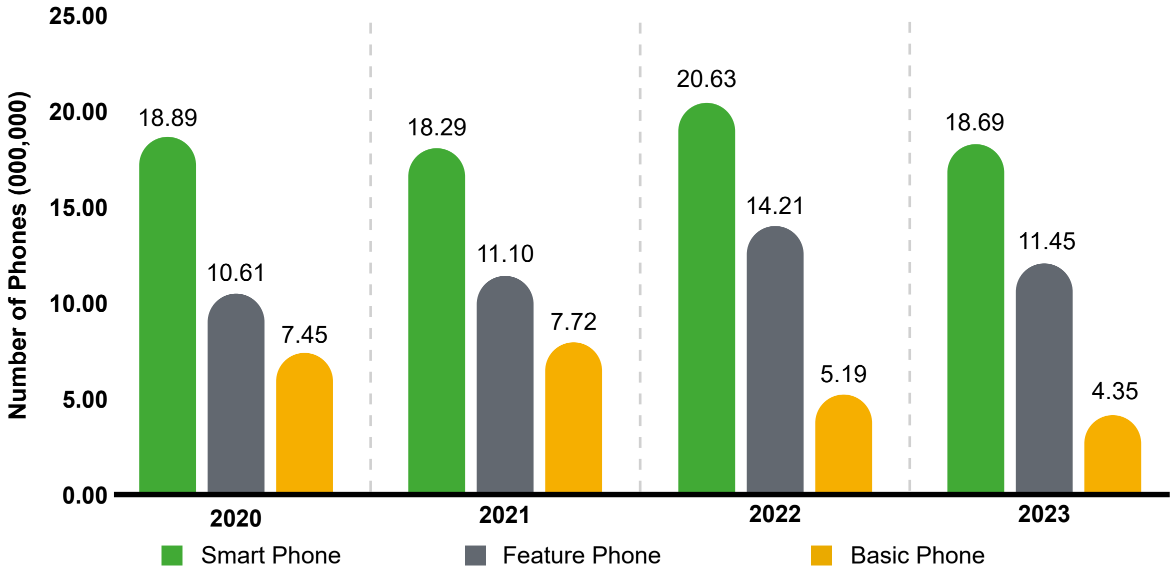
Vodafone network had 48 net subscriptions after 389 subscriptions port in to the network and 437 subscriptions port out of the Vodafone network.

AT had negative 413 net port, when 67 subscriptions ported in to the network and 480 subscriptions ported out of the network.

1.25 Categories of Mobile Phones on Mobile Networks

The total number of mobile phones connected to the mobile network decreased by 13.84 percent from 40.02 million in 2022 to 34.48 million in 2023. The number of smartphones on the network decreased by 9.41 percent, from 20.63 million in 2022 to 18.69 million in 2023. Feature phone users also reduced from 14.21 million in 2022 to 11.45 million indicating a 19.40 percent negative growth. Basic phone users on the network also fell from 5.19 million in 2022 to 4.35 million in 2023 representing a 16.24 percent negative growth.

Figure 26: Categories of Mobile Phones on Mobile Networks

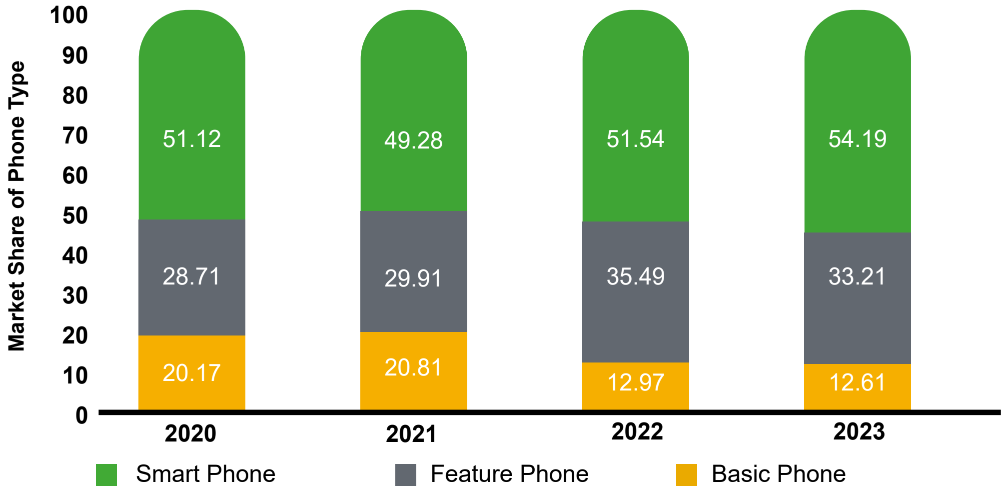


Source: NCA, Mobile Network Operators, 2023

Share of Categories of Mobile Phones on Mobile Networks

During the period under review, the market share for smartphones on mobile networks increased from 51.54 percent in the year 2022 to 54.19 percent in 2023. Feature phone market share decreased from 35.49 percent in 2022 to 33.21 percent in the year 2023. Basic phone market share also dropped marginally from 12.97 percent in the year 2022 to 12.61 percent in 2023.

Figure 27: Share of Categories of Mobile Phones on Mobile Network



Source: NCA, Mobile Network Operators, 2023

CHAPTER TWO

FIXED NETWORK SERVICES

2.0 Introduction

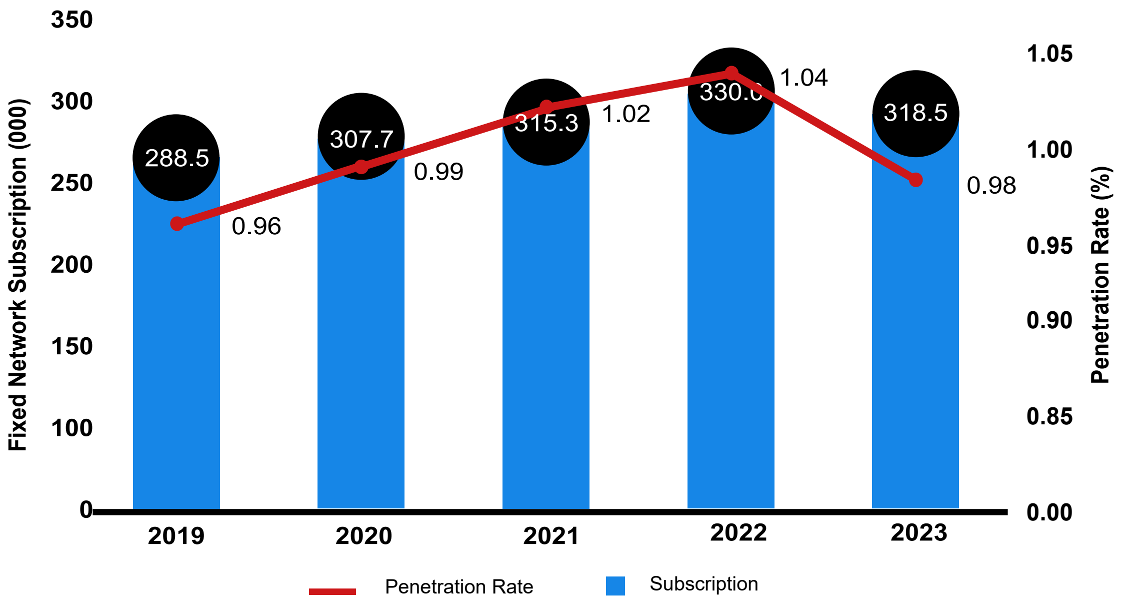
This chapter covers subscriptions over the five years from 2019 to 2023. In the reference period, the telecommunications industry had three (3) fixed network service providers: AT (Formerly AirtelTigo), MTN, and Vodafone.

2.1 Fixed Voice Subscriptions and Penetration Rate

Fixed voice subscriptions experienced declined from 330,016 in 2022 to 318,460 by a growth of negative 3.50 percent in 2023. Over the five-year period, fixed voice subscriptions grew by a CAGR of 2.50 percent, from 288,531 in 2019 to 318,460 in 2023.

Subsequently, the penetration rate fell from 1.04 percent in 2022 to 0.98 percent in 2023. From 2019 to 2023, the fixed voice penetration rate increased from 0.96 percent to 0.98 percent in 2023 with a Compound Annual Growth Rate (CAGR) of 0.68 percent.

Figure 28: Fixed Voice Subscriptions and Penetration Rate (%)



Source: NCA, Fixed Network Operators, 2023

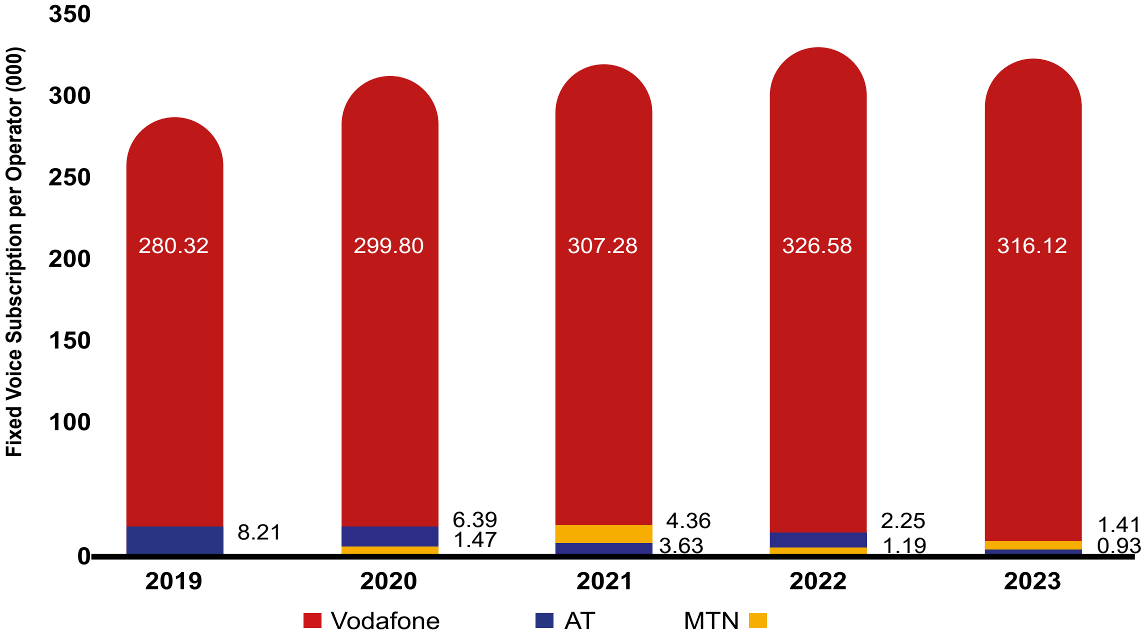
2.2 Fixed Voice Subscription per Operator

Vodafone recorded 316,120 fixed voice subscriptions in 2023, representing a decline in growth by 3.20 percent from 326,579 fixed voice subscriptions in 2022. Over the five years, Vodafone's fixed voice subscriptions grew from 280,321 in 2019 to 316,120 in 2023 with a Compound Annual Growth Rate (CAGR) of 3.05 percent.

AT ended the year with 933 subscriptions, recording a negative 58.48 percent decline from 2,247 fixed voice subscriptions in 2022. From 2019 to 2023, AT fixed voice subscriptions declined from 8,210 subscriptions in 2019 to 933 subscriptions in 2023, representing a negative 41.94 percent growth.

MTN recorded 18.24 percent growth, from 1,190 subscriptions in 2022 to 1,407 subscriptions in 2023. MTN fixed voice subscriptions grew from 1,477 in 2020 to 1, 407 in 2023.

Figure 29: Fixed Voice Subscriptions per Operator

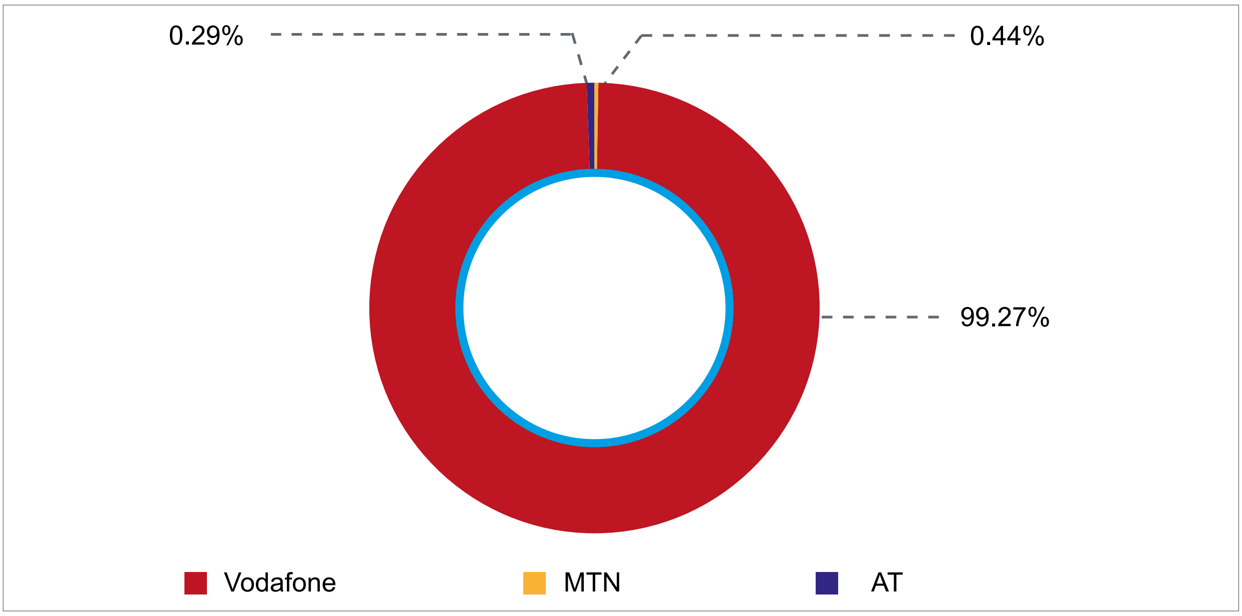


Source: NCA, Fixed Network Operators, 2023

2.3 Fixed Voice Subscription Market Share

Vodafone's market share of fixed voice subscriptions continuously grew from 97.15 percent in 2019 to 99.27 percent in 2023. MTN fixed voice subscription market share grew from 0.48 percent in 2020 to 1.38 percent in 2021 and fell to 0.36 percent in 2022. However, it grew from 0.36 percent in 2022 to 0.44 percent in 2023. AT's market share declined from 2.85percentin 2019 to 0.29 percent in 2023.

Figure 30: Market Share of Fixed Voice Operators

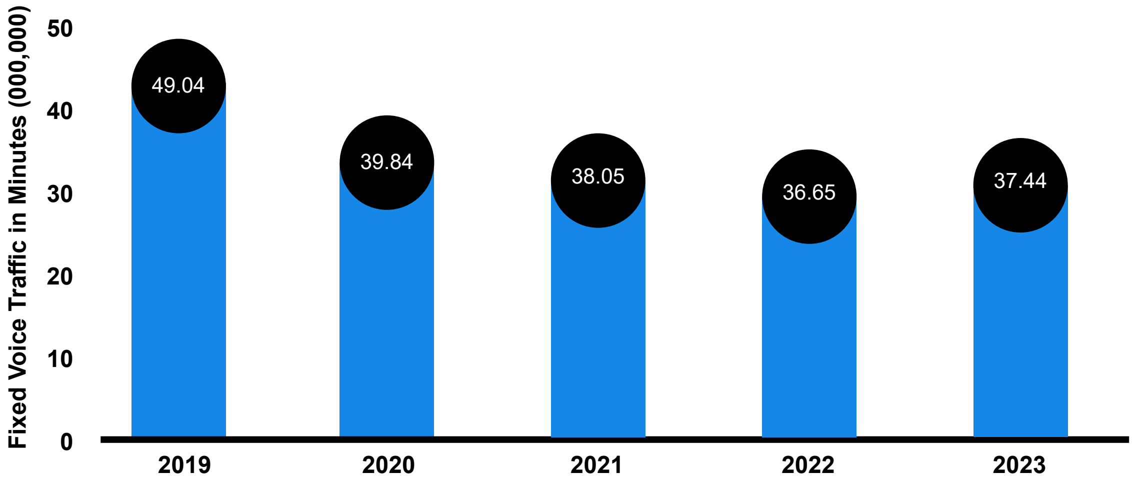


Source: NCA; Fixed Network Operators, 2023

2.4 Fixed Voice Traffic in Minutes

In the year under review, traffic generated from fixed voice subscriptions was 37.44 million minutes from 36.65 million minutes in 2022, representing a growth of 2.15 percent. Over the five years, fixed voice traffic continued to decline from 49.04 million minutes in 2019 to 36.65 million minutes in 2022. It increased to 37.44 million minutes in 2023 resulting in a negative Compound Annual Growth Rate (CAGR) of -6.53 percent.

Figure 31: Fixed Voice Traffic in Minutes



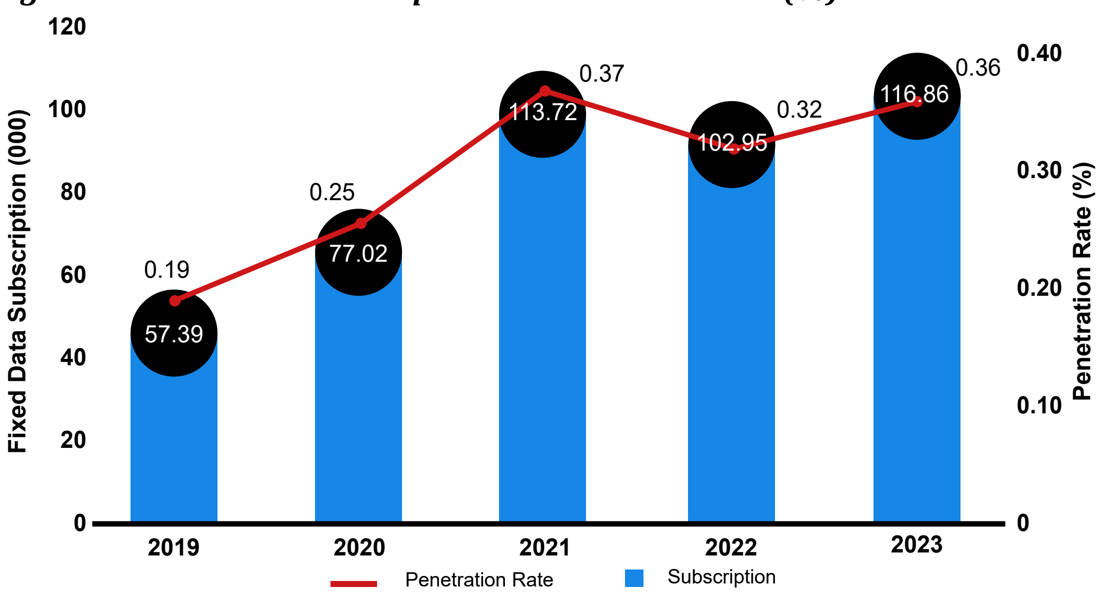
Source: NCA, Fixed Network Operators, 2023

2.5 Fixed Data Subscriptions & Penetration Rate (%)

Fixed data subscriptions increased by 13.51 percent from102,952 in 2022 to 116,860 in 2023. Fixed data subscriptions increased from 57,393 in 2019 to 113,722 in 2021 but declined to 102,952 in 2022. Fixed Data Subscriptions experienced a 19.45 percent Compound Annual Growth Rate (CAGR) from 2019 to 2023.

The penetration rate grew from 0.19 percent to 0.37 percent in 2021. It further declined to 0.32 percent and rose to 0.36 percent in 2023.

Figure 32: Fixed Data Subscriptions &Penetration Rate (%)



Source: NCA, Fixed Network Operators, 2023

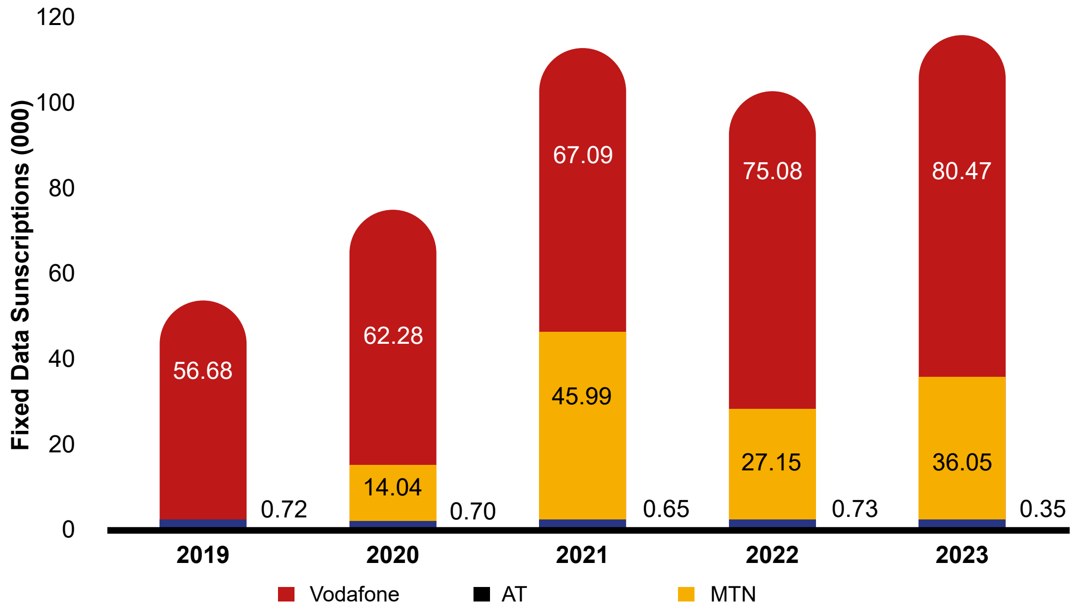
2.6 Fixed Data Subscriptions per Operator

Vodafone fixed data subscriptions increased from 75,078 in 2022 to 80,465 in 2023 recording a 7.18 percent growth rate. Over the five years, it grew at a Compound Annual Growth Rate (CAGR) 9.16 percent from 56,677 subscriptions in 2019 to 80,465subscriptions in 2023.

MTN's fixed data subscription increased from 14,038 in 2020 to 45,987in 2021 and declined to 27,148 in 2022. It also grew by 32.78 percent from 27,148 in 2022 to 36,047 in 2023.

AT recorded 348 fixed data subscriptions in 2023, a decrease from 726 subscriptions in 2022 indicating a negative 52.07 percent growth. In 2019, AT's fixed data subscriptions decreased from 716 in 2019 to 348 in 2023 with Compound Annual Growth Rate (CAGR) of negative 16.50 percent.

Figure 33: Fixed Data Subscriptions per Operator

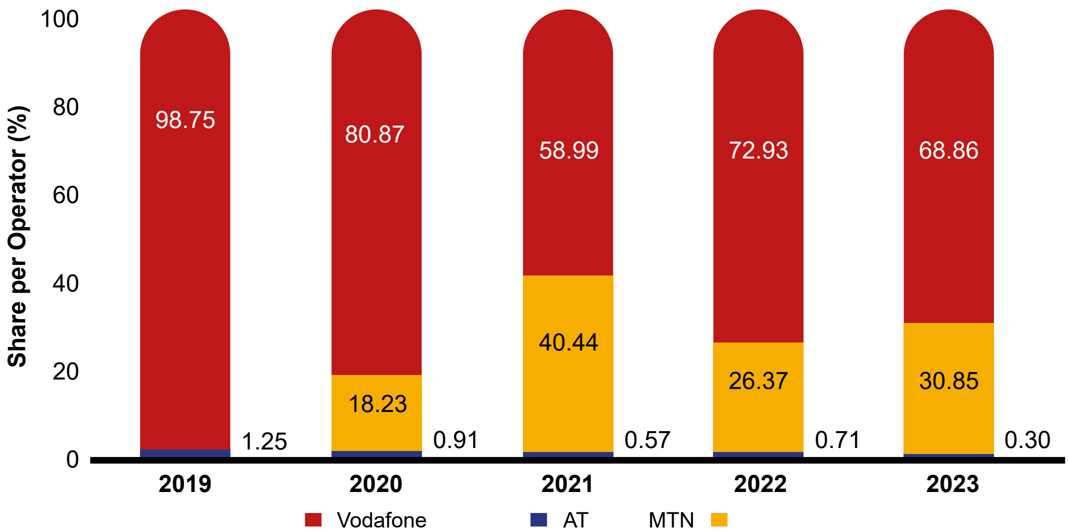


Source: NCA, Fixed Network Operators, 2023

2.7 Fixed Data Subscriptions Market Share

Over the five years, Vodafone's market share fell from 98.75 percent in 2019 to 58.99 percent in 2021 and increased to 68.86 percent in 2023. MTN fixed data subscriptions market share fluctuated from 18.23 percent in 2020 to 30.85 percent in 2023. AT fixed data subscriptions accounted for 1.25 percent of the market share in 2019 and declined to 0.30 percent in 2023. MTN's market share moved from 18.23% in 2020 to 30.85% in 2023. During the five-year period, MTN recored its highest market share of 40.44% in 2021. AT subscriptions accounted for 0.30% of the market share in the year under review, compared to 0.71% recorded in 2022.

Figure 34: Market Share (%) of Fixed Data Subscription



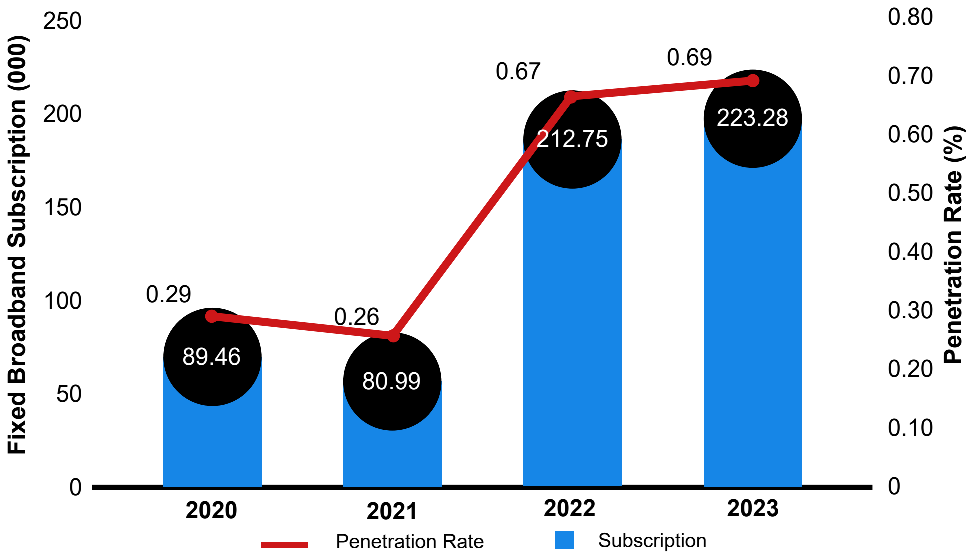
Source: NCA, Fixed Network Operators, 2023

2.8 Fixed Broadband[1] Subscriptions and Penetration Rate

Fixed Broadband subscriptions at the end of 2023 recorded 223,278 subscriptions from 212,750 in 2022, indicating a 4.95 percent growth. From 2020, fixed broadband subscriptions declined from 89,456 to 80,990 in 2021 and continually increased to 223.278 subscriptions.

The penetration rate for fixed broadband declined from 0.29 percent in 2020 to 0.26 percent in 2021 and rose to 0.69 percent in 2023.

Figure 35: Fixed Broadband Subscriptions & Penetration Rate (%)



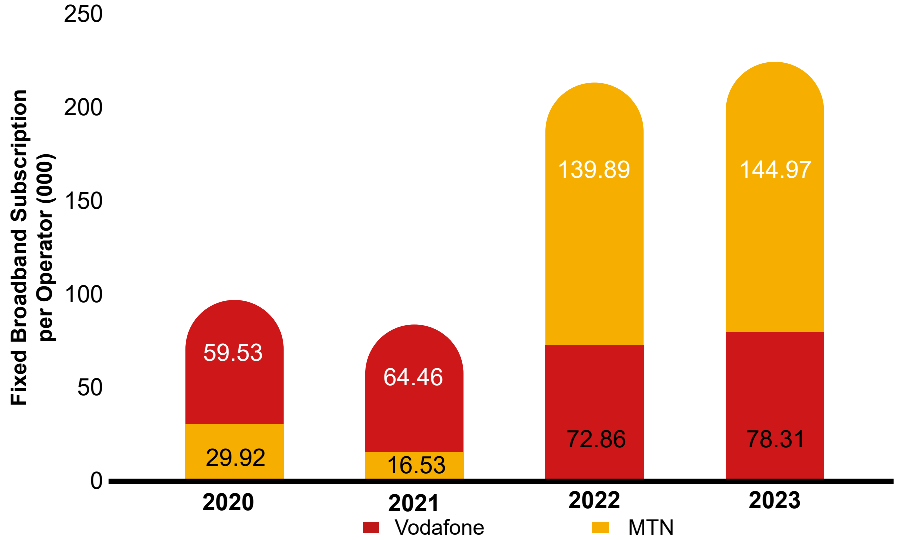
Source: NCA, Fixed Network Operators, 2023

1. This refers to fixed subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes Digital Subscriber line (DSL), fibre-to-the-home/building, other fixed (wired)-broadband subscriptions and terrestrial fixed wireless broadband. The NCA started collecting data on this indicator in October 2020.

2.9 Fixed Broadband Subscriptions per Operator

In the reference year, MTN recorded 144,967 subscriptions representing 64.93 percent of the total subscriptions. MTN fixed broadband subscriptions declined from 29,924 in 2020 to 16,533 in 2021 and exponentially increased to 144,967 in 2023. Vodafone subscriptions made up the remaining 35.07 percent of market shares.

Figure 36: Fixed Broadband Subscriptions per Operator

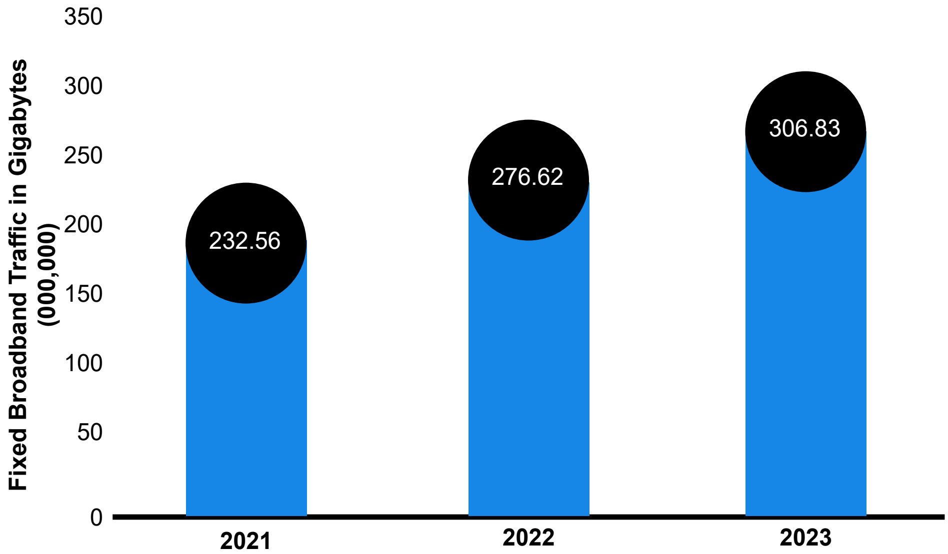


Source: NCA, Fixed Network Operators, 2023

2.10 Fixed Broadband Traffic

Fixed Broadband Traffic consistently increased from 232.56 million gigabytes in 2021 to 306.83 million gigabytes in 2023. The fixed broadband traffic increased by 10.92 percent from 276.62 million gigabytes in 2022 to 306.83 million gigabytes in 2023.

Figure 37: Fixed Broadband Traffic in Gigabytes

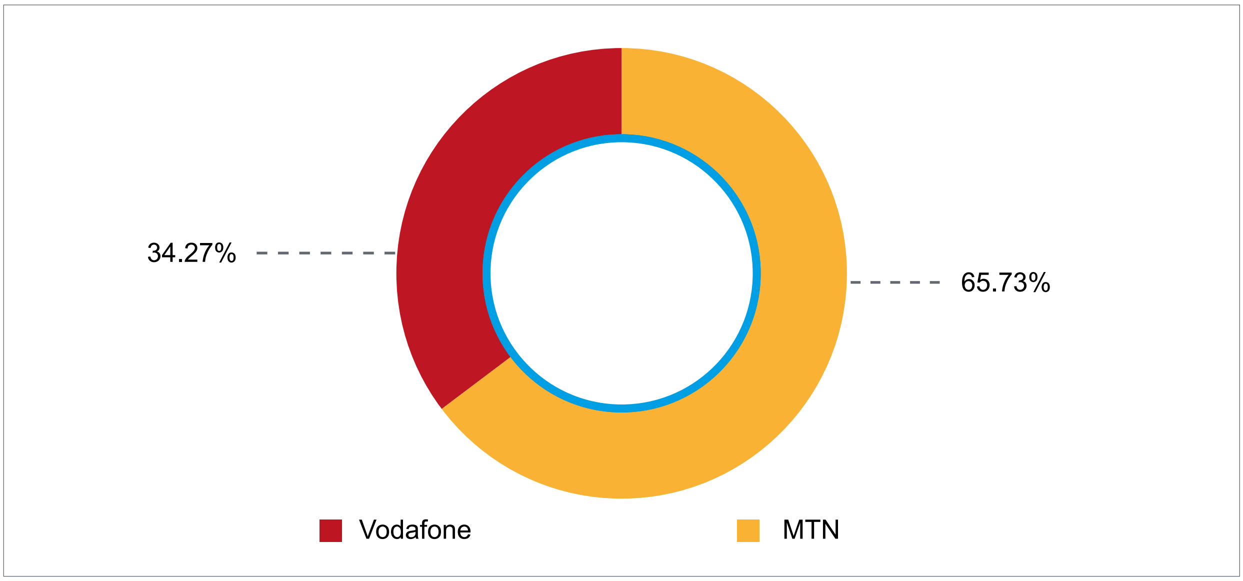


Source: NCA, Fixed Network Operators, 2023

2.11 Fixed Broadband Traffic Market Share

Vodafone subscriptions constituted 34.27 percent of total fixed broadband traffic of the market with MTN subscriptions covering 65.73 percent.

Figure 38: Fixed Broadband Traffic Market Share



Source: NCA, Fixed Network Operators, 2023

Chapter Three

BROADBAND WIRELESS ACCESS

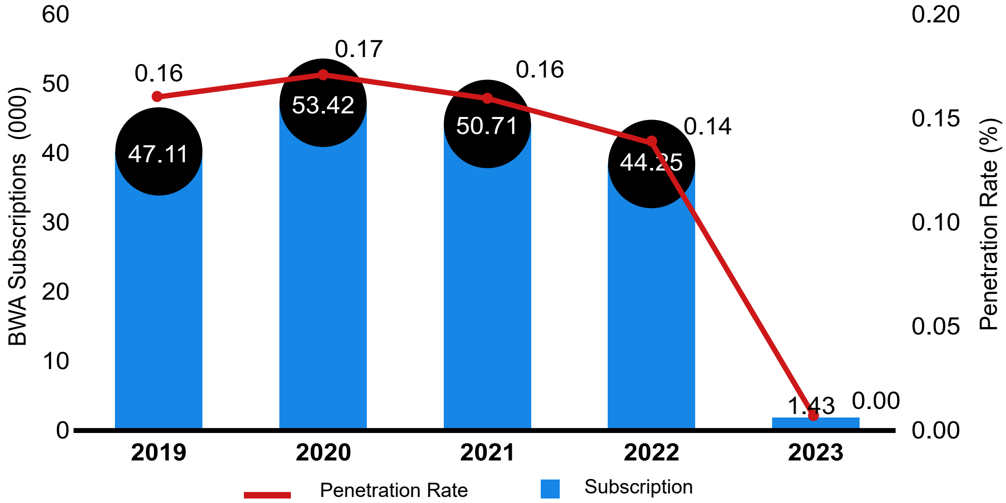
3.0 Introduction

In the reference year, one out of the five (5) Broadband Wireless Access (BWA) was providing services to the population. Telesol was the only provider with the other service providers out of business. This chapter highlights an analysis of subscriptions, penetration and volume of traffic.

3.1 Broadband Wireless Access Subscriptions[1] and Penetration Rate (%)

Broadband Wireless Access (BWA) subscriptions decreased from 44,247 in 2022 to 1,431 in 2023 recording a 96.77 percent decline in growth. Broadband Wireless subscriptions fluctuated from 47,108 in 2019 to 1,431 subscriptions in 2023 representing a negative Compound Annual Growth Rate (CAGR) of -58.25 percent over the five years. The penetration rate declined from 0.14 percent in 2022 to 0.0044 percent in 2023.

Figure 39: Broadband Wireless Subscriptions and Penetration Rate (%)



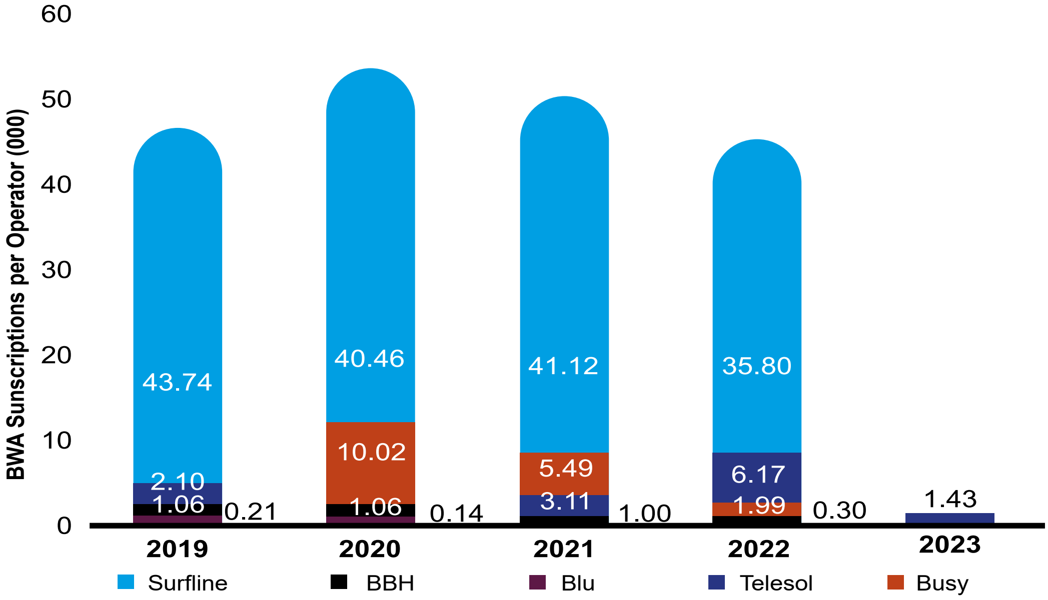
Source: NCA, BWA Operators, 2023

3.2 Broadband Wireless Subscriptions per Operator

Telesol ended 2023 with 1,431 subscriptions recording a decrease from 6,174 subscriptions in the previous year.

1. The total BWA subscriptions as at the end of 2022 includes estimation of Busy's subscriptions. This estimation was based on their last submission as at September 2022.

Figure 40: BWA Subscriptions per Operator

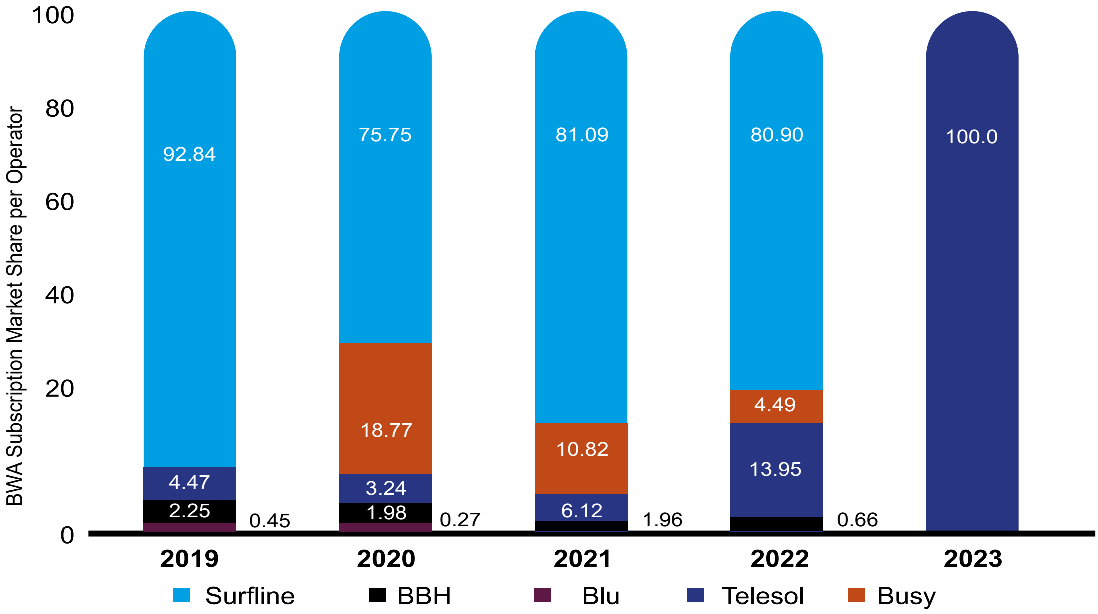


Source: NCA, BWA Operators, 2023

3.3 BWA Subscription Market Share

With Telesol's subscription, they were the only providers in the BWA market in 2023.

Figure 41: Market Share for BWA subscription

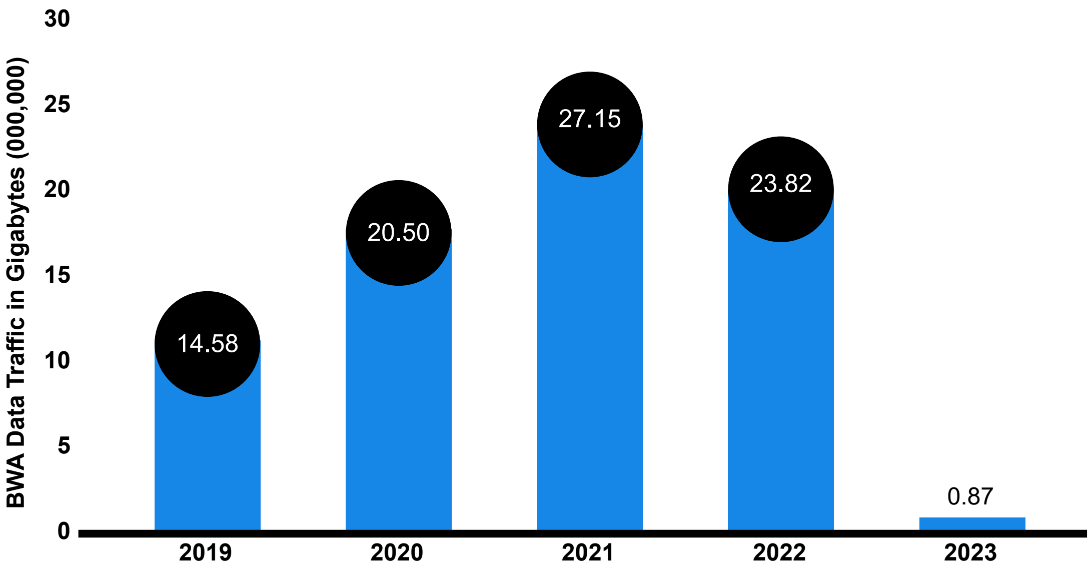


Source: NCA, BWA Operators, 2023

3.4 BWA Traffic in Gigabytes

Total data traffic generated by BWAs at the end of 2023 was 891,852 gigabytes indicating a decrease of 96.34 percent from 23,816,054 gigabytes in the previous year.

Figure 42: BWA Traffic in Gigabytes

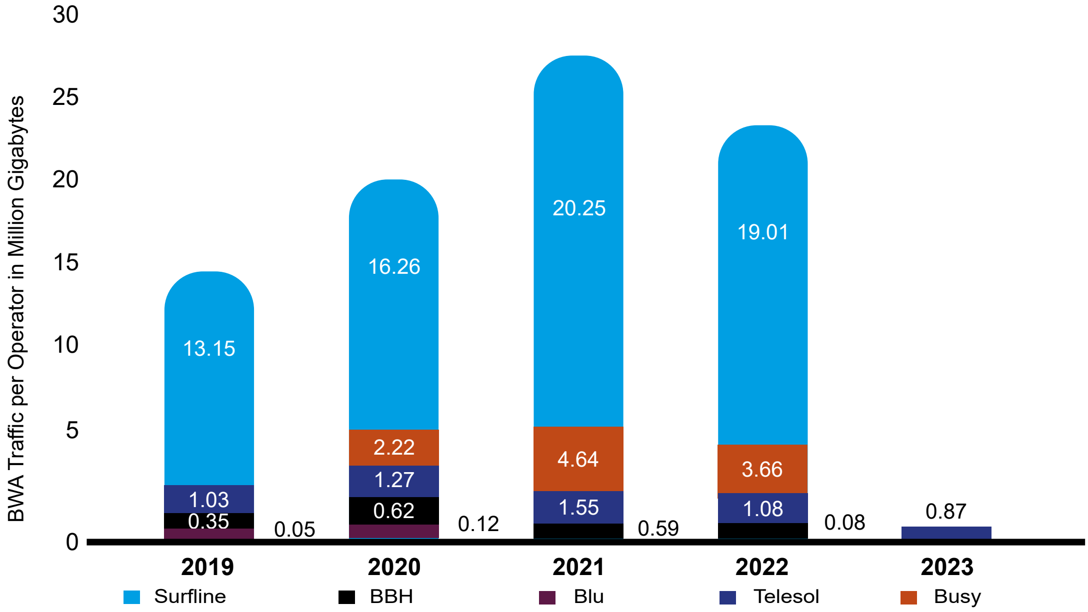


Source: NCA, BWA Operators, 2023

3.5 BWA Traffic per Operator

Telesol generated 891,852 gigabytes of data traffic for the year under review, a decrease from 1,079,396 gigabytes recording a 17.37 percent decline in growth.

Figure 43: BWA Traffic per Operator

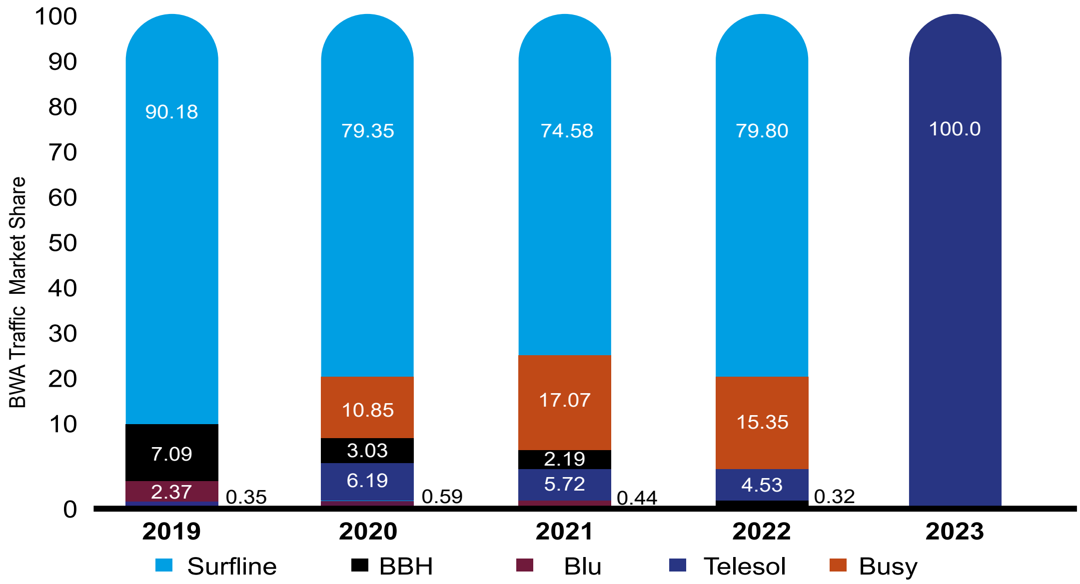


Source: NCA, BWA Operators, 2023

3.6 BWA Traffic Market Share

Surfline subscriptions generated 79.80% of total traffic. Busy subscriptions generated 15.35%, while Telesol subscriptions generated 4.53% of total traffic. The remaining 0.32% of traffic was generated by BBH subscriptions.

Figure 44: BWA Traffic Market Share



Source: NCA, BWA Operators, 2023

Chapter Four

BROADCASTING SERVICES

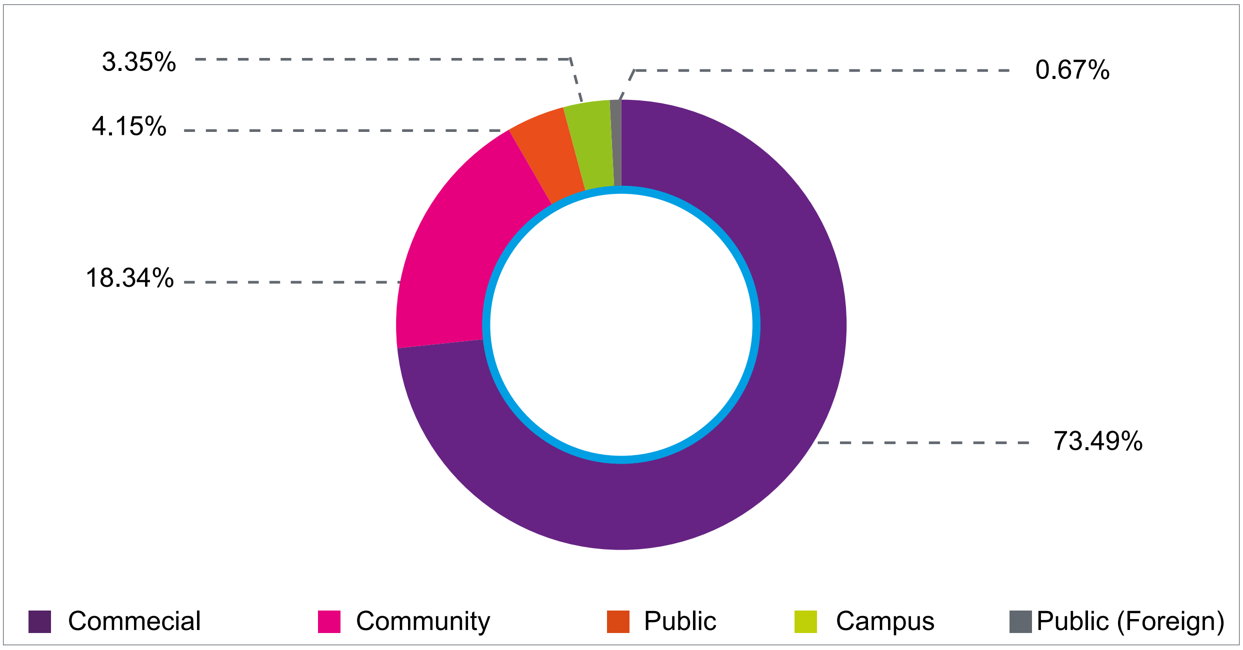
4.0 Introduction

This chapter provides information about Frequency Modulation (FM), Television (TV) Broadcasting, Amateur Radio, Maritime, and Aeronautical Radio services in Ghana.

4.1 Total Number and Types of Authorised Frequency Modulation (FM) Stations

In the reference year, 747 FM stations were authorised. A total of 550 FM stations (73.63%) were operating and 197 stations were not in operation (26.37%). Out of the total authorised FM stations, 549(73.49%) were Commercial FM stations, 137 (18.34%) were Community FM stations, 31(4.15%) were public FM stations, 25(3.35%) were campus FM stations and 5 (0.67%) were Public (Foreign) FM stations.

Figure 45: Types of Authorised FM Stations as at end of year 2023

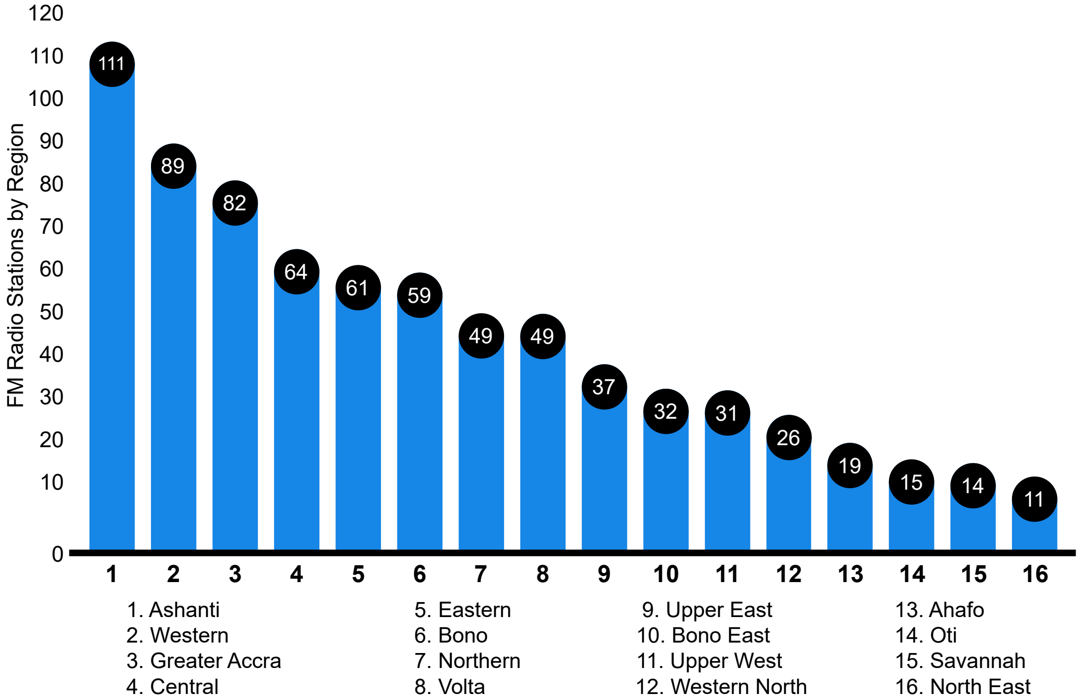


Source: National Communications Authority, 2023

4.2 Regional Distribution of Authorised FM Stations

The Ashanti Region has the highest authorised number of FM stations, with 111 radio stations, while the North East recorded the fewest, with 11 authorised FM stations.

Figure 46: Regional Distribution of Authorised FM Stations



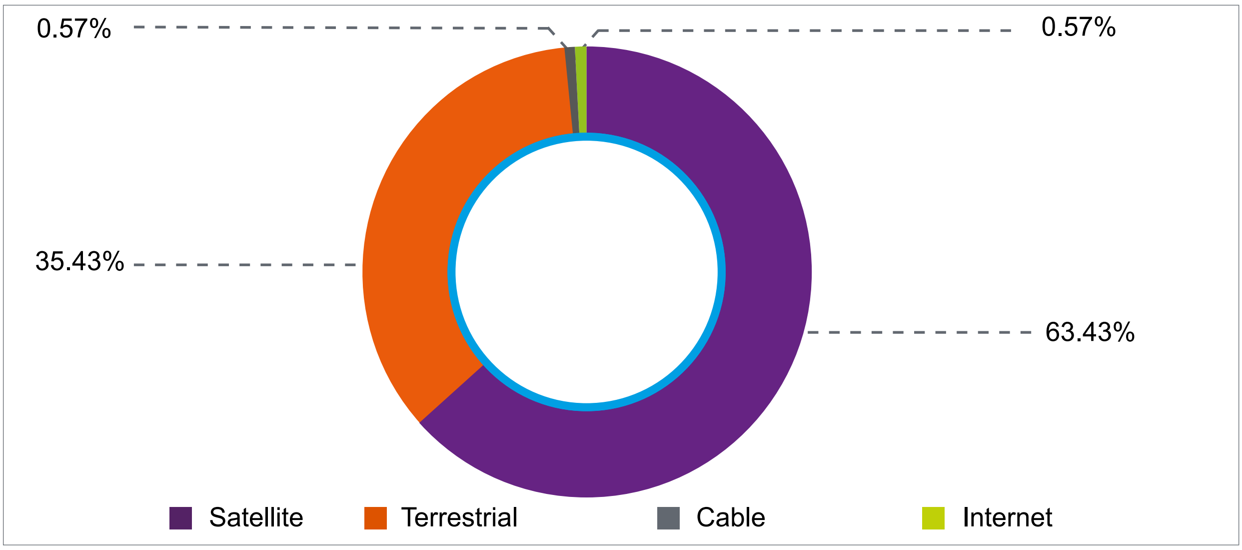
Source: National Communications Authority, 2023

4.3 Types of Television (TV) Broadcasting Station by Platforms

At the end of 2022, there were 175 authorised television stations, out of which 137 were operational (78.29%) and 38 were not operational (21.71%).

There are four (4) platforms through which TV signals are transmitted in Ghana: satellite, terrestrial, cable, and internet. Satellite television stations accounted for 63.43 percent of the authorised TV stations, with 111 stations, and Terrestrial stations were 35.43 percent of the total authorised television stations, with 57 stations. One television station has been authorised for cable and internet, respectively, with 0.57 percent each in the market.

Figure 47: Number of Authorised TV Stations by Platform for Transmission



Source: National Communications Authority, 2023

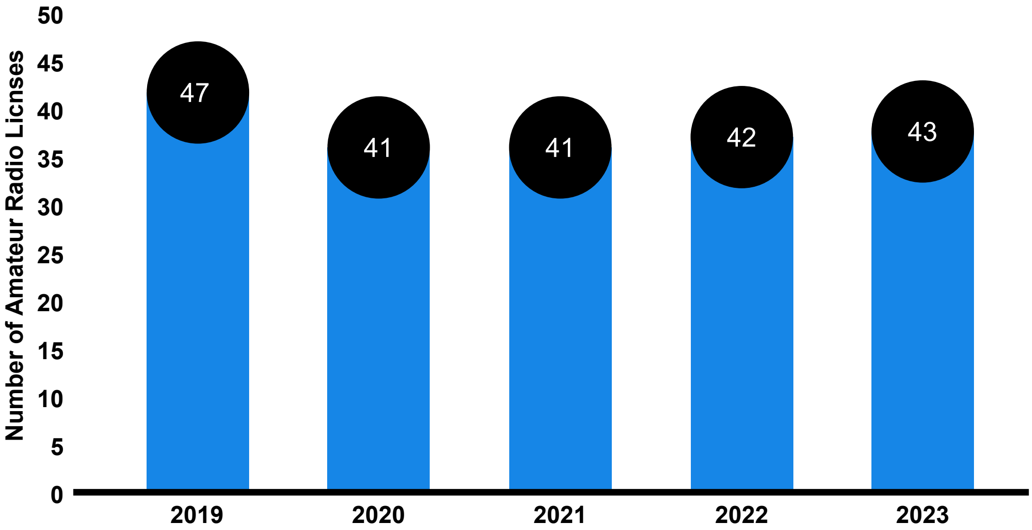
4.4 Categories of Television Services

Fifteen (15) categories of Television Services are authorised by the Authority. The most authorised TV Category is Satellite Television Broadcasting (Free-to-home direct-to-home bouquet).

4.6 Amateur Radio Services[1]

From 2019 to 2023, Amateur radio licence decreased from 47 license to 43 licences with a Compound Annual Growth Rate (CAGR) of negative 2.20 percent.

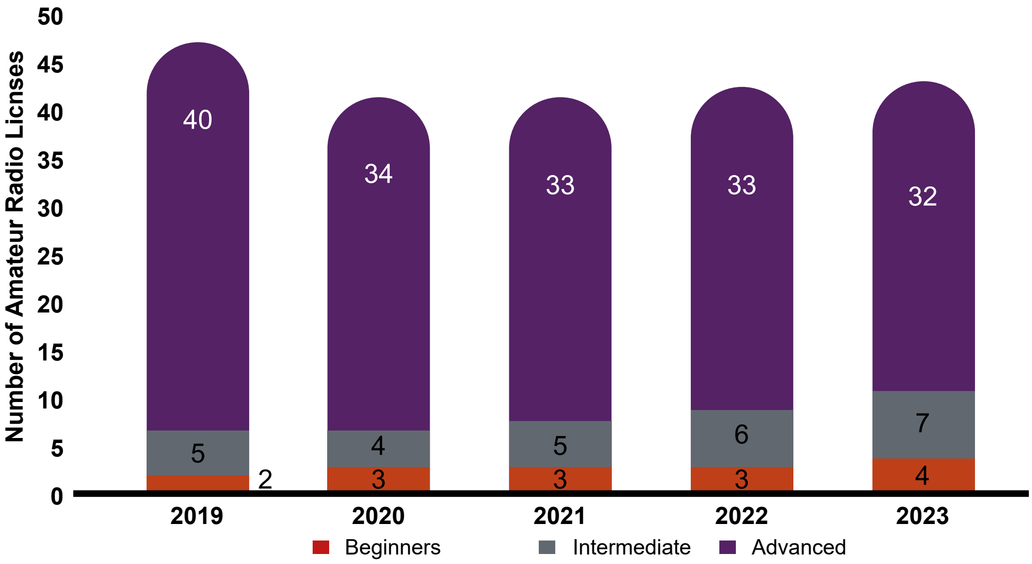
Figure 49: Amateur Radio Licences



Source: National Communication Authority, 2023

At the end of the reference period, 43 Amateur radio operators were authorised. Thirty-two (32) were advanced operatorsrepresenting 74.42 percent, 16.28 percent were intermediate stations with 7 amateur radio licences and 4 amateur radio licences representing 9.30 percent were beginner stations.

Figure 49: Amateur Radio Licences



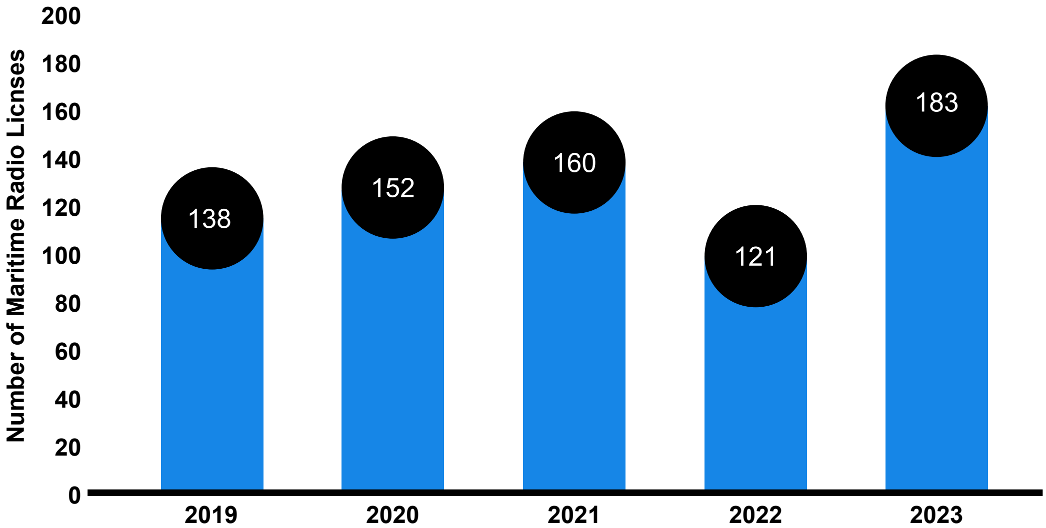
Source: National Communication Authority, 2023

2. Amateur Radio Service is a radio communication service for the purpose of self-training, interconnection and technical investigations carried out by amateurs.

4.6 Maritime Radio Service

At the end of 2023, the number of authorisations issued for maritime radio services increased by 51.24 percent to 183 authorisations from 121 authorisations in 2022. The Compound Annual Growth Rate (CAGR) over the five years was 7.31 percent, from 138 in 2019 to 183 authorisations in 2023.

Figure 51: Maritime Radio Service Licences

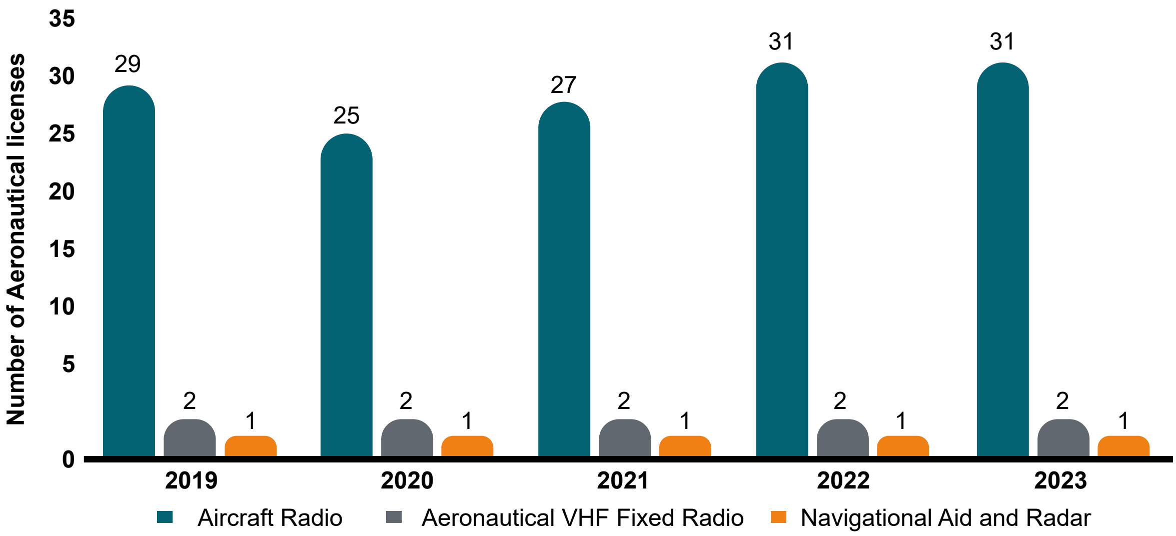


Source: National Communications Authority, 2023

4.7 Aeronautical Radio Services

In the reference period, 31 aircraft radio licenses were issued, which has been the same since 2022. Over the five years, it grew from 29 aircraft radio licenses in 2019 to 31 in 2023, representing a 1.68 percent Compound Annual Growth Rate (CAGR).

Figure 52: Number of Aeronautical Radio Licences

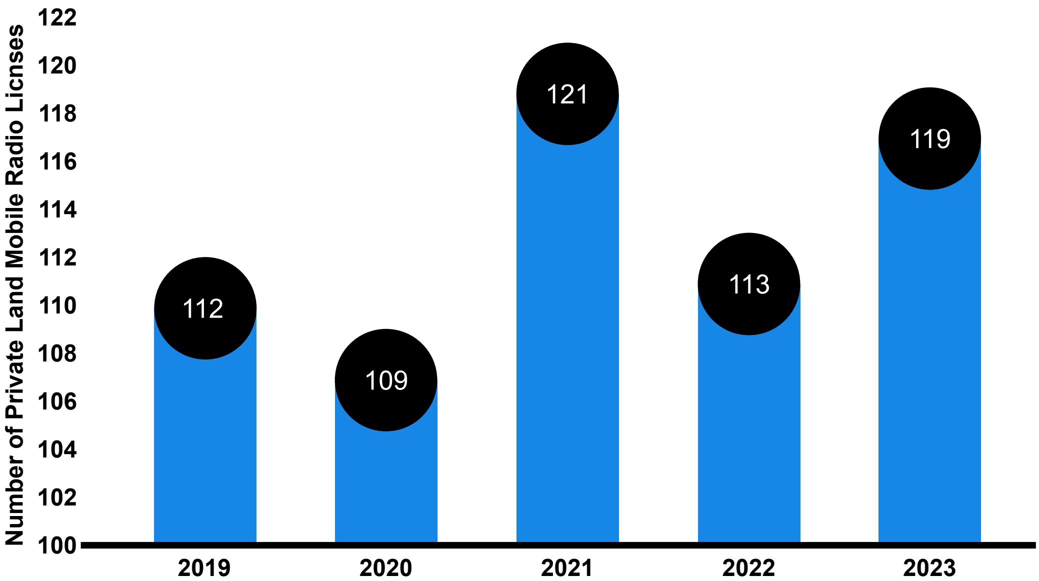


Source: National Communications Authority, 2023

4.8 Private Land Mobile Radio

In 2023, the number of Private Land Mobile Radio increased licensees by 6 public radio equipment, from 113 in 2022 to 119. Over the five-years trends show that the licensed radio equipment fluctuated with a Compound Annual Growth Rate (CAGR) of 1.53 percent from 112 equipment in 2019 to 119 equipment in 2023.

Figure 53: Licensed Private Land Mobile Radio



Source: National Communication Authority, 2023

Chapter Five

INFRASTRUCTURE SERVICES

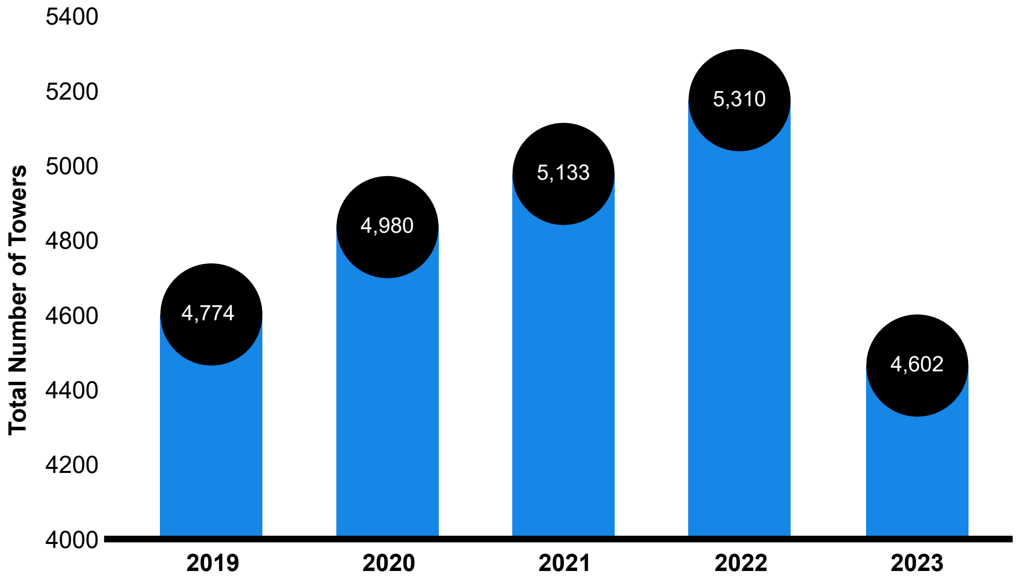
5.0 Introduction

This chapter gives an overview of infrastructure services provided by Towers Companies, International Submarine Operators and Domestic Inland Fibre. It expands to cover the total number of towers, tenancy ratio, regional distribution of towers, and potential capacity lit and used capacity by submarine and inland fibre operators.

5.1 Total Number of Towers

The total number of towers owned and managed by the Tower Companies declined to 4,602 towers in 2023, a 13.33 percent decrease from 5,310 towers in 2022. Over the five years, the number of towers grew consistently from 4,774 in 2019 to 5,310 in 2022 and declined to 4,602 in 2023 with a Compound Annual Growth Rate (CAGR) of negative 0.91 percent.

Figure 50: Year -on- Year number of Towers



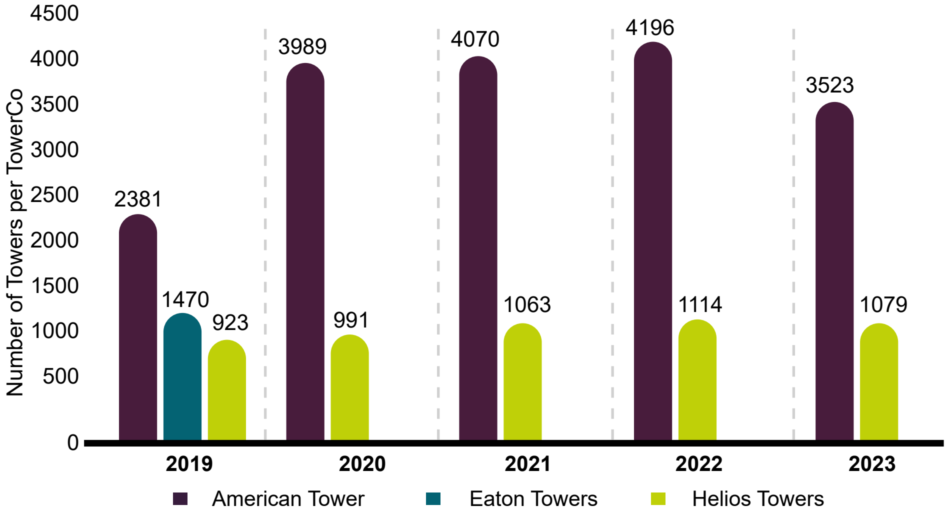
Source: NCA, Tower Companies, 2023

5.2 Number of Towers by Operator

American Towers manages 3,523 towers, representing a 16.04 decline in growth from 4,196 towers in 2022. The number of towers managed and owned by American Tower increased from 2,381in 2019 to 4,196 in 2022 and declined to 3,523 in 2023, representing a Compound Annual Growth Rate (CAGR) of 10.29 percent. This represents 76.60 percent of the market.

Helios Towers manages 23.40 percent of the total towers, recording a 3.14 percent decline in growth from 1,114 towers in 2022 to 1,079 towers in 2023. Over the five years, Helios Towers increased from 923 towers in 2019 to 1,114 towers in 2022 before declining to 1,079 towers in 2023 with a Compound Annual Growth Rate (CAGR) of 3.98 percent.

Figure 51: Total Number of Towers per Operator

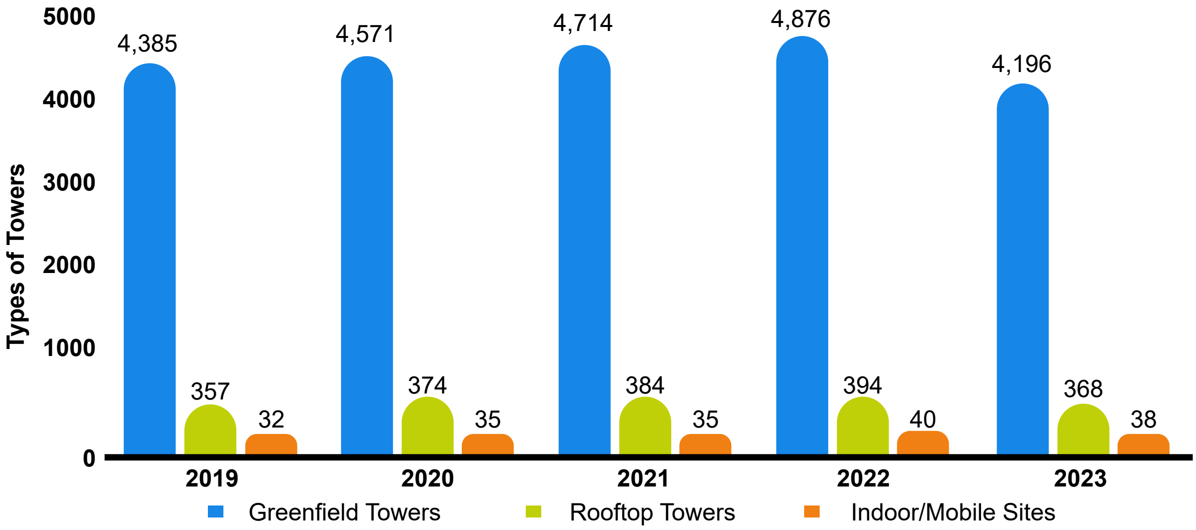


Source: NCA, Tower Companies, 2023

5.3 Types of Towers

The tower companies deployed three different types of towers. These are the Greenfield, Rooftop and Indoor network/mobile sites towers. At the end of 2023, 91.18 percent of the total towers were Greenfield towers, 8.00 percent were Rooftop towers and 0.82 percent were Indoor network/mobile sites.

Figure 52: Types of Towers

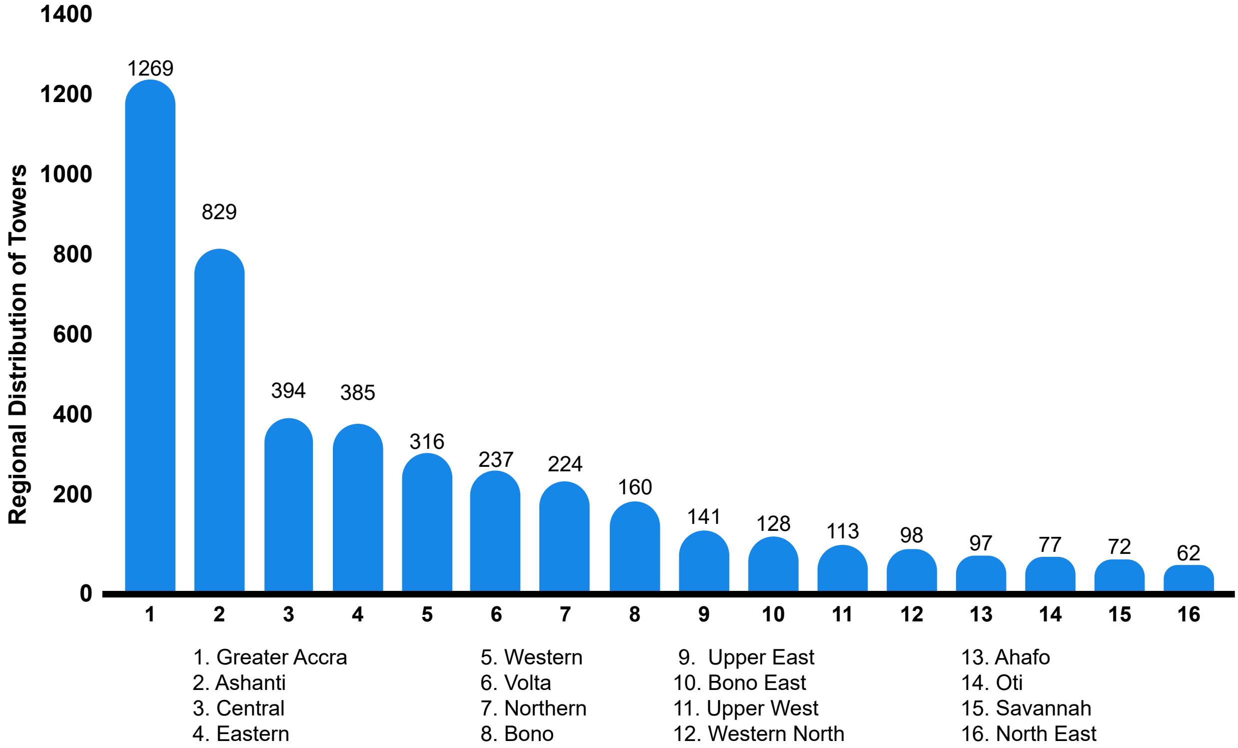


Source: NCA, Tower Companies, 2023

5.4 Regional Distribution of Towers in Ghana

Most Towers are located in the Greater Accra region reason being that the region is densely populated as compared to the other regions. North East Region recorded the least number of towers with 62 towers.

Figure 53: Regional Distribution of Towers

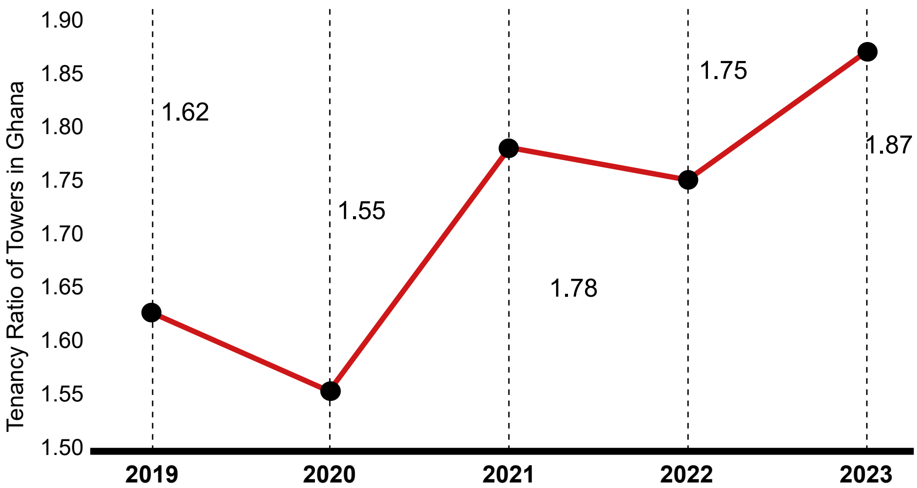


Source: NCA, Tower Companies, 2023

5.5 Tenancy Ratio

In the year under review, the tenancy Ratio increased from 1.75 in 2022 to 1.87 in 2023, recording a 7.01 percent increase. Over the five years, the tenancy ratio was lowest in 2020 with a ratio of 1.55.

Figure 54: Tenancy Ratio

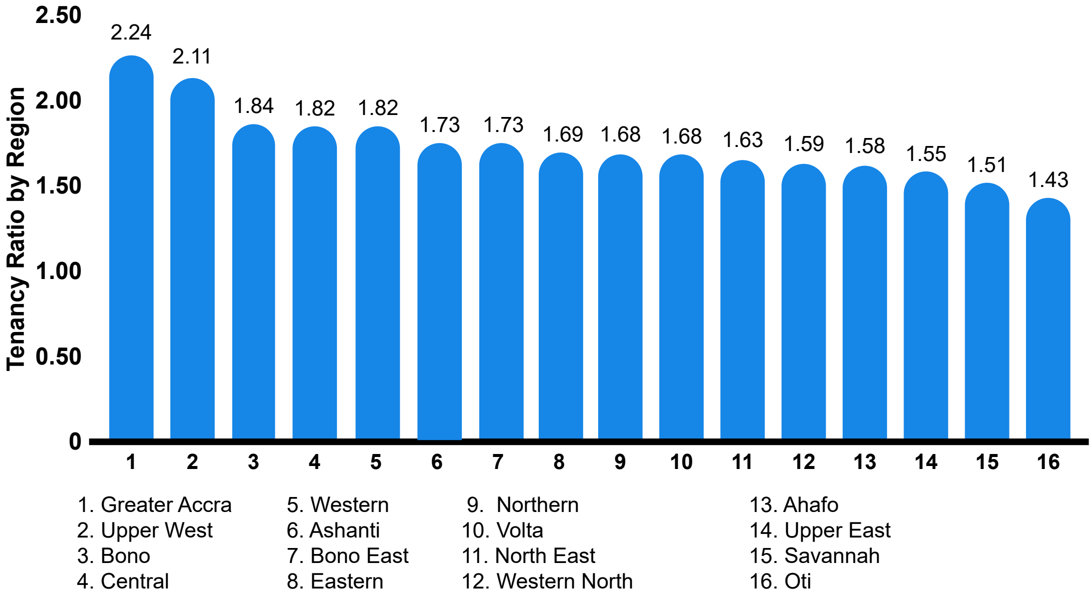


Source: NCA, Tower Companies 2023

5.6 Regional Distribution of Tenancy Ratio

The regional distribution of tenancy ratio in 2023 was between 2.24 and 1.43 with a nationwide average of 1.87. Greater Accra and Upper West regions recorded tenancy ratios of 2.24 and 2.11 respectively indicating that most of the towers in these regions are occupied by two or more tenants.

Figure 55: Regional Distribution of Tenancy Ratio



Source: NCA, Tower Companies, 2023

5.7 Submarine Cable Service

There are 5 authorised Submarine Cable Landing operators in the country, however, during the year under review, four (4) were operational namely:

a) West Africa Cable Systems (WACS)

b) MainOne Cable Company Ltd.

c) ETG Integrated Services Ltd.

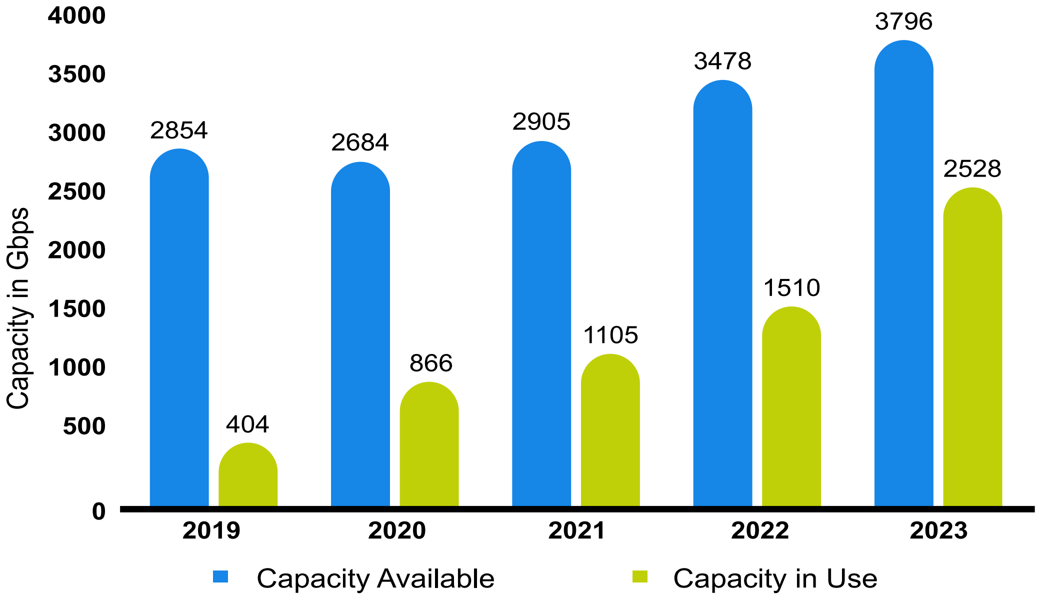
d) SAT-3 Limited.

5.8 Submarine Cable Capacity Available and Capacity in Use

The total capacity available in 2023 was 3,796 Gbps, an increase from 3,478 Gbps in 2022 representing a 9.14 percent increase in available capacity. Over the five years, there was a continuous increase in the available submarine capacity, from 2,854 Gbps in 2019 to 3,796 Gbps in 2023 with an average growth rate of 7.39 percent.

The total capacity in use increased to 2,528.01 Gbps from 1,509.91 Gbps in 2022 representing a 67.43 percent increase in the capacity used. This represents 66.60 percent of the capacity available being used.

Figure 56: Total Capacity Available and Capacity in Use

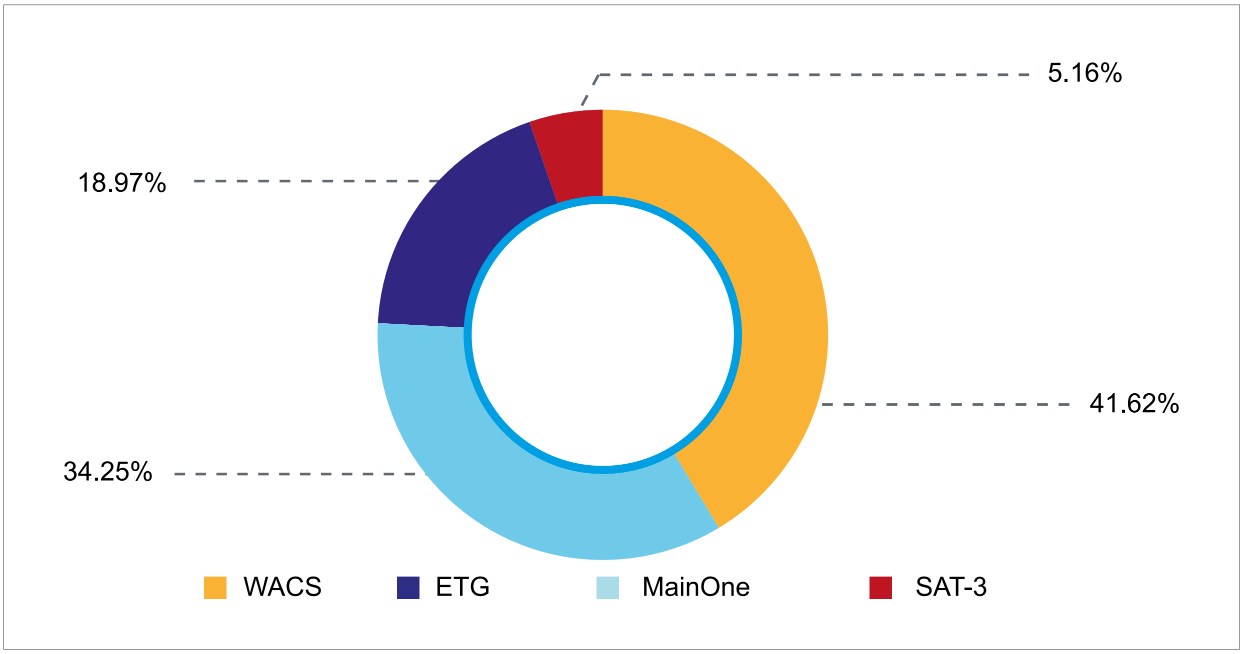


Source: NCA, Submarine Cable Providers 2023

5.9 Market Share of Submarine Cable Capacity Available and In-Use

In the year under review, 41.62 percent of the total capacity available was from WACS, followed by MainOne, which provided 34.25 percent of the total capacity available. ETG (Dolphine) provided 18.97 percent of available capacity whilst SAT-3 had 5.16 percent of the total capacity.

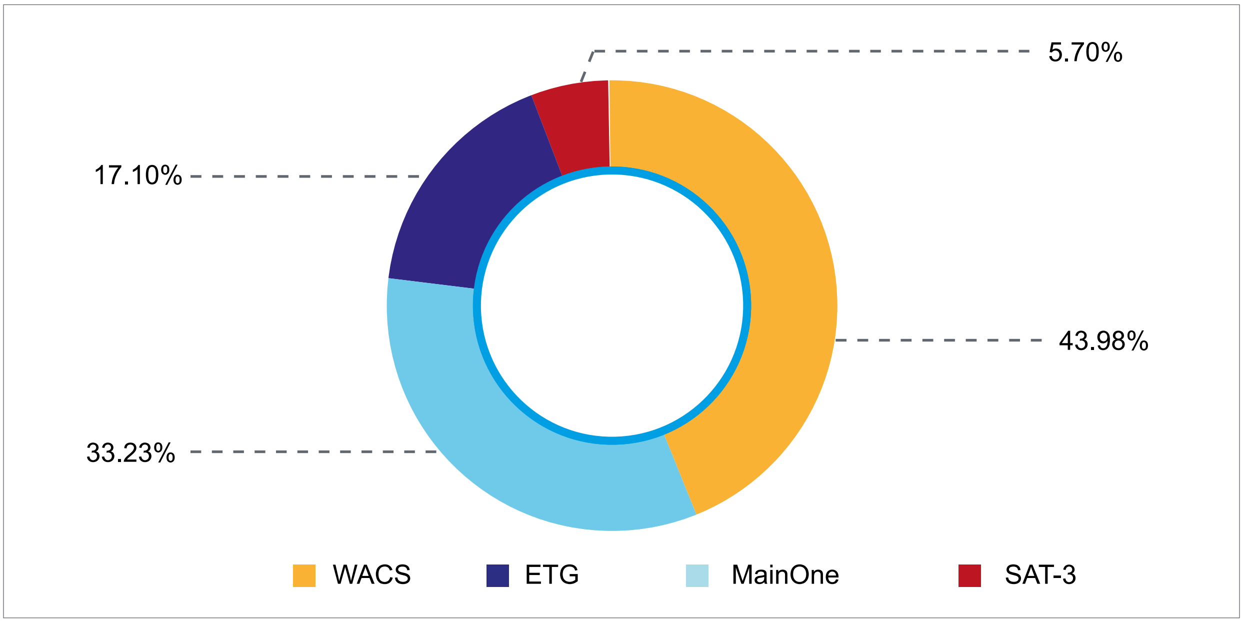
Figure 57: Market Share of Submarine Cable Providers per Capacity Available



Source: NCA, Submarine Cable Providers 2023

In reference to capacity in use, 43.98 percent of the total capacity was from WACS, MainOne contributed 33.23 percent, ETG (Dolphine) 17.10 percent and SAT-3 5.70 percent of the total capacity in use.

Figure 58: Market Share of Submarine Cable Providers per Capacity In Use



Source: NCA, Submarine Cable Providers 2023

5.9 Domestic Inland Fibre Optics

The data in this section covers four (4) out of the ten (10) Domestic Inland Fibre operators:, namely: Comsys, Spectrum Fiber Co., MainOne and C-Squared Ghana Ltd.

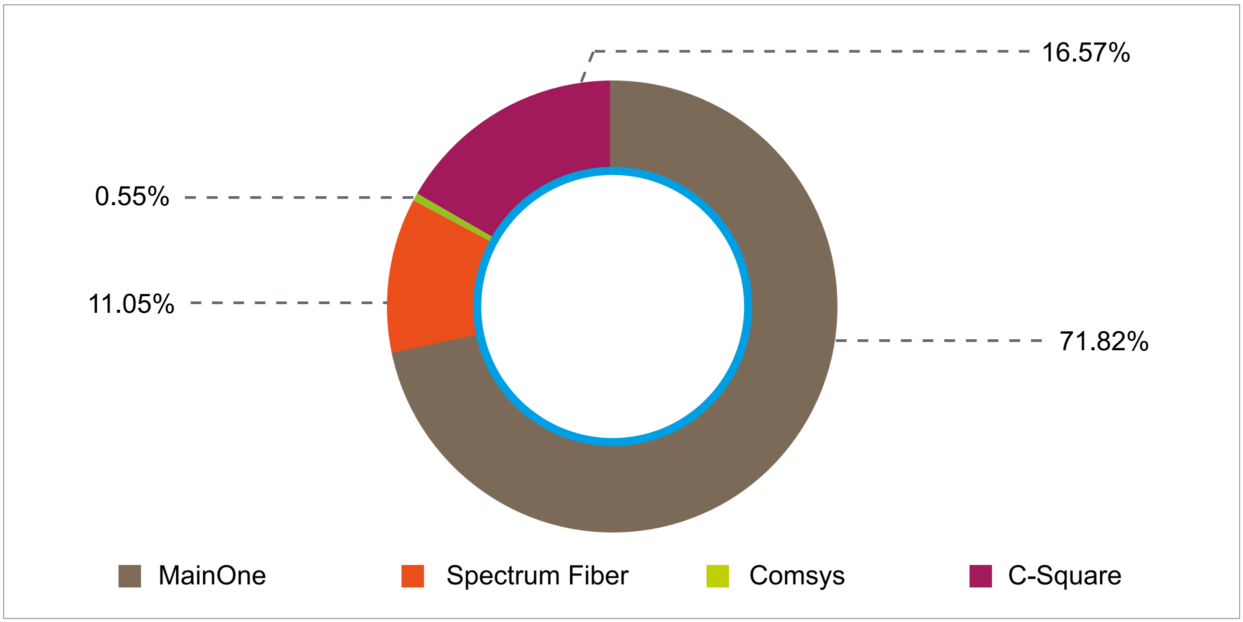
5.10 Total Domestic Fibre Capacity Available and In Use

In the year under review, the total capacity available was 1,810 Gbps out of which 1,067.85 Gbps is in use. This represents a 59.00 percent utilisation of available capacity.

5.11 Market Share of Domestic Inland Fibre Capacity Available and In Use

In the year under review, 71.82 percent of the total capacity available was provided by Main One, followed by C Squared Ghana Ltd with 16.57 percent. Spectrum Fiber Co. provided 11.05 percent of the total capacity and Comsys contributed 0.55 percent of the total available capacity in Gbps.

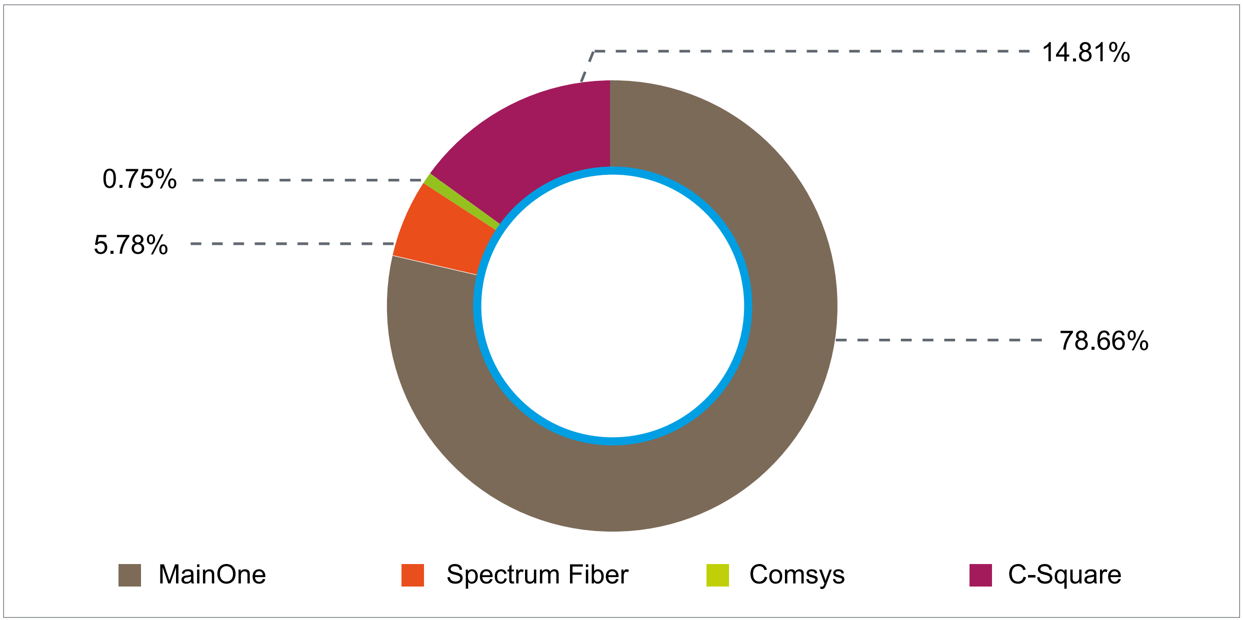
Figure 64: Market Share of Domestic Inland Fibre Capacity Available



Source: NCA, Domestic Fibre Operators 2023

In 2023, 78.66 percent of the total capacity was used by MainOne customers, C-Squared Ghana Ltd also used 14.81 percent, Spectrum Fibre Co. used 5.78 percent and Comsys used 0.75 percent of the total capacity.

Figure 65: Market Share of Domestic Inland Fibre Capacity in Use

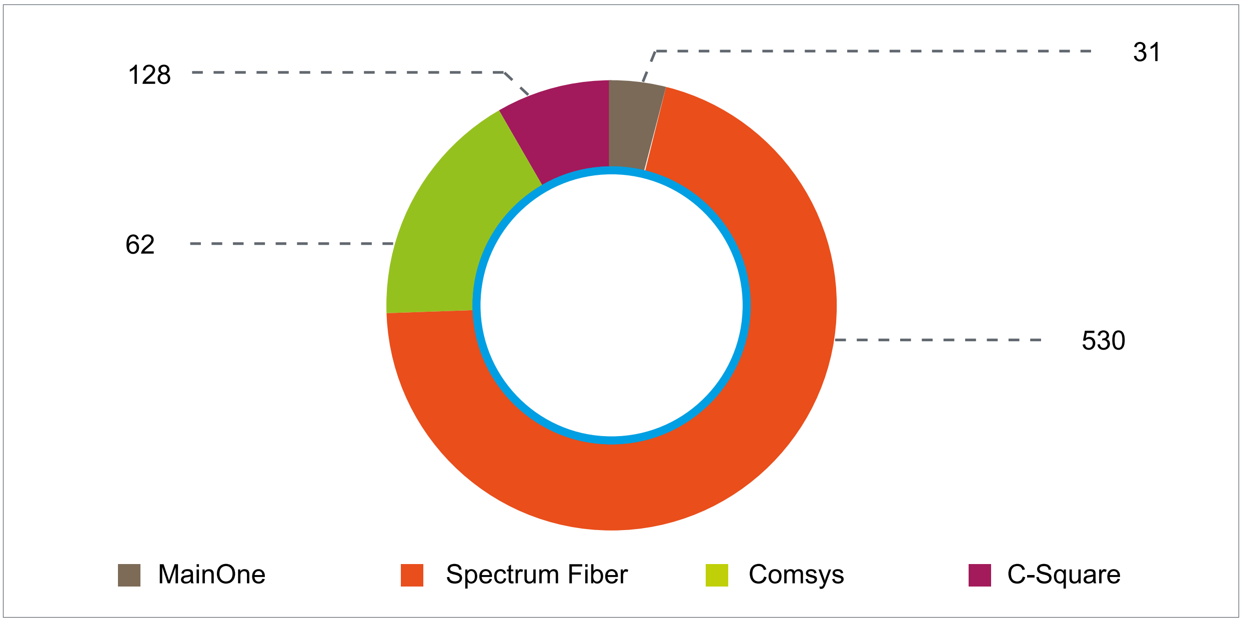


Source: NCA, Domestic Fibre Operators 2023

5.12 Fibre Cuts

In 2023, the total fibre cuts experienced by the Domestic Fiber operators were 751. The most affected operator was Spectrum Fibre Co. . These fibre cuts are mostly caused due to road construction, private developers, utility companies, fire, etc.

Figure 66: Number of Fibre Cuts per Operator



Source: NCA, Domestic Fibre Operators 2023

Chapter Six

OTHER SERVICES

6.0 Introduction

This Chapter provides information on other major services regulated by the National Communications Authority.

6.1 Numbering Resources

Telephony Numbering Resources are a string of numbers and or alphanumeric used to address electronic communication terminals, networks, protocols, or applications. The Authority regulates and authorizes the use of two main types of numbering resources; Normal Numbering Resources and Special Numbering Resources.

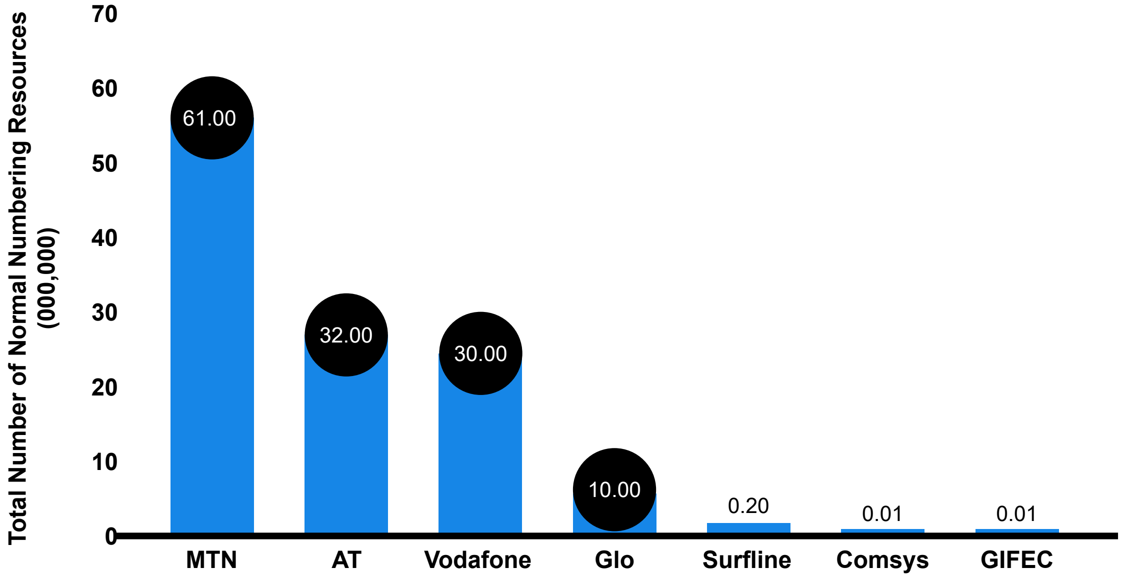
Normal Numbering Resource:

Ghana uses the closed numbering plan that follows the ITU.T E164 recommended format to assign numbers. The numbers available for use in connection with network and application services in Ghana and are categorized to include the following

- Network destination codes (NDC)
- Mobile Station International Subscriber Directory Number (MSISDN)
- Mobile Network Codes (MNC)
- Machine-to-Machine Numbering Resources (M2MNR)
- Geographic Numbering Resource

At the end of 2023, a total of 133,215,000 numbering resources has been assigned to the various service providers. The figure below gives details on the distribution per service provider.

Figure 59: Normal Numbers assigned per operator



Source: National Communication Authority, 2023

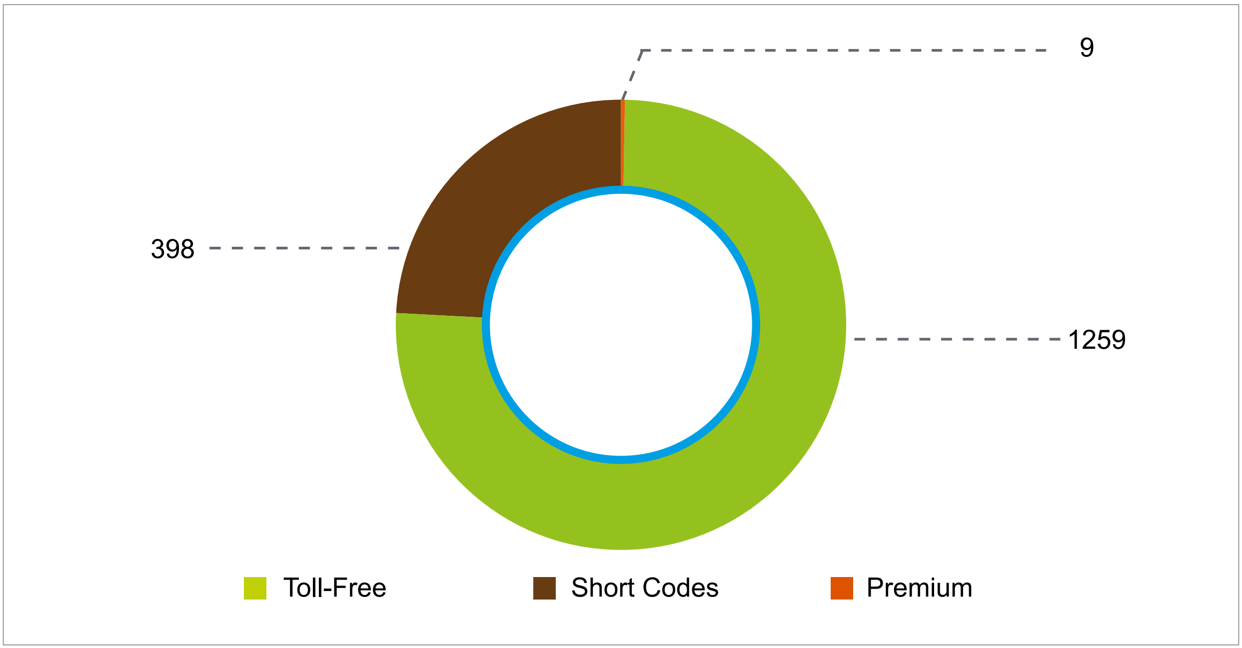
Special Numbering Resource:

The Authority also provides Special Numbering Resources (SNR), which are non-geographic and non-network dependent codes used in sending data and voice. These encompass the following:

- Toll-Free Numbering Resources
- Shared Cost Numbering Resources (SCNR)
- Premium Rate Numbering Resources:
- Short Codes

In 2023, 1,259 numbers were Toll Free numbers representing 75.57 percent of the special numbers issued. Short Codes were 398 numbers (23.89%) and Premium Numbers are 9 numbers represent 0.54%.

Figure 60: Special Numbering Resources Assigned



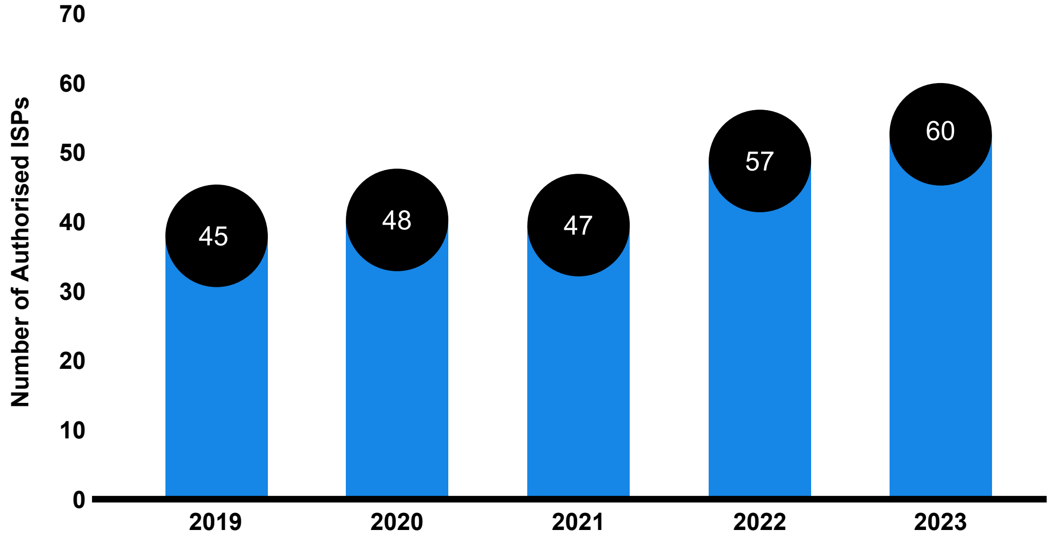
Source: National Communication Authority, 2023

6.2 Internet Service Providers (ISPs)

Internet Service Provider (ISP) refers to an entity that provides access and connectivity to the Internet using both licenced and unlicenced frequency bands for its deployments. The following are the service classifications under ISP:

At the end of 2023, the authority had authorised 60 Internet Service Providers, an increase of 3 from the previous year's figure of 57. Over the five years, it increased from 45 in 2019 to 60 in 2023, representing a 7.46 percent Compound Annaul Growth Rate (CAGR).

Figure 61: Number of Licenced ISPs



Source: National Communication Authority, 2023

6.3 Satellite Services

There are two types of Satellite Services regulated by the Authority; Very Small Aperture Terminal (VSAT) and Satellite Gateway Earth Stations

Satellite Gateway Earth Stations

This refers to large hubs that connect satellite networks to the internet and /or to private networks and cloud services. A Gateway may be used to provide telephony and data backhaul as well as broadcast feeder links. It may also be used for telemetry, tracking, commanding and monitoring satellite networks.

As at the end of the year 2023, only one (1) license had been issued for the operation of a satellite gateway earth station services. The licensee (OneWeb Ghana Limited) is yet to start operations.

Very Small Aperture Terminal (VSAT)

A Very Small Aperture Terminal (VSAT) is a two-way satellite ground station with a dish antenna that is usually smaller than 3.8 meters.

There are four (4) categories of VSAT licenses based on use;

i VSAT for Public Use: refers to the deployment of VSAT to enable the provision of telecommunications services to the public

ii VSAT for Private/Corporate Use: refers to the deployment of VSAT to enable the provision of telecommunications services for personal use or to aid the operations a corporate body

iii. VSAT for Educational Use: refers to the deployment of VSAT to enable the provision of telecommunications services for educational institutions.

iv. VSAT for Network Use: refers to the deployment of VSAT using a hub to enable the provision of telecommunications services to the public. There are three (3) classes of VSAT Network Licences as follows;

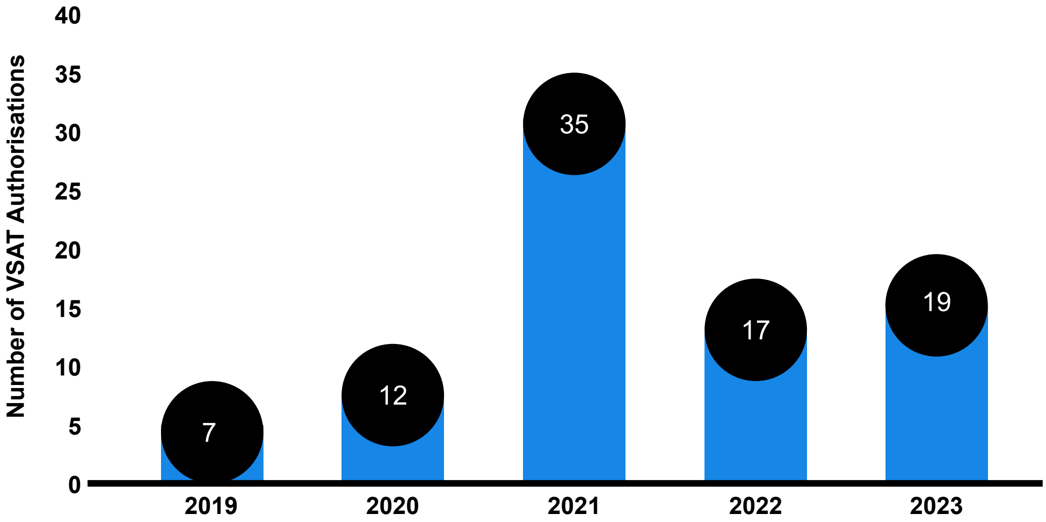
a. VSAT Network Class 1: Refers to the establishment, operation, and provision of a VSAT Network in Ghana, with a minimum of 101 terminals (i.e. (unlimited Terminals 101+)).

b. VSAT Network Class 2: Refers to the establishment, operation, and provision of a VSAT Network in Ghana, with a minimum of 51 terminals and a maximum of 100 terminals (i.e. (51-100 Terminals)).

c. VSAT Network Class 3: Refers to the establishment, operation, and provision of a VSAT Network in Ghana, with a maximum of 50 terminals (i.e. (Less/= 50 Terminals)

As of the end of 2023, 19 valid VSAT authorisations had been issued. Out of the 19 Authorisations, three (3) were for Public Use, six (6) for Corporate Use, two (2) for Educational Use and the remaining eight (8) for Network Use.

Figure 62: Number of VSAT Authorisations

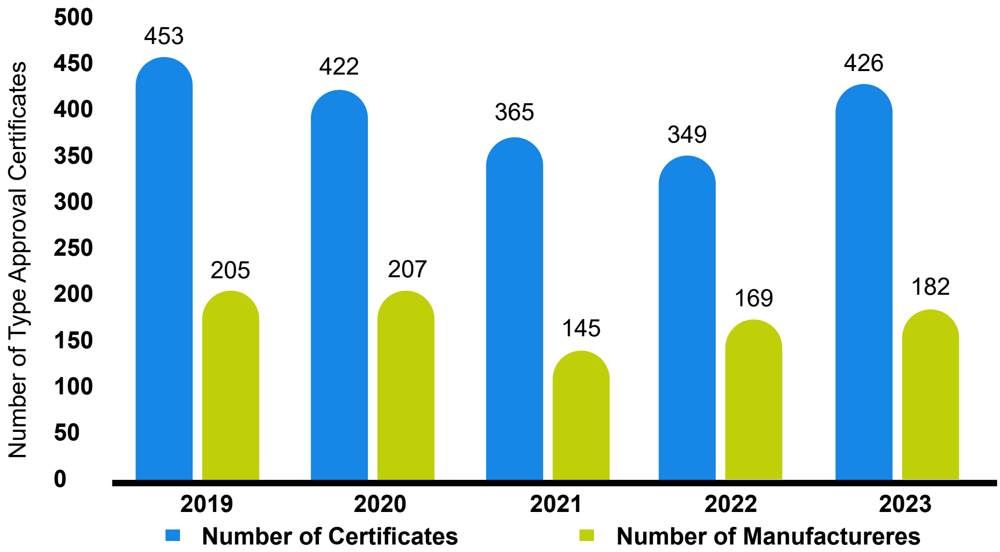


Source: National Communication Authority, 2023

6.4 Type Approval

In the year 2023, 426 type approval certificates were issued. This represents a 22.06 percent increase from 349 in 2022. A total of 182 manufacturers were certified recording a 7.69 percent increment from 169 in the previous year.

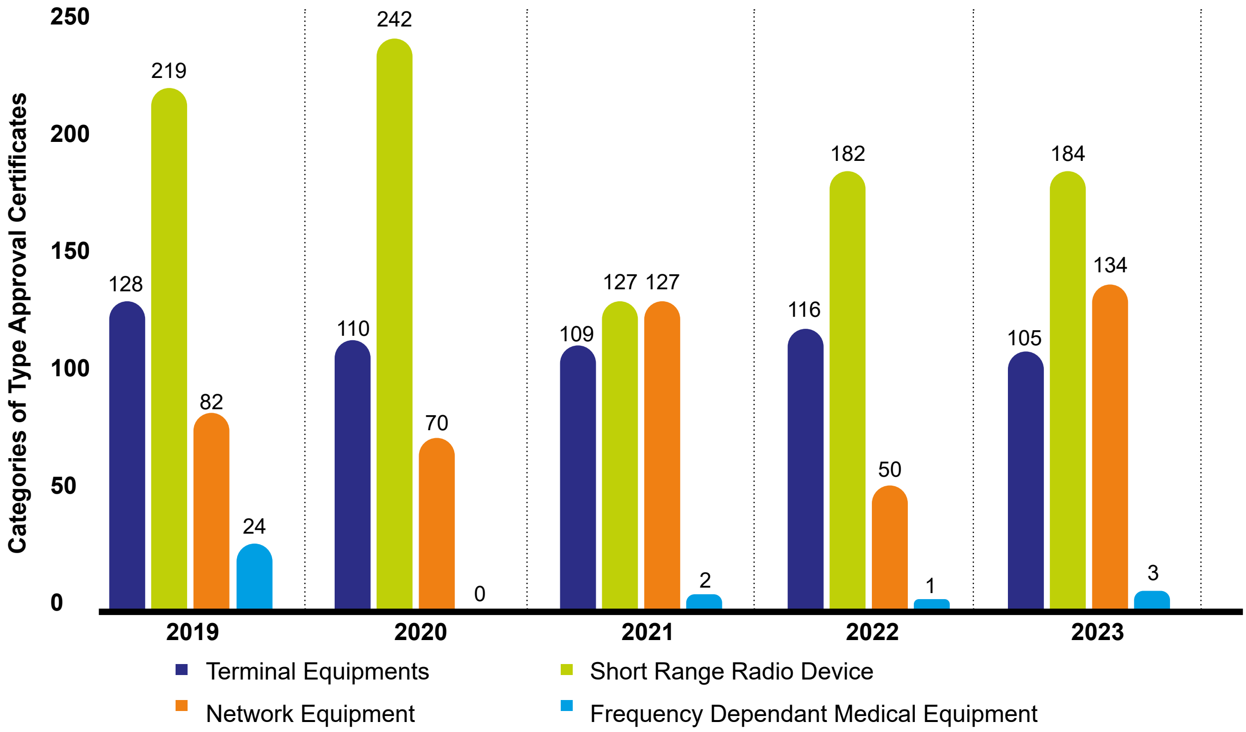
Figure 63: Number of Type Approval Certificates Issued



Source: National Communication Authority, 2023

There are four categories of equipment under Type Approval Certification. In the year under review, 184 Short-Range Radio Devices, 134 Network Equipment, 105 Terminal Equipment and 3 Frequency Dependent Medical Equipment were issued with type approve certificates.

Figure 64: Categories of Type Approval Certificates Issued

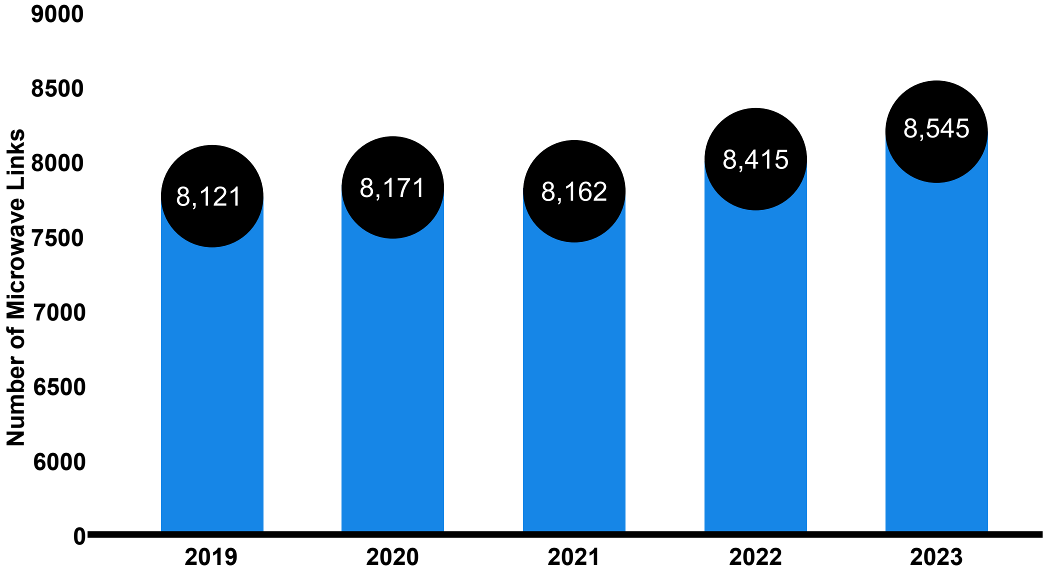


Source: National Communication Authority, 2023

6.5 Microwave Links

During the reference period, there were a total of 8,545 microwave links deployed across the country of which 99.27 percent were deployed by MNOs, 0.64 percent were deployed by ISPS and 0.08 percent were deployed by other service providers. BWAs did not deploy any microwave links as they were not operational in 2023. There has been a continuous increase in the total number of microwave links deployed over the last five years by a cCompound Annual Growth Rate (CAGR) of 1.28% from 8,121 links in 2019 to 8,545 links in 2023.

Figure 65: Number of Microwave Links Assigned

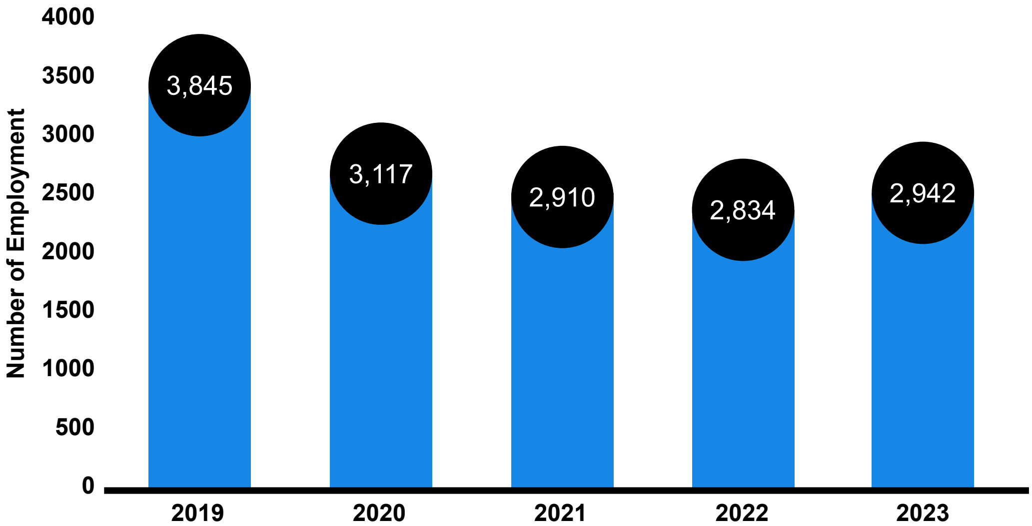


Source: National Communication Authority, 2023

6.6 Employment in the Telecommunications Space

Total employment among the Mobile Network Operators increased from 2,834 personnel in 2022 to 2,942 personnel in 2023 representing a growth of 3.81 percent. Over the five years, total employees declined from 3,845 in 2019 to 2,942 in 2023 with a CAGR of 21.95 percent.

Figure 66: Number of Employment by MNOs



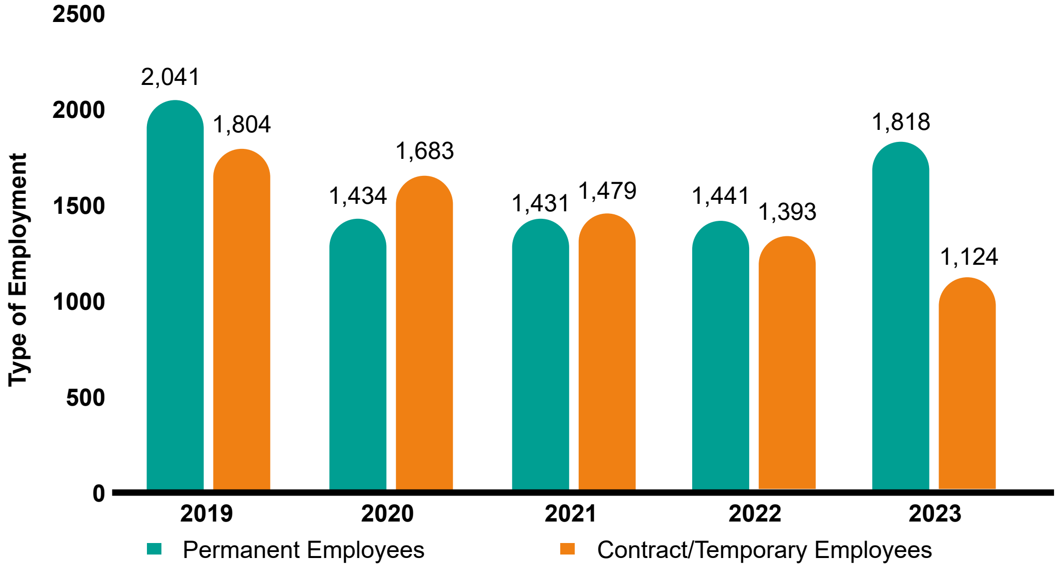
Source: NCA, Mobile Network Operators, 2023

Types of Employment

The number of permanent employees for the year 2023 was 1,818 from 1,441 in 2022, a 26.16 percent growth in permanent employees. Contract/Temporary Employees decreased from 1,393 in 2022 to 1,124 in 2023 recording a 19.31 percent decline in temporary employees.

Over the five-year period, permanent employees decreased from 2,041 in 2019 to 1,818 in 2023 with a negative Compound Annual Growth Rate (CAGR) of -2.85 percent. The temporary employees over the last five years decreased from 1,804 in 2019 to 1,124 in 2023 with a negative average growth rate of 11.16 percent.

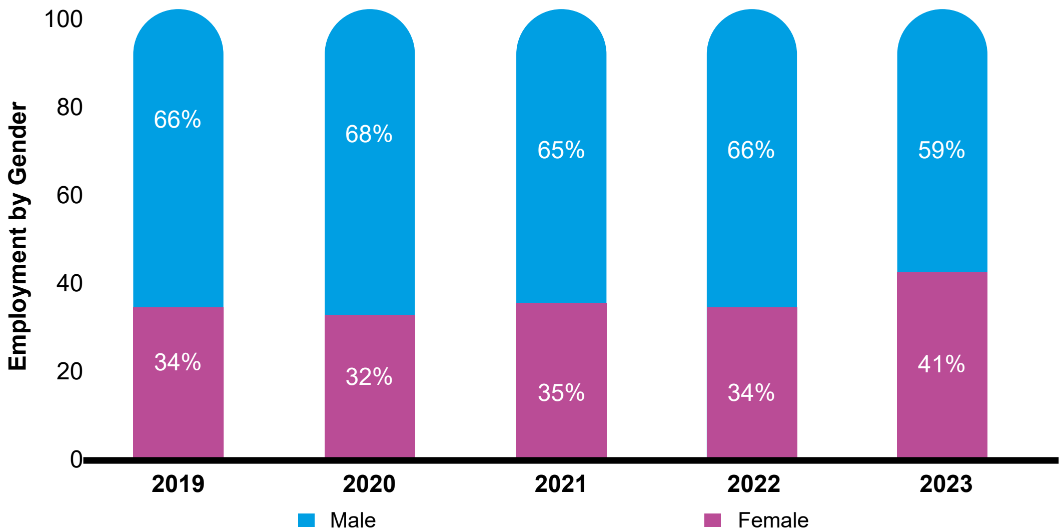
Figure 67: Types of Employment



Source: NCA, Mobile Network Operators, 2023

The Mobile Network Operators have more than 59% male employees as compared to 41% female employees. This male employee percentage of 59% is a decrease from the previous year's 66% whilst the percentage of the female employees increased from 34% to 41% in 2023.

Figure 68: Share of Employment by Gender



Source: NCA, Mobile Network Operators, 2023

APPENDIX

Table 1: Mobile Voice Subscriptions and Penetration Rate

Subscriptions	2019	2020	2021	2022	2023
Mobile Voice	40,857,077	40,461,609	40,454,073	40,045,308	33,384,460
Growth rate (%)	*-0.19*	*-0.97*	*-0.02*	-1.01	-16.63
Net Additions	-77,798	-395,468	-7,536	-408,765	-6,660,848
Population	30,190,081	30,922,666	30,792,608	31,769,363	32,429,591
Penetration rate (%)	*135.33*	*130.85*	*131.38*	126.05	102.94

Source: National Communication Authority, 2023

Table 2: Distribution of Postpaid and Prepaid Subscriptions

	2019	2020	2021	2022	2023
Prepaid	40,216,604	40,173,414	40,158,443	39,617,681	32,941,379
Postpaid	640,473	288,195	295,630	427,627	443,081
Mobile Voice Subscriptions	**40,857,077**	**40,461,609**	**40,454,073**	**40,045,308**	**33,384,460**
Growth rate (%)	*-0.19*	*-0.97*	*-0.02*	-1.01	-16.63
Net Additions	-77,798	-395,468	-7,536	-408,765	-6,660,848
Population	30,190,081	30,922,666	30,792,608	31,769,363	32,429,591
Penetration rate (%)	*135.33*	*131.84*	*131.38*	126.05	102.94

Source: National Communication Authority, 2023

Table 3: Mobile Voice Subscriptions per Operator

Mobile Network Operator		2019	2020	2021	2022	2023
MTN	Subscriptions	22,555,848	23,144,302	23,966,302	26,613,845	24,652,582
	Market Share (%)	*55.21*	*57.20*	*59.24*	*66.46*	*73.84*
Vodafone	Subscriptions	9,122,403	8,400,565	8,250,436	7,537,400	6,275,415
	Market Share (%)	*22.33*	*20.76*	*20.39*	*18.82*	*18.80*
AT	Subscriptions	8,453,053	8,135,618	7,390,278	5,585,510	2,456,463
	Market Share (%)	*20.69*	*20.11*	*18.27*	*13.95*	*7.36*
Glo	Subscriptions	725,773	781,124	847,057	308,553	
	Market Share (%)	*1.78*	*1.93*	*2.09*	*0.77*	
Total		**40,857,077**	**40,461,609**	**40,454,073**	**40,045,308**	**33,384,460**

Source: National Communication Authority, 2023

Table 4: Mobile Voice Traffic per Operator

Mobile Operator		2019	2020	2021	2022	2023
MTN	Traffic	70,521,752,504	89,786,199,833	98,334,998,826	92,774,464,908	91,203,644,161
	Share (%)	*86.78*	*90.36*	*90.99*	*90.64*	*92.30*
Vodafone	Traffic	6,682,666,929	5,215,491,661	5,547,932,163	6,463,007,442	6,641,969,907
	Share (%)	*8.22*	*5.25*	*5.13*	*6.31*	*6.72*
AT	Traffic	3,953,752,066	4,174,073,901	4,010,269,647	3,006,884,218	964,373,396
	Share (%)	*4.87*	*4.20*	*3.71*	*2.94*	*0.98*
Glo	Traffic	108,413,410	188,390,005	179,977,127	110,523,331	
	Share (%)	*0.13*	*0.19*	*0.17*	*0.11*	
Total Voice Traffic		**81,266,584,909**	**99,364,155,400**	**108,073,177,763**	**102,354,879,899**	**98,809,987,464**

Source: National Communication Authority, 2023

Table 5: Distribution of Off net and On net Traffic (Domestic)

	2019	2020	2021	2022	2023
On-Net					
Traffic	73,774,794,534	92,094,192,477	100,174,180,889	93,743,975,726	91,038,847,890
Share (%)	*90.78*	*92.68*	*92.69*	*91.59*	*92.14*
Growth (%)	*16.48*	*24.83*	*8.77*	*-6.42*	*-2.89*
Off-Net					
Traffic	7,491,790,375	7,269,962,924	7,898,996,874	8,610,904,173	7,771,139,575
Share (%)	*9.22*	*7.32*	*7.31*	*8.41*	*7.86*
Growth (%)	*-18.28*	*-2.96*	*8.65*	*9.01*	*-9.75*
Total	**81,266,584,909**	**99,364,155,400**	**108,073,177,763**	**102,354,879,899**	**98,809,987,464**

Source: National Communication Authority, 2023

Table 6: Distribution of Inbound and Outbound International Traffic

	2019	2020	2021	2022	2023
Inbound International					
Traffic	313,030,354	220,895,472	239,092,078	248,344,559	192,770,372
Share(%)	*37.50*	*31.72*	*34.54*	*43.76*	*41.58*
Growth(%)	*-34.08*	*-29.43*	*8.24*	*3.87*	*-22.38*
Outbound International					
Traffic	521,630,329	475,444,765	453,152,114	319,144,643	270,787,611
Share(%)	*62.50*	*68.28*	*65.46*	*56.24*	*58.42*
Growth(%)	*-8.67*	*-8.85*	*-4.69*	*-29.57*	*-15.15*
Total	**834,660,683**	**696,340,237**	**692,244,192**	**567,489,202**	**463,557,983**

Source: National Communication Authority, 2023

Table 7: Average Mobile Voice Traffic per Subscription

Subscriptions	2019	2020	2021	2022	2023
Mobile Voice Subscription	40,857,077	40,461,609	40,454,073	40,045,308	**33,384,460**
Mobile Voice Traffic	81,266,584,909	99,364,155,400	108,073,177,763	102,354,879,899	98,809,987,464
Average traffic per subscription	1,989	2,456	2,672	2,556	2959.76

Source: National Communication Authority, 2023

Table 8: Mobile Data Subscriptions and Penetration Rate (%)

Subscriptions	2019	2020	2021	2022	2023
Prepaid	29,960,572	26,130,249	23,237,338	22,498,227	22,996,027
Postpaid	380,721	339,714	177,189	188,331	211,601
Mobile Data	30,341,293	26,469,963	23,414,527	22,686,558	23,207,628
Growth Rate (%)	*11.42*	*-12.76*	*-11.54*	*-3.11*	*2.30*
Net Additions	3,109,141	-3,871,330	-3,055,436	-727,969	521,070
Population	30,190,081	30,922,666	30,792,608	31,769,363	32,429,591
Penetration Rate (%)	*100.50*	*85.60*	*76.04*	*71.41*	*71.56*

Source: National Communication Authority, 2023

Table 9: Mobile Data Subscription per Operator

Mobile Network Operator		2019	2020	2021	2022	2023
MTN	Subscriptions	22,260,198	19,146,862	16,159,901	16,744,370	18,675,841
	Market Share (%)	73.37	72.33	69.02	73.29	80.47
Vodafone	Subscriptions	3,700,970	3,055,454	3,346,148	3,210,797	3,066,359
	Market Share (%)	12.20	11.54	14.29	14.05	13.21
AT	Subscriptions	4,110,972	3,926,130	3,524,022	2,730,454	1,465,428
	Market Share (%)	13.55	14.83	15.05	11.95	6.31
Glo	Subscriptions	269,153	341,517	384,456	160,627	
	Market Share (%)	0.89	1.29	1.64	0.70	
Total		**30,341,293**	**26,469,963**	**23,414,527**	**22,846,248**	**23,207,628**

Source: National Communication Authority, 2023

Table 10: Mobile Data Traffic per Operator

Mobile Network Operator		2019	2020	2021	2022	2023
MTN	Data Traffic (GB)	262,451,963	511,530,510	675,662,190	1,082,401,526	1,504,709,782
	Market Share (%)	*68.13*	*71.71*	*70.58*	*78.51*	*80.95*
Vodafone	Data Traffic (GB)	69,276,035	113,916,081	183,653,560	210,000,989	274,785,598
	Market Share (%)	*17.98*	*15.97*	*19.19*	*15.23*	*14.78*
AT	*Data Traffic (GB)*	45,759,166	67,669,723	70,881,825	68,286,450	79,314,699
	Market Share (%)	*11.88*	*9.49*	*7.40*	*4.95*	*4.27*
Glo	Data Traffic (GB)	7,738,808	20,196,277	27,047,252	18,075,656	
	Market Share (%)	*2.01*	*2.83*	*2.83*	*1.31*	
Total		**385,225,972**	**713,312,591**	**957,244,828**	**1,378,764,621**	**1,858,810,079**

Source: National Communication Authority, 2023

Table 11: Average Mobile Data Usage per Subscription

Subscriptions	2019	2020	2021	2022	2023
Mobile Voice Subscription	30,341,293	26,469,963	23,414,527	22,686,558	23,207,628
Mobile Data Traffic (GB)	385,225,972	713,312,591	957,244,828	1,378,764,621	1,858,810,079
Average Data Usage per subscription	**12.70**	**26.95**	**40.88**	**60.77**	**80.09**

Source: National Communication Authority, 2023

Table 12: Distribution of Off-net and On-net SMS Count

	2019	2020	2021	2022	2023
On-Net SMS					
Traffic	2,367,716,985	1,648,715,441	1,600,711,943	1,976,546,289	2,303,380,905
Growth (%)	*12.41*	*(30.37)*	*(2.91)*	*23.48*	*16.51*
Off-Net SMS					
Traffic	381,146,115	392,946,906	577,412,214	742,702,003	1,195,717,077
Growth (%)	(27.84)	3.10	46.94	28.63	61.53
Total	**2,748,863,100**	**2,041,662,347**	**2,178,124,157**	**2,719,248,292**	**3,498,641,208**

Source: National Communication Authority, 2023

Table 13: SMS Counts per Operator

Mobile Network Operator	2019	2020	2021	2022	2023
MTN	1,400,664,864	1,184,006,344	1,268,498,378	1,965,836,108	2,520,750,757
Vodafone	1,286,085,070	832,384,480	884,774,319	701,508,358	935,516,832
AT	58,597,086	21,124,918	17,255,704	45,871,731	42,373,619
Glo	3,516,080	4,146,605	7,595,756	6,032,095	
Total	**2,748,863,100**	**2,041,662,347**	**2,178,124,157**	**2,719,248,292**	**3,498,641,208**

Source: National Communication Authority, 2023

Table 14: Average SMS Count per Subscription

Subscriptions	2019	2020	2021	2022	2023
Mobile Voice Subscription	40,857,077	40,461,609	40,454,073	40,045,308	33,384,460
Total SMS Count	2,748,863,100	2,041,662,347	2,178,124,157	2,719,248,292	3,503,050,092
Average SMS per subscription	67	50	54	68	105

Source: National Communication Authority, 2023

Table 15: Default Tariffs for Mobile Services

Average Industry Tariffs	2019	2020	2021	2022	2023
On-net Voice	0.11	0.12	0.12	0.13	0.14
Off-net Voice	0.12	0.13	0.12	0.13	0.14
On-net SMS	0.05	0.05	0.05	0.05	0.06
Off-net SMS	0.05	0.05	0.06	0.06	0.06
Data/MB	0.09	0.09	0.08	0.09	0.14

Source: National Communication Authority, 2023

Table 16: Mobile Numbers Ported

	2019	2020	2021	2022	2023
Total No. of Ports	384,558	236,111	219,957	5,333	1,113
Growth Rate (%)	114.2	-38.6	-6.8	-97.6	-79.1
Cumulative Total Port	**4,411,924**	**4,648,035**	**4,867,992**	**4,873,325**	**4,874,438**

Source: National Communication Authority, 2023

Table 17: Net Porting per Operator

	2019	2020	2021	2022	2023
Port In					
MTN	205,029	189,818	217,374	3,272	657
Vodafone	175,403	43,848	1,730	1,550	389
Tigo	368	-			
Airtel	3,596	-			
AT		2,314	797	495	67
Glo	162	131	56	16	-
Total	**384,558**	**236,111**	**219,957**	**5,333**	**1,113**
Port Out					
MTN	63,059	6476	1257	841	166
Vodafone	98,693	45059	2245	763	437
Tigo	5,850	-	0	0	0
Airtel	212,464				
AT		183813	216003	3520	480
Glo	4,449	753	447	208	30
Expresso	43	10	5	0	0
Total	**384,558**	**236,111**	**219,957**	**5,332**	**1,113**

Source: National Communication Authority, 2023

Table 18: Types of Mobile Phone of on Mobile Networks

Types of Phones	2020	2021	2022	2023
Number of Smartphone Users	18,889,922	18,288,346	20,626,277	18,686,118
Market Share (%)	51.12%	49.28%	51.54%	54.19%
Number of Feature Phone Users	10,607,310	11,098,344	14,206,200	11,450,697
Market Share (%)	28.71%	29.91%	35.49%	33.21%
Number of Basic Phone Users	7,454,119	7,723,395	5,190,747	4,347,697
Market Share (%)	20.17%	20.81%	12.97%	12.61%
Total	**36,951,351**	**37,110,085**	**40,023,224**	**34,484,512**

Source: National Communication Authority, 2023

Table 19: Fixed Voice Subscription and Penetration Rate (%)

Subscriptions	2019	2020	2021	2022	2023
Fixed Network Subscriptions	288,531	307,668	315,271	330,016	318,460
Growth Rate (%)	*3.65*	*6.63*	*2.47*	*4.68*	*-3.50*
Net Additions	10,152	19,137	7,603	14,745	-11,556
Country Population	30,190,081	30,922,666	30,792,608	31,769,363	32,429,591
Penetration Rate (%)	*0.96*	*0.99*	*1.02*	*1.04*	*0.98*

Source: National Communication Authority, 2023

Table 20: Fixed Voice Subscriptions per Operator

Fixed Network Operators		2019	2020	2021	2022	2023
Vodafone	Subscriptions	280,321	299,802	307,278	326,579	316,120
	Share (%)	*97.15*	*97.44*	*97.46*	*98.96*	*99.27*
AT	Subscriptions	8,210	6,389	3,634	2,247	933
	Share (%)	*2.85*	*2.08*	*1.15*	*0.68*	*0.29*
MTN	*Subscriptions*	-	*1477*	*4,359*	1,190	1,407
	Share (%)	-	*0.48*	*1.38*	*0.36*	*0.44*
Total Industry Subscriptions		**288,531**	**307,668**	**315,271**	**330,016**	**318,460**

Source: National Communication Authority, 2023

Table 21: Fixed Voice Traffic per Operator

Fixed Network Operator		2019	2020	2021	2022	2023
Vodafone	Traffic (Minutes)	49,042,238	35,907,849	37,144,772	36,635,138	37,330,800
	Shares (%)	*100*	*90.14*	*97.63*	*99.96*	*99.71*
AT	Traffic (Minutes)	27	3,926,459	873,298	15,032	40,457
	Shares (%)	*0*	*9.86*	*2.30*	*0.04*	*0.11*
MTN	*Traffic (Minutes)*	-	*1,294*	*28,265*	739	67,034
	Shares (%)	-	*0.00*	*0.07*	0.00	0.18
Total Traffic (Minutes)		**49,042,265**	**39,835,602**	**38,018,070**	**36,650,909**	**37,438,291**

Source: National Communication Authority, 2023

Table 22: Fixed Data Subscriptions and Penetration Rate (%)

Subscriptions	2019	2020	2021	2022	2023
Fixed Network Subscriptions	57,393	77,022	113,722	102952	116,860
Growth Rate (%)	*-0.02*	*34.00*	*48.65*	*-9.47%*	*13.51*
Net Additions	-1,415	19,629	36,700	-10,770	13,908
Country Population	30,190,081	30,922,666	30,792,608	31,769,363	32,429,591
Penetration Rate (%)	*0.19*	*0.25*	*0.37*	*0.32*	*0.36*

Source: National Communication Authority, 2023

Table 23: Fixed Data Subscriptions per Operator

Fixed Network Operator		2019	2020	2021	2022	2023
Vodafone	Subscriptions	56,677	62,284	67,086	75,078	80,465
	Shares (%)	*98.75*	*80.87*	*58.99*	*72.93*	*68.86*
AT	Subscriptions	716	700	649	726	348
	Shares (%)	*1.25*	*0.91*	*0.57*	*0.71*	*0.30*
MTN	Subscriptions		14,038	45,987	27,148	36,047
	Shares (%)		18.23	*40.44*	*26.37*	*30.85*
Total Subscriptions		**57,393**	**77,022**	**113,722**	**102,952**	**116,860**

Source: National Communication Authority, 2023

Table 24: Fixed Broadband Subscriptions

Fixed Network Operator		2020	2021	2022	2023
Vodafone	Subscriptions	59,532	64,457	72,856	78,311
	Shares (%)	*66.55*	*79.59*	*34.24*	*35.07*
MTN	Subscriptions	29,924	16,533	139,894	144,967
	Shares (%)	33.45	*20.41*	*65.76*	*64.93*
Total Subscriptions		**89,456**	**80,990**	**212,750**	**223,278**

Source: National Communication Authority, 2023

Table 25: Fixed Broadband Traffic

Fixed Network Operator		2020	2021	2022	2023
Vodafone	Traffic	30,360,312	126,533,459	157,793,466	201,680,600
	Shares (%)		*54.41*	*57.04*	*65.73*
MTN	Traffic	16,750,138	106,031,417	118,824,426	105,153,657
	Shares (%)		*45.59*	*42.96*	*34.27*
Total Traffic		**47,110,450**	**232,564,876**	**276,617,892**	**306,834,257**

Source: National Communication Authority, 2023

Table 26: BWA Subscriptions and Penetration Rate (%)

Subscriptions	2019	2020	2021	2022	2023
BWA	46,050	53,415	50,714	44,247	1,431
Growth rate (%)	-42.85	13.39	-5.06	-12.75%	-96.77%
Net Additions	-34,531	6,307	-2,701	-6,467	-42,816
Population	30,190,081	30,922,666	30,792,608	31,769,363	32,429,591
Penetration rate (%)	0.15	0.17	0.16	0.14%	0.0044%

Source: National Communication Authority, 2023

Table 27: BWA Subscriptions per Operator

Broadband Wireless Access Operator		2019	2020	2021	2022	2023
Surfline	Subscriptions	43,735	40,462	41,123	35,796	
	Growth rate (%)	-20.68	-7.48	1.63	-12.95	
	Market Share (%)	92.84	75.75	81.09	80.90	
BBH	Subscriptions	1,058	1,056	996	292	
	Growth rate (%)	-95.78	-0.19	-5.68	-70.68	
	Market Share (%)	2.25	1.98	1.96	0.66	
Blu	Subscriptions	211	143	-		
	Growth rate (%)	-39.19	-32.23	-		
	Market Share (%)	0.45	0.27	-		
Busy	Subscriptions		*10,024*	5,489	1,985	
	Growth rate (%)		-	-45.24	-36.09	
	Market Share (%)		*18.77*	10.82	4.49	
Telesol	Subscriptions	2,104	1,730	3,106	6,174	1,431
	Growth rate (%)	-	-17.78	79.54	12.48	-27.91
	Market Share (%)	4.47	3.24	6.12	13.95	100.00
Total		**47,108**	**53,415**	**50,658**	**44,247**	**1,431**

Source: National Communication Authority, 2023

Table 28: BWA Traffic in Gigabytes per Operator

		2019	2020	2021	2022	2023
Surfline	Traffic	13,153,292	16,263,920	20,247,645	19,005,586	
	Market Share(%)	90.18	80.70	74.58	79.80	
BBH	Traffic	1,034,714	621,066	593,566	75,478	
	Market Share(%)	7.09	1.58	2.19	0.32	
Blu	Traffic	345,440	119,969	118,983	-	
	Market Share(%)	2.37	0.40	0.44	-	
Busy	Traffic	-	2,223,327	4,635,201	3,655,594	
	Market Share(%)		11.03	17.07	15.35	
Telesol	Traffic	51,449	1,268,272	1,553,628	1,079,396	891,852
	Market Share(%)	0.35	6.29	5.72	4.53	100.00
Total Traffic		**14,584,895**	**20,496,534**	**27,149,023**	**23,816,054**	**891,852**

Source: National Communication Authority, 2023

Table 29: Regional Distribution of Authorised FM in Ghana as at the end of 2023

NO.	NAME OF REGIONS	TOTAL NO. AUTHO-RISED	PUBLIC	PUBLIC (FOR-EIGN)	COMMU-NITY	CAMPUS	COM-MER-CIAL	TOTAL NO. IN OPERA-TION	TOTAL NO. NOT IN OPERA-TION
1	ASHANTI	**111**	2	1	21	5	82	88	23
2	BONO	**59**	1	0	6	3	49	45	14
3	BONO EAST	**32**	2	0	4	0	26	27	5
4	AHAFO	**19**	0	0	3	0	16	12	7
5	CENTRAL	**64**	2	0	17	3	42	40	24
6	EASTERN	**61**	2	0	20	1	38	50	11
7	GREATER ACCRA	**82**	2	3	13	4	60	69	13
8	NORTHERN	**49**	3	0	10	1	35	28	21
9	SAVANNAH	**14**	3	0	4	0	7	8	6
10	NORTH EAST	**11**	1	0	3	0	7	3	8
11	UPPER EAST	**37**	2	0	10	3	22	29	8
12	UPPER WEST	**31**	2	0	10	2	17	23	8
13	VOLTA	**49**	3	0	5	1	40	37	12
14	OTI	**15**	1	0	3	0	11	9	6
15	WESTERN	**87**	2	1	8	2	74	64	23
16	WESTERN NORTH	**26**	3	0	0	0	23	18	8
TOTAL		**747**	**31**	**5**	**137**	**25**	**549**	**550**	**197**

Source: National Communication Authority, 2023

Table 30: Authorized TV Stations in Ghana as at the end of 2023

NO.	TYPE OF TELEVISION SERVICE	TOTAL NO. OF AUTHORISED STATIONS	TOTAL NO. OF STATIONS ON AIR	TOTAL NO. OF STATIONS NOT ON AIR
1.	Analogue Terrestrial Television	1	1	0
2.	Digital Terrestrial Free-To-Air Television Programme Channel (Nationwide Coverage)	42	42	0
3.	Digital Terrestrial Free-To-Air Television Programme Channel (Regional Coverage)	6	6	0
4.	Digital Terrestrial Pay Television (Service only)	0	0	0
5.	Digital Terrestrial Pay Television (Service and Frequency)	5	5	0
6.	Digital Terrestrial Television (Network only)	0	0	0
7.	Digital Terrestrial Radio Service on TV Multiplex	8	2	6
8.	Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	3	3	0
9.	Satellite Television Broadcasting (Free-To-Air Direct-To-Home Bouquet)	8	8	0
10.	Satellite Television Broadcasting (Free-To-Air Direct-To-Home Single Channel)	99	69	30
11.	Digital Terrestrial Television Additional Services (eg. Teletext, etc)	0	0	0
12.	Digital Terrestrial Mobile Television Service (Stand-alone Authorisation)	0	0	0
13.	Digital Cable Television	1	1	0
14.	Television over Internet Protocol (Pay TV)	1	0	1
15.	Subscription Management Service for a Satellite Television Broadcasting (Pay TV Direct-To-Home Bouquet)	1	0	1
TOTAL NO. OF AUTHORISED TV STATIONS		**175**	**137**	**38**

Source: National Communication Authority, 2023

Table 31: Amateur Radio Services

Class Options	2019	2020	2021	2022	2023
Beginner	2	3	3	3	4
Intermediate	5	4	5	6	7
Advanced	40	34	33	33	32
Total	**47**	**41**	**41**	**42**	**43**

Source: National Communication Authority, 2023

Table 32: Maritime Radio Services

	2019	2020	2021	2022	2023
Total Number of Authorisations	**138**	**36**	**81**	**27**	**41**

Source: National Communication Authority, 2023

Table 33: Aeronautical Radio Services

Aeronautical Licenses	2019	2020	2021	2022	2023
Aircraft Radio License	**29**	**24**	**21**	**21**	**21**
Navigational Aid and Radar	**1**	**1**	**1**	**1**	**1**
Aeronautical VHF Fixed Radio Station	**2**	**2**	**2**	**2**	**2**
Total	**32**	**28**	**30**	**34**	**34**

Source: National Communication Authority, 2023

Table 34: Private Land Mobile Radio Services

	2019	2020	2021	2022	2023
Total Number of Authorisations	**112**	**109**	**121**	**113**	**119**

Source: National Communication Authority, 2023

Table 35: Number of Towers and Market Share per Tower Company

Tower Company		2019	2020	2021	2022	2023
Eaton Towers	Number of Towers	1470				
	Market Share (%)	*30.79*				
American Towers	Number of Towers	2,381	3,989	4,070	4,196	3,523
	Market Share (%)	*49.9*	*80.1*	*79.3*	*79.0*	*76.6*
Helios Towers	Number of Towers	923	991	1,063	1,114	1,079
	Market Share (%)	*19.3*	*19.9*	*20.7*	*21.0*	*23.4*
Total		**4,564**	**4,980**	**5,133**	**5,310**	**4,602**

Source: National Communication Authority, 2023

Table 36: Types of Towers

TOWER	2019	2020	2021	2022	2023
Greenfield	4,385	4,571	4,714	4,876	4,196
Rooftop	357	374	384	394	368
Indoor Network/Mobile Sites	32	35	35	40	38
Total number of towers	**4,774**	**4,980**	**5,133**	**5,310**	**4,602**

Source: National Communication Authority, 2023

Table 37: Tenancy Ratio of Towers

	2019	2020	2021	2022	2023
Total Number of Towers	4,774	4,980	5,133	5,310	4,602
Total Number of Tenants	7,753	7,729	9,148	9,270	8,597
Tenancy Ratio	**1.62**	**1.55**	**1.78**	**1.75**	**1.87**

Source: National Communication Authority, 2023

Table 38: Regional Distribution of Towers and Tenancy Ratio

Region	Number of Towers	Number of Tenants	Tenancy Ratio
Ahafo	97	153	1.58
Ashanti	829	1434	1.73
Bono	160	295	1.84
Bono East	128	221	1.73
Central	394	719	1.82
Eastern	385	651	1.69
Greater Accra	1269	2845	2.24
North East	62	101	1.63
Northern	224	376	1.68
Oti	77	110	1.43
Savannah	72	109	1.51
Upper East	141	218	1.55
Upper West	113	238	2.11
Volta	237	397	1.68
Western	316	574	1.82
Western North	98	156	1.59
Total	**4602**	**8597**	**1.87**

Source: National Communication Authority, 2023

Table 39: Total Submarine Cable Capacity Available (Gbps)

Total Capacity Available (Gbps)	2019	2020	2021	2022	2023
SAT-3	64	74	95	168	196
WACS	1770	1,580	1,580	1580	1580
MainOne	270	270	470	970	1300
ETG (Dolphine)	720	720	720	720	720
GLO-1	30	40	40	40	
Total	**2,854**	**2,684**	**2,905**	**3,478**	**3,796**

Source: National Communication Authority, 2023

Table 40: Total Submarine Cable Capacity in Use (Gbps)

Total Capacity in Use (Gbps)	2019	2020	2021	2022	2023
SAT-3	50	42	55	125	144.00
WACS	280	616.8	561.3	625	1,111.70
MainOne	37.29	124.053	360	398	840.00
ETG (Dolphine)	30	43.12	98.99	332	432.31
GLO-1	7	40	30	30	
Total	**404**	**866**	**1105**	**1510**	**2,528.01**

Source: National Communication Authority, 2023

Table 41: Total Domestic Fibre Cable Capacity Available (Gbps)

Operator	2022	2023
Comsys	8	10
Spectrum Fiber Co.	200	200
MainOne	970	1300
C Squared Ghana Ltd	300	300
Total	**1,478**	**1,810**

Source: National Communication Authority, 2023

Table 42: Total Domestic Fibre Cable Capacity in Use (Gbps)

Operator	2022	2023
Comsys	6.30	8.00
Spectrum Fiber Co.	5.50	61.70
MainOne	398.00	840.00
C Squared Ghana Ltd	409.80	158.15
Total	**819.59**	**1067.85**

Source: National Communication Authority, 2023

Table 43: Fibre Cuts

Operator	2023
Comsys	62
Spectrum Fiber Co.	530
MainOne	31
C Squared Ghana Ltd	128
Total	**751**

Source: National Communication Authority, 2023

Table 44: VSAT Services

VSAT	2021	2022	2023
Public	2	0	3
Corporate	19	7	6
Educational	2	2	2
Network	12	8	8
Total	**35**	**17**	**19**

Source: National Communication Authority, 2023

Table 45: Numbering Resources

Types of Numbering	2019	2020	2021	2022	2023
Short codes	467	605	437	464	398
Premium numbers	0	8	5	3	9
Toll Free	75	1159	1033	292	1259
Mobile numbers (SIM cards)	105,610,000	105,610,000	116,410,00	123,215,000	133,215,000

Source: National Communication Authority, 2023

Table 46: Type Approval Certificates

	2019	2020	2021	2022	2023
Number of certificates	453	422	365	349	426
Number of Manufacturers	205	207	145	169	182
Terminal Equipment	128	110	109	116	105
Short Range Radio Devices	219	242	127	182	184
Network Equipment	82	70	127	50	134
Frequency Dependent Medical Equipment	24	0	2	1	3

Source: National Communication Authority, 2023

Table 47: ISP Service Classifications.

No.	ISP Service Classification	Operational	Not Operational	Number of Companies
1	Internet / Public Data Service	28	16	44
2	Internet / Public Data Service (Rural)	0	1	1
3	Internet Hotspot	2	0	2
Total		**30**	**17**	**47**

Source: National Communication Authority, 2023

Table 48: Microwave Links Authorization

SERVICE PROVIDER	2019	2020	2021	2022	2023
MNOs	7,748	7,798	7,789	8,042	8,483
BWAs	317	317	317	317	-
ISPs	54	54	54	54	55
Others	2	2	2	2	7
TOTAL	**8,121**	**8,171**	**8,162**	**8,415**	**8,545**

Source: National Communication Authority, 2023

Table 49: Dealership Certificates

	2019	2020	2021	2022	2023
Class A	5	8	1	3	2
Class B	4	5	3	1	2
Class C	1	1	1	2	2
Class D	4	1	0	0	0

Source: National Communication Authority, 2023

NCA CONTACTS AND PRESENCE NATIONWIDE

The following are the locations and addresses of the Authority's offices across the country:

1. Accra
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Website: https://www.nca.org.gh

2. Bolgatanga
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PMB-Bolgatanga
Upper East Region, Ghana
Tel: +233 (0) 382 021141
Email: complaints.bolgatanga@nca.org.gh

3. Koforidua
Residency Street,
Behind New Juaben Municipal Library
Digital Address: EN-001-4621
PMB – Koforidua
Eastern Region, Ghana
Tel: +233 (0) 342 28380/ 342 28382
Email: complaints.koforidua@nca.org.gh

4. Tamale
Watherson Residential Area
Digital Address: NT-0027-8191
P. O. Box TL 1590, Tamale
Northern Region, Ghana
Tel: +233 (0) 3720 28105/ 3720 20104
Email: complaints.tamale@nca.org.gh

5. Sunyani
House No. 83/D, Penkwase
Digital Address: BS-0012-4632
P. O. Box SY125, Sunyani
Brong Ahafo Region, Ghana
Tel: +233 (0) 352 027564
Email: complaints.sunyani@nca.org.gh

6. Kumasi
Fuller Road, Danyame, Kumasi
Digital Address: AK-063-2250
P. O. Box KS 10768, Kumasi
Ashanti Region, Ghana
Tel: +233 (0) 322 020014/ (0) 322 020018
Email: complaints.kumasi@nca.org.gh

7. Ho
H/No A6/29, Stadium Road
Digital Address: VH-0006-0554
P. O. Box HP1576, Ho,
Volta Region, Ghana
Tel: +233 (0) 3620 26339
Email: complaints.ho@nca.org.gh

8. Takoradi
Bakado
Digital Address: WS-014-8190
P. O. Box SL 409, Sekondi
Western Region, Ghana
Tel: +233 (0) 312 028063/ (0) 312 028049
Email: complaints.takoradi@nca.org.gh