BOCRA

BOTSWANA COMMUNICATIONS REGULATORY AUTHORITY

BROADBAND FACTS AND FIGURES

DECEMBER 2021

FOREWORD

The Botswana Communications Regulatory Authority (BOCRA or the Authority) hereby releases the annual report on Broadband Facts and Figures. This year marks the third publication of this non-technical report, which offers descriptive insight into the broadband market in Botswana. BOCRA is one of the few regulators that publish this kind of report in the region and aims to maintain the publication as an informative report for consumers, policy makers, ICT players and other interested users. Therefore, the Authority takes advantage of its early pioneering position to be creative in the structure of the report and the contents. This report provides information on the available broadband solutions and coverage of broadband as well as related market development information. The report additionally considers the impact of COVID-19 pandemic on broadband.

All the figures and tables herein presented were created from information[1] submitted by broadband providers. Immediate feedback to BOCRA is encouraged and must be sent to businessdevelopment@bocra.org.bw.

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[1] While facts and figures presented herein have been proofread, reporting omissions and errors are acknowledged, with the believe that such are not material to the extent of misleading readers and stakeholders.

EXECUTIVE SUMMARY

The year 2021 saw a continued prevalence of the COVID 19 pandemic and many sectors were disrupted including the Information Communication Technology sector. There were some of lockdowns and other restrictions as the pandemic progressed, so a lot of people had to work from home. This period highlighted the importance of broadband internet all over the world. As everyone got accustomed to social distancing as a new normal, employers and employees adapted to using digital and electronic channels to carry on the day-to-day business proceedings. Friends and family more than ever relied on social media to connect with each other and spread all important messages relating to the pandemic.

BOCRA continued to engage stakeholders to guarantee affordable, accessible, and good quality broadband services. The importance of pursuing the National Broadband Strategy became apparent because the strategy was created primarily to facilitate extensive installation and use of broadband. By continuing to create an environment that allows broadband ecosystem to flourish, BOCRA has seen an increase in mobile broadband statistics as well as decline in prices as service providers become more competitive.

INTRODUCTION

The Botswana National Broadband Strategy defines broadband as an ecosystem encompassing high capacity, high speed and quality electronic networks, the services carried through the networks, the applications they deliver as well as the users. This definition takes into account the continuous evolution of technologies, applications, needs and the variety of requirements of users and the fact that users are mainly interested in the services provided rather than the technology that conveys such services.

Demand for broadband in Botswana has grown tremendously over the recent years. Substantial demand is noted in the consumer markets as presented in the various sections of this Report. It is expected that demand for broadband services will continue to grow for a considerable length of time. The Fibre To The X (FTTx) initiatives by Botswana Fibre Networks (BoFiNet) and other service providers has heightened

consumer expectations and it is anticipated to fuel new levels of demand for broadband services resulting in continued growth.

BOTSWANA'S NATIONAL BROADBAND CAPABILITY

Role of BoFiNet
BoFiNet plays a vital role in providing backbone infrastructure for national broadband. BoFiNet has national fibre countrywide connecting cities, major towns, villages, and a number of strategic locations. BoFiNet is the single largest internet wholesaler with about 66.30 Gbps incoming international bandwidth and 26.1 Gbps outgoing international internet bandwidth.

The BoFiNet infrastructure is deployed for use by Public Telecommunications Operators (Botswana Telecommunications Corporation or BTCL, Mascom Wireless and Orange Botswana) and Internet Service Providers (ISPs). The infrastructure is used for inter-city and intra-city connectivity. Figure 1 below shows the fibre coverage across the country.
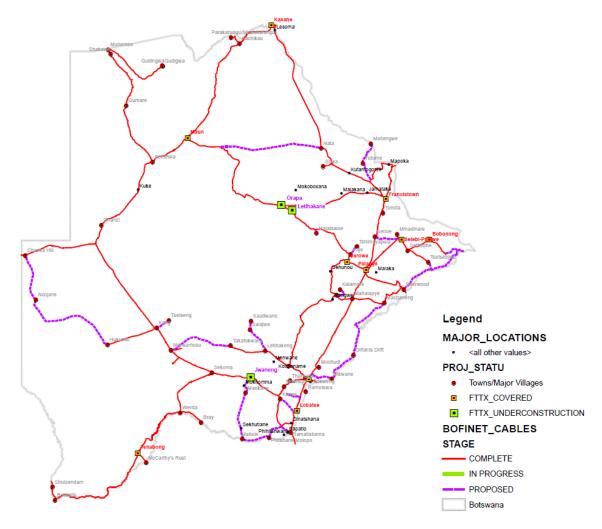
Figure 1: BoFiNet fibre map coverage in Botswana. (Source: BoFiNet, 2021)

Competition in the International Bandwidth Market that Serves Botswana

The international internet bandwidth market is heavily contested particularly in the transit routes of South Africa. The transit routes are used by service providers located in Botswana to reach the regional and global internet exchange points as well as coastal landing points in South Africa and Namibia. The internet providers in Botswana source internet bandwidth from providers including BoFiNet, Seacom, Liquid Intelligent Technologies, Paratus Telecom, and Botswana Telecommunications Corporation Limited. According to ITU, in 2020 networks around the world were put to test during the pandemic. Increased internet traffic caused a drop in speeds in many countries, but international bandwidth usage is

estimated to have grown globally by over 30%. Figure 2 below shows the incoming international bandwidth and outgoing international bandwidth as well as their utilisation levels. The total incoming internet bandwidth is 107,860 Mbps out of which 56,475 Mbps is utilised which translates to 52% utilisation of the incoming bandwidth. On the other hand, Outgoing internet bandwidth is 98,497 Mbps of which 7,978 Mbps (8%) is utilised.
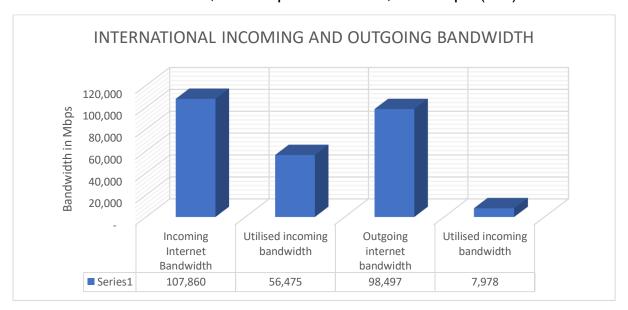

INTERNATIONAL INCOMING AND OUTGOING BANDWIDTH

	Incoming Internet Bandwidth	Utilised incoming bandwidth	Outgoing internet bandwidth	Utilised incoming bandwidth
■ Series1	107,860	56,475	98,497	7,978

Figure 2: International Incoming and Outgoing Internet Bandwidth. (Source: BOCRA, 2021)

A comparison between June 2020 and June 2021 shows that there has been an increase in total incoming internet bandwidth by 19%, from 90,787 Mbps to 107,860 Mbps. Total outgoing internet bandwidth increased by 14% from 86,163 Mbps in June 2020 to 98,497 Mbps in June 2021. It is expected that Operators will continue to increase their bandwidth capacity to accommodate the increase in traffic therefore international bandwidth usage will continue to increase steadily.

Broadband Uptake and Availability

An analysis of technologies used to access internet in Botswana was conducted for the period ending June 2021. Figure 3 below shows that Fixed Wireless Broadband is popular with 69,650 subscriptions which translates to a market share of 60% followed by VDSL and ADSL with a market share of 19% (21,864 subscriptions) and 16% (19,262 subscriptions) respectively. Fibre to the Home and Business are both at 1% of the market share . It is expected that in future, Fibre subscriptions

will increase as BoFiNet continues to expand its footprint in the country and ISPs continue to offer it at retail level.
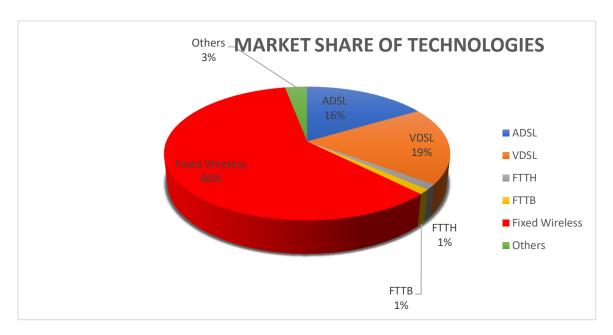

Figure 3: Market Share of used Internet access technologies in Botswana (Source: BOCRA, 2021)

Uptake of Fixed Wireless Broadband

Fixed wireless broadband refers to terrestrial fixed wireless internet with an advertised download speed of at least 256 Kbps. An analysis was conducted on the uptake of fixed wireless broadband for the period ending June 2021. The analysis covered Public Telecommunications Operators and ISPs who are the main providers of fixed wireless broadband.

Figure 4 below illustrates the internet speeds and customer subscription types for fixed wireless broadband. Residential customers constitute the highest number of fixed wireless broadband subscriptions at 92% of the market. The largest number of residential subscriptions are for the 2Mbps to 10Mbps customer segment. There has been a shift in the market when compared to last year when most of the residential subscriptions were in the 256Kbps to 2Mbps segment. The shift is largely due to the fact that residential customers were working from home therefore, demanding speeds that will enable various activities. Business customers account for the 8% of the fixed wireless subscriptions in the market. Most of the business subscriptions are in the 2Mbps to 10Mbps segment and this has not changed when compared with last year.
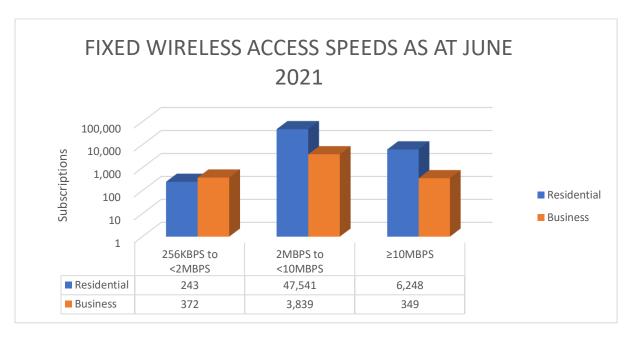
FIXED WIRELESS ACCESS SPEEDS AS AT JUNE 2021

	256KBPS to <2MBPS	2MBPS to <10MBPS	≥10MBPS
Residential	243	47,541	6,248
Business	372	3,839	349

Figure 4: Analysis of Fixed Wireless Access Speeds in June 2021 (Source: BOCRA, 2021)

A comparison between June 2020 and June 2021 indicates that residential access has increased by 95% from 27,676 subscriptions to 54,032 subscriptions. This significant growth is due to working from home by employees in an effort to contain the spread of the COVID-19. Apart from working from home, there is a high demand for high-speed internet for gaming and for streaming services. Fixed wireless subscriptions by businesses also increased by 39% from 3,292 subscribers in June 2020 to 4,560 subscribers in June 2021. The increase is also partly attributable to the high demand for communication services as most employees worked from home and meetings were convened virtually.

Uptake of Asymmetric Digital Subscriber Lines (ADSL)

Asymmetric Digital Subscriber Line (ADSL) is the most prevalent type of fixed broadband, and it is provided through BTC network infrastructure. BTC plays in the wholesale and retail ADSL markets, meaning that they offer wholesale ADSL to ISPs and also compete in the retail market. Figure 5 shows the trend of ADSL subscriptions over the past five years. The chart shows a decline in subscriptions over the years from 56 856 in June 2017 to 21 041 in June 2019 and a slight increase to 33 544 subscriptions in June 2021. The decline was attributable to data-cleaning and validation that was conducted over the years.
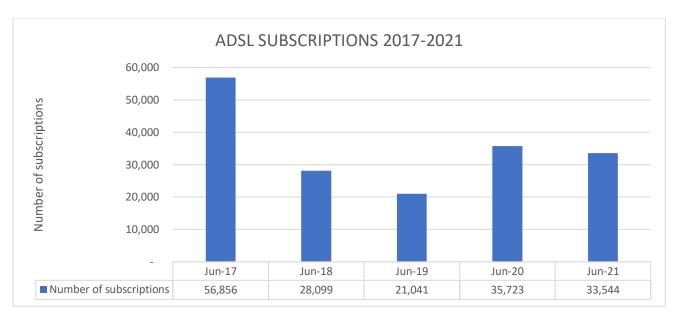
Figure 5: ADSL Subscriptions for five years 2017 to 2021 (Source: BOCRA, 2021)

Uptake of Fibre to The Location

Fibre to the Location (FTTx) is a fairly new technology in Botswana. As shown in Figure 3, Fibre-to the Home (FTTH) and Business (FTTB) jointly account for only 2% of the subscriptions in the market. Figure 6 below, further analyses the subscriptions by speed for Fibre Broadband. Fibre to the Home accounts for 51% of the fibre broadband market whereas Fibre to the Business accounts for 49%. The 2Mbps to 10Mbps customer segment is popular for both residential and business subscriptions particularly due to its affordability. BOCRA anticipates that demand for Fibre connections will continue to grow in the future as ISPs continue to offer it at retail level. The Authority continues to monitor pricing of FTTH by Operators to ensure that customers get value for money.
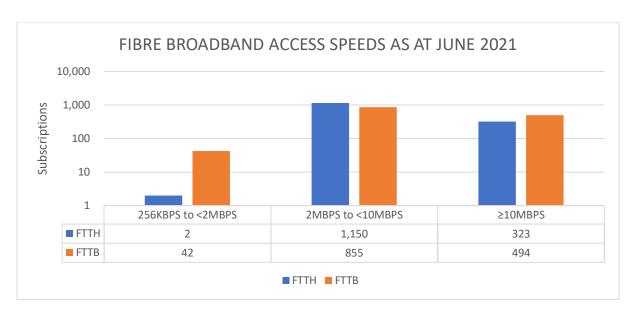
Figure 6: Analysis of Fibre Broadband Access Speeds in June 2021 (Source: BOCRA,2021)

Availability of Mobile Broadband

Figures below depict network coverage for 3G and 4G or Long-Term Evolution (LTE) by Mobile Network Operators in Botswana as of June 2021. The extensive network coverage is supported by 1,648 (One thousand Six Hundred and Forty-eight) 3G base stations and 1,359 (One Thousand Three Hundred and Fifty-Nine) 4G/LTE base stations that are located at various sites across the country to serve the inhabitants of the country. There has been an increase in the number of base stations for 3G and 4G and this shows commitment by the Public Telecommunication Operators to achieve universal access and deploy resilient networks to accommodate increased traffic volumes.
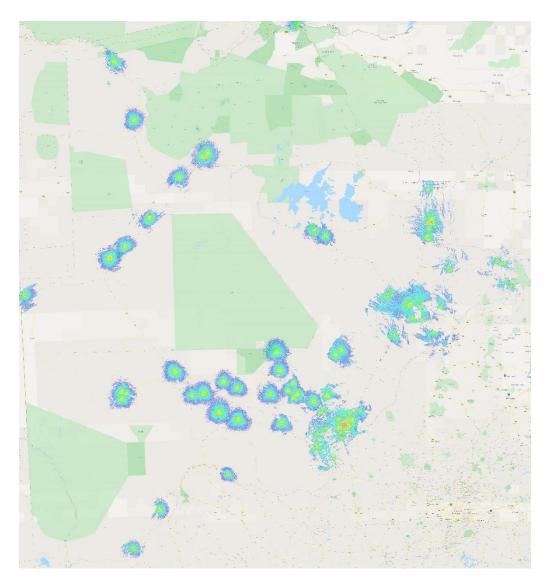
Figure 7: BTC 3G Coverage Map. (Source: BOCRA, 2021)
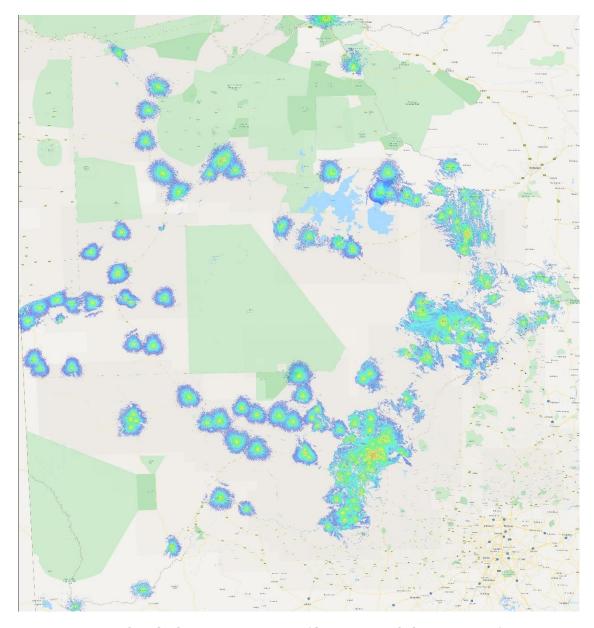
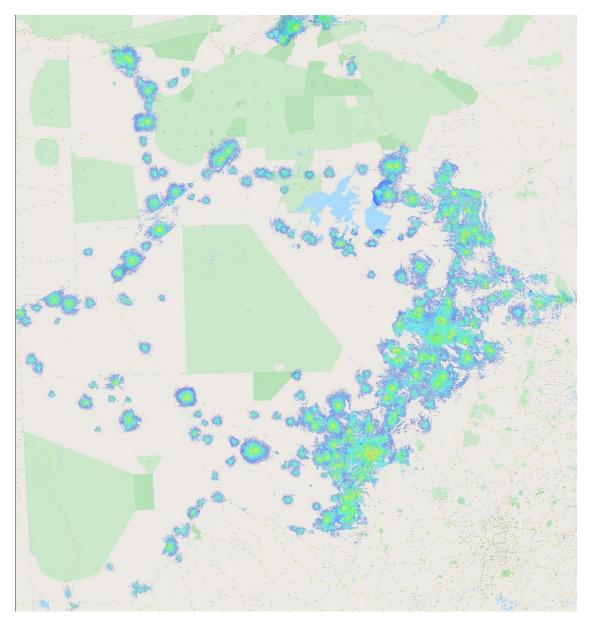*Figure 8: BTC 4G Coverage Map. (Source: BOCRA, 2021)*

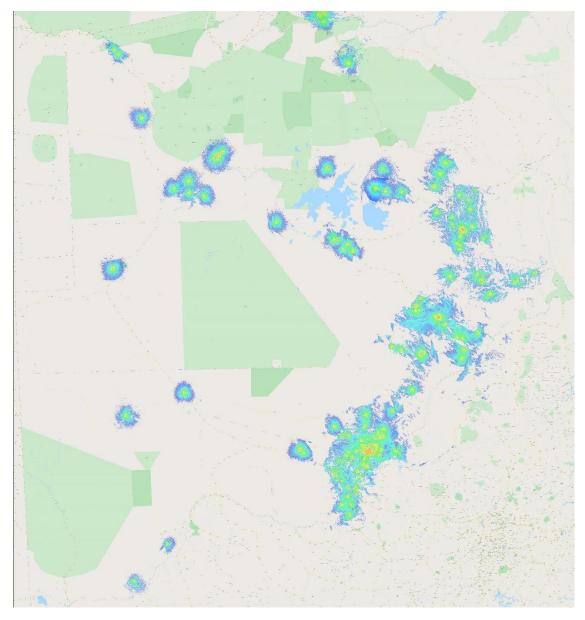*Figure 9: Mascom 3G Coverage Map. (Source: BOCRA, 2021)*

Figure 10: Mascom 4G Coverage Map. (Source: BOCRA, 2021)

Figure 11: Orange 3G Coverage Map. (Source: BOCRA,2021)

Figure 12: Orange 4G Coverage Map. (Source: BOCRA,2021)

Mobile Broadband Subscriptions

The number of mobile broadband subscriptions has increased by 11.5% or 235,521 subscriptions from 2,055,764 subscriptions in June 2020 to 2,291,285 subscriptions in June 2021 as shown in Figure 13. The significant increase in the uptake of mobile broadband is attributable to several factors including ownership of more than one SIM-cards by consumers to enjoy different offers by operators; improved affordability due to price reductions; reduced movement during extreme social distancing leading to extensive use of electronic platforms; increased use

of electronic payment platforms as well as surfing the internet to apply for movement permits and other government services. An increase in the number of subscriptions is expected during 2021 and beyond as operators introduce more affordable products and services in the market.

Figure 13: Broadband Subscriptions as at June 2021 (Source: BOCRA, 2021)

Mobile Broadband (or Data) Traffic

Mobile broadband coverage has increased significantly across Botswana over the recent years as operators continued to roll out new base stations in various locations and the demand for internet grew. Prepaid mobile broadband traffic increased from 6.3 billion Megabytes in June 2017 to 22.3 billion Megabytes in June 2021 representing a 251% increase.

Post-paid mobile broadband traffic increased from 1.4 billion Megabytes in June 2017 to 3.5 billion Megabytes in June 2021 which translates into a 143% increase in traffic. Mobile operators are increasingly introducing innovative offers in the market to meet the needs of different customers. It is expected that mobile broadband traffic will continue to grow substantially as customers build affinity with mobile solutions because of their convenience. Figure 14 shows traffic trends over the five-year period ending June 2021.

Figure 14: Mobile broadband traffic from June 2017 to June 2021 (Source: BOCRA, 2021)
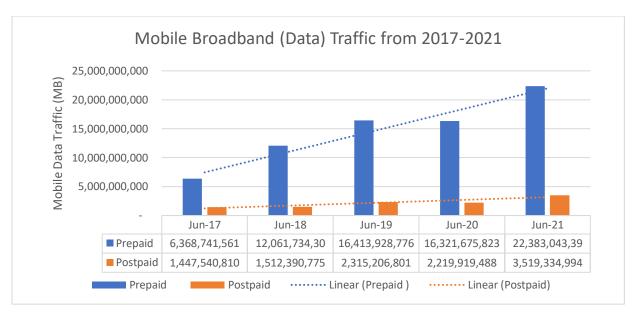
STATUS OF 5G IN BOTSWANA

5G is the latest mobile wireless network that came into being in 2010 and is designed to virtually connect everyone and everything including machines, objects, and devices. It can operate in many more bands of spectrum compared to the early generations. The major use case categories of 5G includes enhanced mobile broadband. This enhanced mobile broadband provides an ideal platform for cloud and artificial intelligence-based services. These services can be of importance to Botswana, as they can trigger positive change in business processes in the country and create an environment that fosters technological and service innovation.

There is currently no deployment of 5G in Botswana. Operators have expressed desire to do 5G trials. 5G requires low, mid, and high spectrum bands to deliver services for different uses. BOCRA has offered existing and new operators an opportunity to apply for spectrum in 5G frequency bands, covering low and mid band spectrum. This will allow operators to expand their existing 4G networks and roll out 5G. Operators are allowed to re-farm their existing spectrum to augment new spectrum to enable them to roll out 5G.

UNIVERSAL ACCESS AND SERVICE FUND (UASF) AND ITS ROLE IN GROWING BROADBAND

The Universal Access and Services Fund (UASF) was established in April 2014 through a Deed of Trust. It is a special purpose vehicle which BOCRA uses to execute its mandate of promote and ensuring universal access with respect to provision of communication services. The mandate of the UASF is to ensure the availability of quality and affordable communication services with primary focus on the unserved and underserved areas. This is achieved through provision of financial subsidies to qualifying service providers who took part in competitive bidding and would then be contracted to provide the necessary broadband infrastructure. Over the past few years UASF has achieved major strides in bridging the digital divide in Botswana by subsidising rollout of services in unserved and underserved areas.

The Achievements of UASF

The UASF, through its subsidy programme, facilitated the provision of mobile broadband networks in 68 villages across Kgalagadi, Mabutsane Sub- District and Ghanzi District. The project which started in 2017 included the upgrading of the existing networks and deployment of new infrastructure in some areas in the identified villages. Sixty-Eight (68) Primary schools and Nine (9) Secondary schools were connected with 5Mbps dedicated internet.

The Fund will facilitate provision of 4G upgrades in three (3) additional villages in the Mabutsane area which were not connected in Phase 1 and also provide internet connectivity in 3 schools with 10Mbps dedicated internet connection. The Fund contributed to employment creation as it employed 68 Information Technology (IT) Officers in the Primary Schools where it had provided schools broadband internet connectivity. Secondary Schools have IT Officers as per government arrangements.

Planned Projects for UASF

For the year 2022/23, the UASF will provide subsidy for deployment of 4G mobile broadband networks in 3 districts namely Kweneng, Northwest and Southern Districts. There will be 47 villages to be covered in the Kweneng District. Connectivity in the villages will be provided by Orange Botswana to 91 primary schools and 23 junior secondary schools. The targeted bandwidth is 10Mbps for primary schools and 20Mbps for 23 junior secondary schools. IT officers will be assigned to all primary schools.

In the North-West District, broadband network deployment will be to 39 villages. BTCL will provide connectivity to the villages. A total of 85 government schools will be provided with broadband dedicated internet: 10Mbps internet connectivity to each of the 70 primary schools, 20 Mbps to each of the 13 junior secondary schools and 2 senior secondary schools with 30 Mbps. IT officers will be assigned to all primary schools.

In Southern District a total of 67 villages will benefit from the UASF projects, excluding Mabutsane Sub-District. Mascom Wireless Botswana has been contracted to provide connectivity to the villages. Broadband internet connections will be provided to 133 government schools as follows: 10Mbps to each of the 102 primary schools and 20Mbps to each of the 27 junior secondary schools. and 4 Senior secondary schools. IT officers will be recruited for all primary schools.

SMART BOTSWANA

Botswana aims to take advantage of the opportunities presented by the Fourth Industrial Revolution (4IR) and move towards a Knowledge Based Economy (KBE) without leaving anyone behind. The 4IR comes with Digital Transformation of everything. Digital Transformation is described as the integration of technology into all areas of the public and private sector, that results in fundamental changes to how we operate and deliver value to citizens, customers, partners, and employees.

Smart Botswana (SmartBots) is an action plan that delivers a smart sustainable society for Botswana and Batswana. It adopts a whole government approach to transform the public sector, and thus enable it to efficiently provide services to citizens and businesses. The plan also envisages to engage the private sector to successfully implement the SmartBots priorities and initiatives.

The objectives of the of the SmartBots Strategy are to:

- Connect the country so that no one is left behind;
- Provide knowledge and tools to compete and build a knowledge workforce;
- Build a citizen/customer experience that is integrated, seamless and trusted leveraging digital technologies;
- Co-create data driven products and services; and
- Prioritise and invest in ideas in order to compete in the global market.

BROADBAND QUALITY OF SERVICE (QoS) AND QUALITY OF EXPERIENCE (QoE) ANALYSIS

BOCRA monitors Quality of Service for the Public Telecommunication Operators which provide mobile broadband. The operators submit monthly network performance reports to the Authority. The performance reports are based on Key Performance Indicators (KPI) as defined on the 2019 QoS and QoE guidelines which stipulate the level of quality of the service offered to the consumer by a service provider.

The Long Term Evolution (LTE) throughput measures the speed of uploading and downloading data in Megabits per second between end user and the equipment. The KPI provides a measure for network performance of 4G technology. For the period April-September 2021 the average Download (DL) throughput of each operator is above 15 Mbps which is acceptable for an LTE network. However, there is still room for improvement to address other areas which are within economic areas. Although the QoS is compromised in some areas, The Authority notes that the situation will normalise as Operators increase their investment in the network to address poor quality of service. Power issues continue to be a challenge for all operators in meeting the required Quality of Service.

BOCRA has issued over 50 Services and Applications Provider (SAP) and Network Facilities Provider licenses (NFP). Since August 2020, BOCRA continues to monitor QoS of ISPs. Some ISPs were able to submit the required reports and several challenges were raised by different ISPs during a consultative meeting such as:

1. Lack of necessary tools to monitor the networks
2. Differences in the required KPI and what they could provide

    3. Lack of technical skills and personnel

    4. Difficulty in providing comparable information

BOCRA is planning to conduct a workshop with all the internet Service Providers in the next financial year 2022/23 to assist the ISPs to come up with KPIs that would apply across their networks as well as tools to be used for monitoring.

THE IMPACT OF THE COVID-19 PANDEMIC ON BROADBAND NETWORKS

The COVID-19 pandemic continued to affect the everyday life despite efforts by the Government of Botswana to contain its spread. Botswana saw an exponential increase in new infections between January and July 2021 and new regulations were put in place to contain the Virus such as introduction of a curfew to restrictions of movement between 2000hrs and 0400 hrs. During these periods of movement restrictions, ICT services particularly broadband services were highly demanded to facilitate access to digital solutions.

The three Operators reported pressure on network resources from COVID 19, as traffic increased mostly during what was traditionally off-peak hours and in areas which were naturally not high traffic areas.

As part of their mitigation strategies, Operators introduced the following measures to ease congestion on the networks:

1. Increased network resources in affected areas, that is, rolling out 3G and 4G sites;
2. Accelerated transmission upgrades for domestic and international links; and
3. Expanded roll out of FTTH and incentivising customers to move from services provisioned using mobile network to relieve pressure

As part of government's mandate of ensuring service provision to all citizens especially during the COVID-19 pandemic, the following initiatives were put in place:

1. Zero rating of the movement permits, and the COVID-19 toll free number.
2. Zero rating of the COVID-19 vaccination URL. Licensees were instructed to zero rate the website so that citizens will register to get vaccinated.

WAY FORWARD POST COVID-19

To reassess progress in achieving Botswana's national economic development goals with the ongoing pandemic, the government has devised new priorities to implement post the pandemic. In coming up with the new priorities, it was recognised that many citizens do not fully enjoy the country's wealth because of income and wealth inequalities and that many have been left behind and the bottom 50% of people have only 9% of the national income amongst others. The realisation of the new priorities as set out in the Government RESET agenda will change the status quo for all. The new priorities are:

1. Saving Botswana's population from COVID-19, through the implementation of life saving programmes that include a successful and timely vaccination programme;

2. Align Botswana Government machinery to the Presidential Agenda. HE's roadmap, including the transformational agenda, should be embodied in the implementation machinery of the government of the day. This will come with significant government reforms in the public service;

3. Digitisation: this has the immense potential to unlock and enable high productivity among people. The global village runs on the wheels of digitisation. Digitisation is quintessential element to the delivery of services to the people.

4. Value chain development: this will unlock opportunities for new, high-growth companies in the private sector and youth employment among other citizen empowerment attributes. The initial sectors of focus will be minerals, tourism, food, and education. New sectors will be identified in the global export product space that can

successfully grow in Botswana, resulting in significant job creation for the youth while also driving much-needed export diversification.

5. Mindset change: it is extremely important that people change their mindset if the goal to attain high income country status is to be achieved. We cannot remain locked in the thinking of the unproductive eras and expect to escape the middle-income trap. This comes with developing capacity for entrepreneurship, eliminating our inferiority complex, and implementing government and strategic reforms that put citizen economic inclusion at the centre of our economic development initiatives. Fully adopting this mindset change will result in self-actualization among our people.

AFFORDABILITY OF BROADBAND

Mobile Broadband Prices

The tables below illustrate the mobile broadband prices for BTCL, Mascom Wireless and Orange Botswana for their packages. It must be noted that in June 2020 Mascom and Orange reduced their prices whereas BTCL did not. However, in 2021 BTCL revised their turn-up bundles as per Table 1 below.

Table 1: *BTC 30-day prepaid mobile broadband prices (BWP)*

Validity	Old Volume	New Volume	%Volume Inc/Dec	Old Price (BWP)	New Price (BWP)	% Price Reduction
30 Days	1GB	1GB	0	76.00	65.00	14%
	3GB	3GB	0	92.00	92.00	0
	5GB	5GB	0	112.00	112.00	0
	10GB	10GB	0	224.00	199.00	11%
	15GB	15GB	0	305.00	269.00	12%
		35GB	New offer		349.00	New offer

(Source: BOCRA,2021)

Table 2: Orange Botswana 30-day prepaid mobile broadband prices (BWP)

VALIDITY	BUNDLES	CURRENT PRICES as at Year 2021(BWP)
30 Days	2 GB	69,00
	4GB	99,00
	8 GB	149,00
	16 GB	279,00
	32 GB	525,00

(Source: BOCRA, 2021)

Table 3: Mascom Wireless 30-day prepaid mobile broadband prices (BWP)

VALIDITY	BUNDLES	CURRENT PRICES as at Year 2021(BWP)
30 Days	2 GB	69,00
	4GB	99,00
	8 GB	149,00
	16 GB	279,00
	32 GB	525,00

(Source: BOCRA, 2021)

Fixed Wired and Fixed Wireless Broadband Prices in Botswana

During the month of June 2021, BOCRA focused its price regulation on the prospects for reducing tariffs for fixed broadband services having achieved major strides in reducing prices for mobile broadband in 2020. The Authority engaged service providers to discuss opportunities for reducing fixed broadband prices. BTC as the major provider of these services reduced prices for fixed broadband internet by up to 40% for the 3-year package allowing consumers to access higher internet speeds at affordable rates. Table 4 below shows the approved prices for fixed broadband packages against old prices.

Table 4: Comparison of Old and New Fixed Broadband 3-Year Contract Tariffs

Fixed Broadband Plan	Old Monthly Charge (BWP) Excl. VAT	New Monthly Charge (BWP) Excl. VAT	Percentage Reduction
20Mbps	975.00	650.00	33%
50Mbps	1,985.00	1,200.00	40%
100Mbps	2,800.00	1,900.00	32%

(Source: BOCRA,2021)

The Authority will continue to monitor for broadband services so as to promote adoption and usage of digital services and ensure that Botswana does not lose its competitive edge regionally and globally. Prices for fixed wireless and other services are attached as Appendix 1 for appreciation.

The Impact of VAT increase on broadband prices, uptake, and subscriptions

The outbreak of the COVID-19 pandemic has had negative effects on Botswana's fiscal position. For the 2020/21 financial year, government revenues declined due to poor performance of the mining sector and movement restrictions which affected most businesses. During February 2021 Budget Speech, the Minister of Finance and Economic Development announced that government will introduce revenue mobilisation measures to restore fiscal balance. The measures included, among others, a tax hike of the Value-Added Tax (VAT) by two percentage points from 12% to 14%, increases in fuel levy, withholding tax, plastic levy, sugar levy and other service fees and charges In different sectors of the economy. Although the changes are expected to increase revenue for the government, households will be negatively impacted by these as prices for goods and services increased. As a result, Mobile Network Operators made adjustments for products and services to accommodate the new 14% VAT.

The revision of the VAT by 2 percentage points has resulted in an increase in tariffs for mobile voice, SMS, and data. Botswana Telecommunications Corporation has increased prepaid voice tariffs to reflect the new price changes, a local peak call now costs P1.34 from P1.32 and peak call costs P0.61 from P0.60. Mascom have since maintained the nominal values for prepaid and postpaid voice, SMS, data, and bundles except for roaming charges. Orange Botswana on the other hand, has revised all their

prepaid and postpaid tariffs to reflect the VAT increase. It is important to note that, though Mascom has maintained the nominal values for their tariffs, their recharge values have decreased. This implies that a P10 voucher that customers buy will now give them P0.20 less of the recharge value. The price changes are shown below.

Table 5: Orange Botswana Prepaid Voice Tariffs

	Call Type	Peak		Off Peak		Sundays and Public Holidays	
		Old Price (BWP)	New Price (BWP)	Old Price (BWP)	New Price (BWP)	Old Price (BWP)	New Price (BWP)
Prepaid Voice Tariffs (Including VAT)	Orange to Orange	1.35	1.37	0.875	0.89	0.875	0.89
	Orange to Fixed Networks	1.35	1.37	0.875	0.89	0.875	0.89
	Orange to Other National Mobile Networks	1.35	1.37	0.875	0.89	0.875	0.89

(Source: BOCRA,2021)

Table 6: BTC Prepaid Voice Tariffs

	Call Type	Peak		Off Peak		Sundays and Public Holidays	
		Old Price (BWP)	New Price (BWP)	Old Price (BWP)	New Price (BWP)	Old Price (BWP)	New Price (BWP)
Prepaid Voice Tariffs (Including VAT)	BTC to BTC	1.32	1.34	0.60	0.61	0.60	0.61
	BTC to Fixed Networks	1.32	1.34	0.60	0.61	0.60	0.61
	BTC to Other National Mobile Networks	1.32	1.34	0.60	0.61	0.60	0.61

(Source: BOCRA,2021)

Table 7: Mascom Wireless Mobile Prepaid Voice Tariffs

	Call Type	Peak (BWP)	Off Peak (BWP)	Off-off Peak
Prepaid Voice Tariffs (Including VAT)	Mascom to Mascom	1.20	0.60	0.45
	Mascom to Fixed Networks	1.20	0.60	0.45
	Mascom to Other National Mobile Networks	1.20	0.60	0.45

(Source: BOCRA,2021)

Pricing for Mobile Broadband in the SADC Region

The price reductions for mobile broadband in 2020 placed Botswana among the most competitive countries in the pricing of broadband services in the SADC region. Table 5 shows SADC prepaid mobile broadband prices as of June 2021. The tables show that mobile broadband prices in Botswana are generally lower than prices in South Africa and Namibia by considerable proportions. In contrast, Kenyan operators offer much lower prices than Botswana and this is not unexpected given population density and level of development of telecommunications networks and geographic position of Kenya which makes access to high-speed bandwidth from the underseas cables much cheaper.

Table 8: 30 Day Package Prepaid Mobile broadband prices in SADC (converted to BWP) in June 2021

30 Day Package	BTCL (BWP)	Mascom (BWP)	Orange (BWP)	MTN SA (BWP)	VODACOM RSA (BWP)	SAFARICOM KENYA (BWP)	AIRTEL KENYA (BWP)	TELECOM NAMIBIA (BWP)
1GB	65	-	-	73.94	-	-	-	104.00
2GB	-	69	69	141.16	118.75	50.88	-	148.49
3GB	92	-	89	-	171.03	-	30.53	-
4GB	-	99	99	-	-	-	-	-
5GB	112	-	-	-	260.65	101.76	50.88	298.52
6GB	-	-	119	-	-	-	-	-
8GB	-	149	-	-	-	-	-	-
10GB	199	-	-	350.27	350.27	-	-	635.20
12GB	-	-	219	-	-	-	101.76	-

15GB	269	-	-	-	-	203.52	-	-
16GB	-	279	-	-	-	-	-	-
32GB	-	525	499	-	-	-	-	-
35GB	349							

(Source: BOCRA, 2021)

The countries that were selected for comparison are some of the biggest economies in Africa, save for Namibia that was selected on the basis of being comparable to Botswana in terms of population and economic status. It must be noted that all the selected countries are on the coast, making international broadband internet connectivity more affordable. The aspect of geographic location places Botswana in a compromised position in terms of competitiveness.

ICT CONTRIBUTION TO THE BOTSWANA ECONOMY

Contribution of ICT Sector to GDP

The ICT sector is a major contributor to an economy of a country. Investments made by the sector has been proven to have positive externalities in the economy as it has spill over effects to other sectors such as Financial (Banking), Education, Health, and Agriculture to mention but a few. According to data from Statistics Botswana GDP at constant 2016 prices for the second quarter of 2021 was recorded at P46,188.0 million compared to the revised P46,077.7 million in the first quarter of 2021. The improvement in the second quarter GDP reflected continued efforts by government to reopen the economy and relaxation of some of the COVID-19 regulations. Public Administration and Defence, Mining & Quarrying, Wholesale & Retail, and Construction were some of the major contributors to GDP by 18.5%, 14.2%, 11.6% and 11.3% respectively. Conversely, ICT contributed 2.6% to GDP. The ICT sector is said to have recorded positive growth rates in all quarters of the year 2020 and 2021 due to a high demand for data services and internet connectivity in all sectors of the economy in response to the COVID-19 protocols.

The ICT industry comprises of publishing, including motion picture and printed matter, radio and television broadcasting, telecommunication services as well as computer programming and information services activities. Figure 15 below shows the contribution of the ICT sector to the

economy from 2015 to 2021. The data shows that it has been fluctuating over the years, from 2015 contribution of ICT to GDP was at 3% before plummeting to 2.3% in 2016. As at first quarter of 2021, contribution was recorded at 2.7% and this represents a decline of 0.3% from 2015.
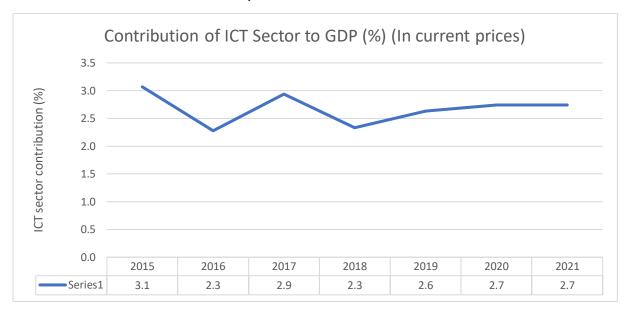

Figure 15: Contribution of ICT sector to GDP. (Source: Statistics Botswana,2021)

Employment Created by The Sector

The ICT sector plays an important role in creating jobs for Batswana. As of June 2021, a total of 3,007 people were employed in the sector with 1, 803 of those being males and 1, 204 being females. From the total people employed, 2,607 were citizens, which represented 86% citizen participation in the sector.
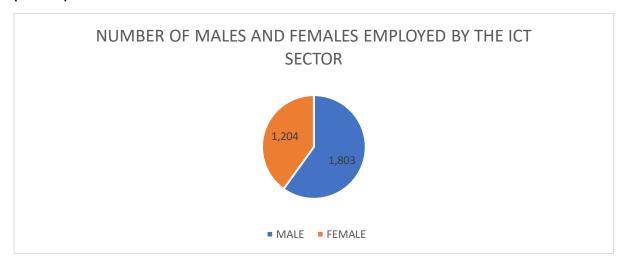
Figure 16: Number of males and females employed by the ICT Sector. (Source: BOCRA, 2021)

CONCLUSION

The covid pandemic affected different sectors differently and it will take inter-sectoral team work as well as enhanced private and public partnerships to bring the country to "normalcy" post the COVID 19 Pandemic. BOCRA, as the communications regulator, will continue to play its role in creating an environment that allows the broadband ecosystem to flourish. BOCRA will continue to liberalise the broadband market within constraints of regulatory resources such as spectrum. Broadband penetration figures are therefore expected to further increase as the regulator continues to pay attention to pertinent broadband issues such as affordability and quality of service to ensure continuous improvement in the sector.