



Information & Communication Technology

Statistics Report 2021



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Contact Unit:

**Information and Communication
Technology Statistics Unit
Statistics Botswana**
Tel: +267 367 1300

GABORONE (HEAD OFFICE)

Private Bag 0024
Gaborone
Tel: 3671300 Fax: 3952201
Toll Free: 0800 600 200

FRANCISTOWN OFFICE

Private Bag F193,
City of Francistown
Tel: 241 5848,
Fax: 241 7540

MAUN OFFICE

Private Bag 47
Maun
Tel: 371 5716
Fax: 686 4327

GHANZI OFFICE

Private Bag 32
Ghanzi
Tel: 371 5723
Fax: 659 7506

E-mail: info@statsbots.org.bw
Website: <http://www.statsbots.org.bw>

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Information & Communication Technology

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PREFACE

This report presents Botswana's Information and Communications Technology Statistics for the year 2021. It covers statistics relating to telecommunications, content and print media as well as the overall contribution of Information and Communication Sector to the economy. In addition, the report introduces new statistics relating to ICT e-waste generated in the country.

In Telecommunications, a snap view of the results shows that internet subscriptions rose significantly by 11.3 percent in 2021, after registering a total of 2,416,651 subscriptions from 2,172,256 recorded in 2020. Most of this growth came from mobile internet subscriptions which constituted 96.2 percent of total internet subscriptions in 2021.

Mobile cellular telephone subscriptions also realised an increase in 2021 while fixed telephone subscriptions went down. Mobile cellular telephone subscriptions rose from 3,792,157 subscriptions recorded in 2020 to 3,993,042 subscriptions in 2021, registering an increase of 5.3 percent. Fixed telephone subscriptions on the other hand registered a decline of 3.0 percent, from 140,015 in 2020 to 135,810 in 2021.

In print media, total printed newspapers and magazines decreased by 0.4 percent in 2021. Printed newspapers issued at least four times a week remained constant in 2021, while those issued once a week declined by 3.5 percent. Printed magazines issued once a month also remained constant in 2021, printed advertising magazines issued once a week however increased by 1.3 percent in 2021.

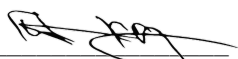
Both public and private broadcasters mainly aired general programs in 2021. A total of 25,944 hours were used for broadcasting general programs in 2021, while English and Setswana programs were aired in 20,928 and 8,659 hours respectively.

The contribution of the ICT sector and that of the Postal and Courier Services to the economy has been growing over the years. In 2021, the contribution of the ICT sector to the economy stood at 2.8 percent of total GDP at current prices while that of Postal and Courier Services amounted to 0.1 percent of total GDP. At constant prices, the ICT sector realized an annual growth rate of 4.4 percent, while Postal and Courier Services sector had an annual growth rate of 1.1 percent.

In 2020, electrical and electronic equipment put on market registered an increase of 8.0 percent with a total of 21,097 tonnes compared to 19,542 tonnes recorded in 2019. A total of 13,494 tonnes of e-waste was generated in 2020, indicating an increase of 4.4 percent from the 12,920 tonnes registered in 2019.

For more information and further enquiries, contact the Directorate of Stakeholder Relations at +267 367 1300. This publication and all other Statistics Botswana outputs or publications are available on the website at www.statsbots.org.bw and also at the Statistics Botswana Information Resource Center (Head-Office, Gaborone).

Data from different stakeholders was used in the production of this report. Statistics Botswana wishes to recognize and extend gratitude to these stakeholders for the collaboration and the immense input they made in the formulation of the report.



Dr. Lucky Mokgatlhe
For Statistician General
December 2022

ABBREVIATIONS

ICT	Information and Communication Technology
ADSL	Asymmetric Digital Subscriber line
ISP	Internet Service Providers
GDP	Gross Domestic Product
BOCRA	Botswana Communications Regulatory Authority
IDI	ICT Development Index
EEE	Electric and Electronic Equipment
EEE POM	Electrical and Electronic Equipment Placed on the Market
WEEE	Waste Electrical and Electronic Equipment
POM	Put on Market
EU	European Union
E-WASTE	Electronic Waste, also known as Waste Electrical and Electronic Equipment
KG/ INH	Kilograms per Inhabitant
UNU	United Nations University
UNU-KEY	Product-based classification distinguishing 54 products, used to measure E-waste statistics
HS Codes	Harmonized Commodity Description and Coding System

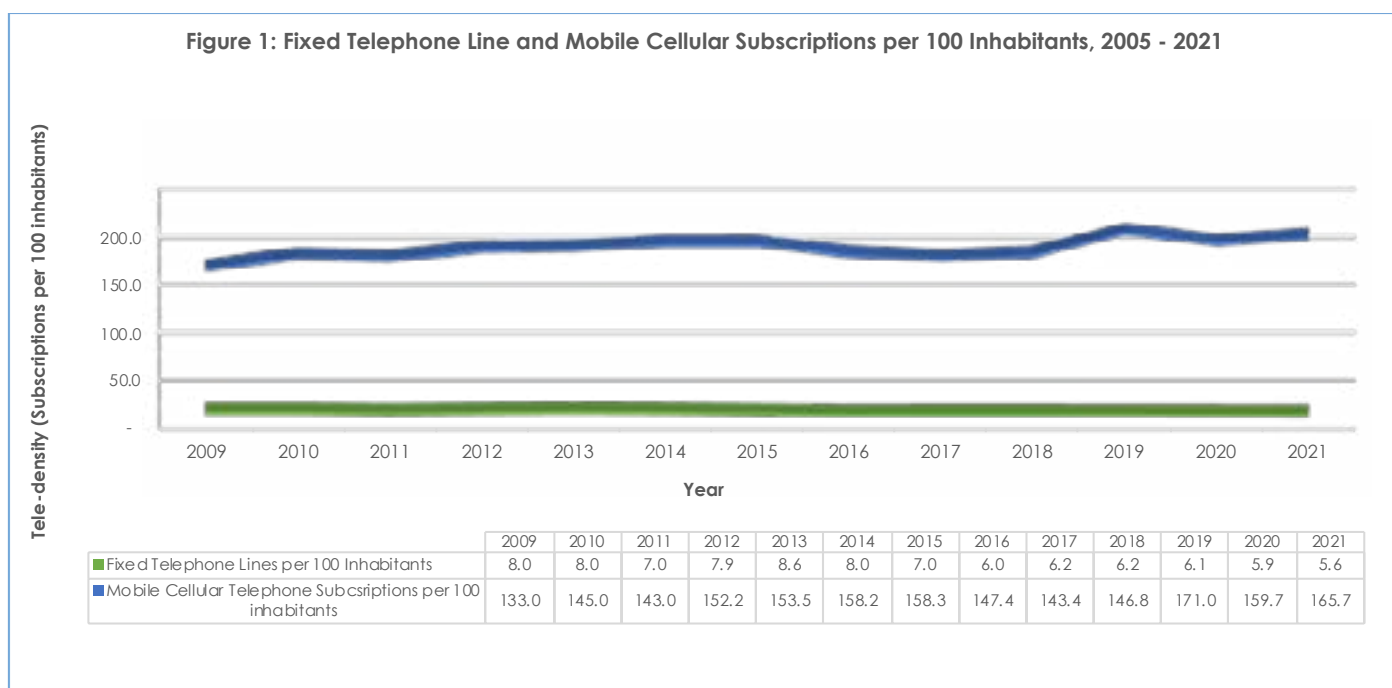
1. TELECOMMUNICATION

1.1. Fixed Telephone Lines and Mobile Cellular Telephone Subscriptions

Subscriptions for fixed telephone lines declined by 3.0 percent in 2021, from 140,015 recorded in 2020 to 135,810. As a result, tele-density (the number of fixed telephone lines per 100 inhabitants) decreased to 5.6 lines in 2021 from 5.9 in 2020.

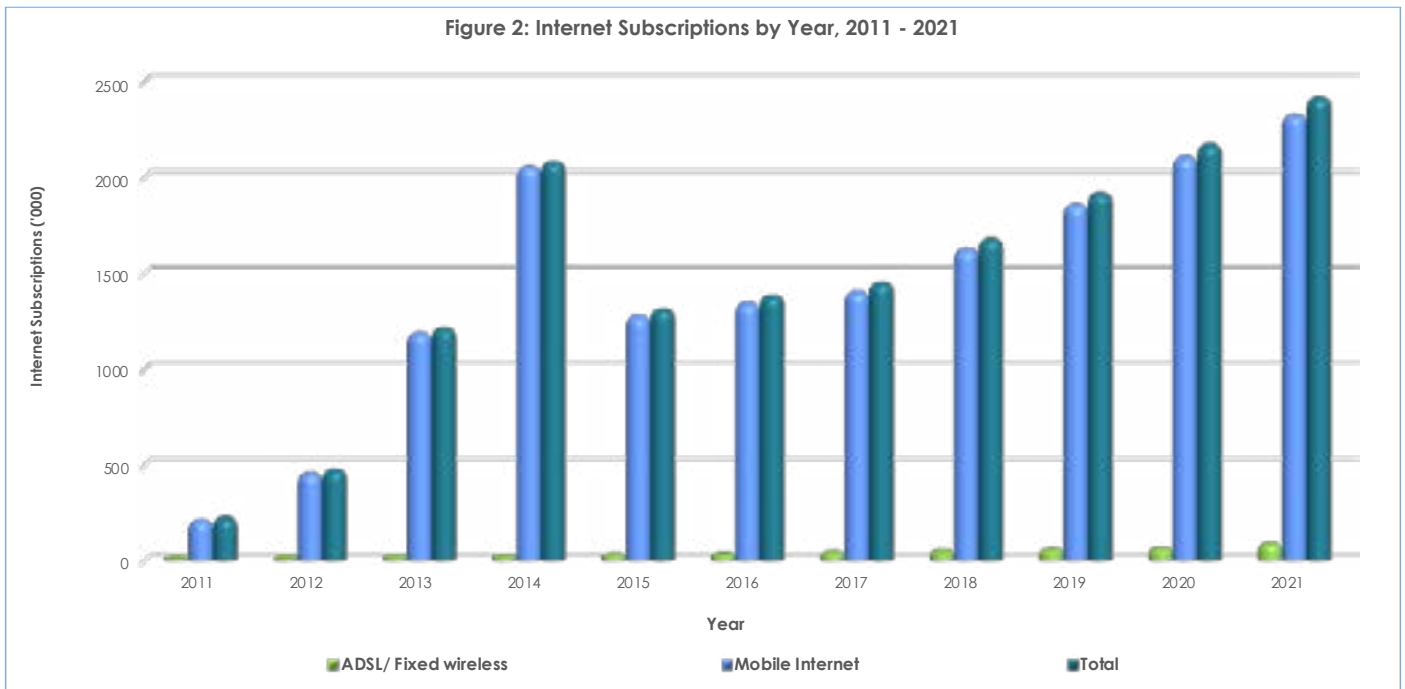
Mobile cellular telephone subscriptions on the other hand realised an increase of 5.3 percent in 2021 from 3,792,157 recorded in 2020 to 3,993,042. This significant increase resulted from a rise in both pre-paid and post-paid mobile cellular telephone subscriptions by 5.0 percent and 12.2 percent respectively. Pre-paid mobile cellular telephone subscriptions constituted 96.3 percent of total mobile cellular telephone subscriptions in 2021 while post-paid made up 3.7 percent of the total.

Mobi-density (the number of mobile cellular telephone subscriptions per 100 inhabitants) increased from 159.7 subscriptions in 2020 to 165.7 in 2021. For more details refer to [Table 1](#) and [Table 2](#) in [Appendix I](#) and [Figure 1](#) below.



1.2. Internet Subscription

Internet subscriptions (both mobile and fixed internet subscriptions) went up by 11.3 percent in 2021, from 2,172,256 in 2020 to 2,416,651. This resulted from a significant increase in both mobile internet and fixed internet subscriptions. Mobile internet subscriptions increased by 10.4 percent, from 2,106,669 in 2020 to 2,325,381 in 2021. Fixed internet subscriptions also went up, by 39.2 percent in 2021, from 65,588 recorded in 2020 to 91,271. This is illustrated in **Figure 2** below and **Table 3** in **Appendix I**.



Internet subscriptions per 100 inhabitants increased from 90.8 in 2020 to 100.3 in 2021, while mobile internet subscriptions per 100 inhabitants increased from 88.7 in 2020 to 96.5 in 2021. See **Table 1** in **Appendix I** for details.

1.3. Telephone Traffic

Both domestic calls from fixed to fixed telephone and fixed to mobile telephone traffic declined in 2021. Domestic fixed to fixed telephone traffic decreased by 17.6 percent (from 81.5 million minutes recorded in 2020 to 67.2 million) while fixed to mobile telephone traffic calls declined by 6.8 percent (from 111.2 million minutes in 2020 to 103.6 million).

With regard to mobile telephone domestic calls traffic, on-net mobile telephone traffic rose by 22.9 percent in 2021 from 6,309.2 million minutes recorded in 2020 to 7,751.7 million. Off-net mobile telephone traffic however went down by 3.3 percent, from 760.7 million minutes registered in 2020 to 735.7 million in 2021. Mobile to fixed telephone traffic also fell by 7.9 percent in 2021 compared to the previous year.

International outgoing calls traffic from fixed telephones decreased by 42.8 percent in 2021, from 9.5 million minutes in 2020 to 5.4 million. Outgoing international mobile telephone calls traffic declined as well (18.9 percent), from 28.7 million minutes in 2020 to 23.3 million minutes in 2021.

In 2021, both on net and off net SMS traffic declined compared to the previous year. On net SMS traffic went down by 10.9 percent in 2021, from 456.4 million minutes recorded in 2020 to 406.5 million minutes. Off net SMS traffic fell from 278.3 million minutes recorded in 2020 to 230.6 million minutes in 2021, registering a 17.1 percent decrease. The details are shown in **Tables 1.1** below and **Tables 4** in **Appendix I**.

Table 1.1: Domestic and International Telephone Traffic (Minutes), 2012 - 2021

Telephone and Short Message Service Traffic										
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Minutes ('000 000)									
Domestic Calls										
Fixed to Fixed Telephone Traffic	180.0	164.1	190.4	145.3	180.2	125.4	125.4	103.6	81.5	67.2
Fixed to Mobile Telephone Traffic	120.8	130.3	142.9	147.4	105.3	132.2	126.2	120.9	111.2	103.6
On Net Mobile Telephone Traffic	1,477.0	2,012.6	2,017.3	2,290.6	2,135.8	1,677.4	2,274.4	4,425.3	6,309.2	7,751.7
Off Net Mobile Telephone Traffic	498.1	507.5	639.5	698.0	719.5	529.1	471.7	587.2	760.7	735.7
Mobile to Fixed Telephone Traffic	58.0	44.4	47.8	38.7	36.2	30.4	26.7	37.2	230.0	211.7
International Calls										
Outgoing Fixed Telephone Traffic	23.1	25.5	23.2	31.5	29.3	16.2	14.8	11.9	9.5	5.4
Incoming Fixed Telephone Traffic	-	-	-	-	-	-	-	-	-	-
Outgoing Mobile Telephone Traffic	60.5	70.4	64.9	59.6	55.0	37.0	34.8	40.5	28.7	23.3
Short Message Service										
On Net	813.7	888.9	866.0	814.9	735.0	600.5	553.0	594.2	456.4	406.5
Off Net	461.5	319.5	571.6	596.8	555.0	626.4	549.3	525.3	278.3	230.6
	Quarterly Percentage Change									
Domestic Calls										
Fixed to Fixed Telephone Traffic	...	(8.8)	16.0	(23.7)	23.9	(30.4)	0.0	(17.4)	(21.3)	(17.6)
Fixed to Mobile Telephone Traffic	...	7.9	9.7	3.1	(28.6)	25.6	(4.5)	(4.3)	(8.0)	(6.8)
On Net Mobile Telephone Traffic	...	36.3	0.2	13.5	(6.8)	(21.5)	35.6	94.6	42.6	22.9
Off Net Mobile Telephone Traffic	...	1.9	26.0	9.2	3.1	(26.5)	(10.9)	24.5	29.5	(3.3)
Mobile to Fixed Telephone Traffic	...	(23.5)	7.7	(19.0)	(6.7)	(15.8)	(12.4)	39.7	517.4	(7.9)
International Calls										
Outgoing Fixed Telephone Traffic	...	10.4	(8.9)	35.8	(7.0)	(44.6)	(9.0)	(19.3)	(20.7)	(42.8)
Incoming Fixed Telephone Traffic	...	-	-	-	-	-	-	-	-	-
Outgoing Mobile Telephone Traffic	...	16.4	(7.8)	(8.3)	(7.7)	(32.6)	(5.9)	16.4	(29.2)	(18.9)
Short Message Service										
On Net	...	9.2	(2.6)	(5.9)	(9.8)	(18.3)	(7.9)	7.5	(23.2)	(10.9)
Off Net	...	(30.8)	78.9	4.4	(7.0)	12.9	(12.3)	(4.4)	(47.0)	(17.1)

Source: Information and Communication Technology Statistics, Statistics Botswana

Note: "-" denotes zero

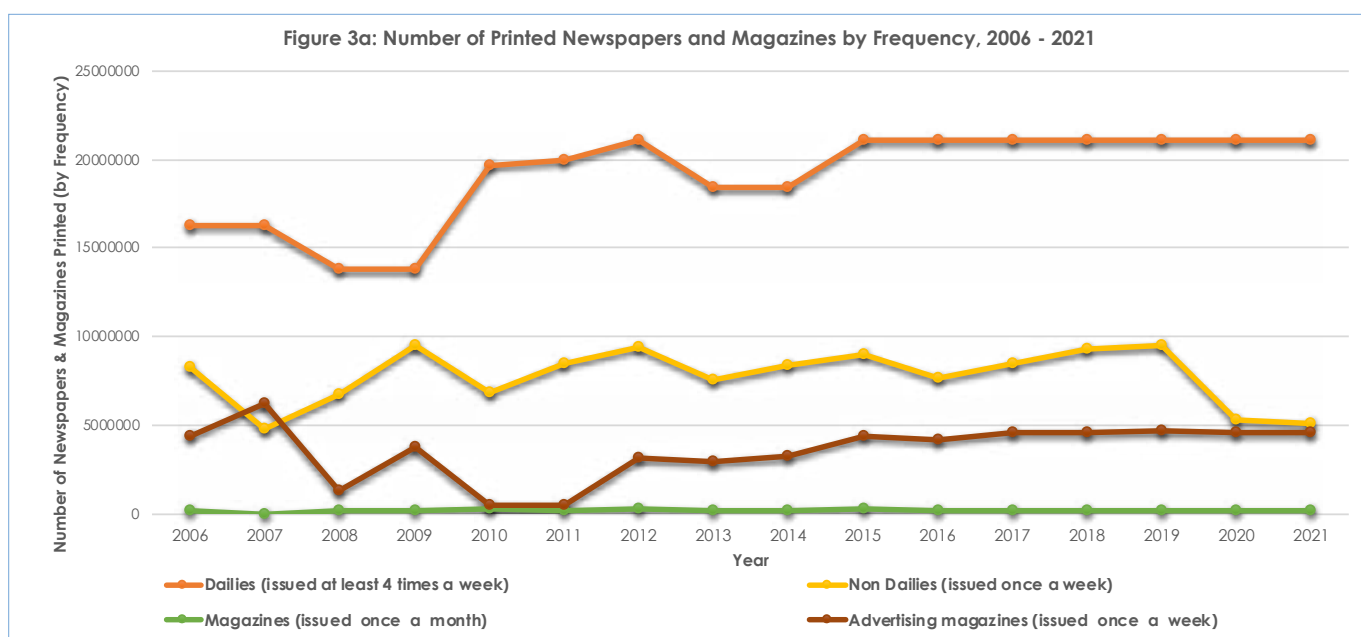
"..." denotes no data

2. PRINT MEDIA

Print media covers private and Government owned newspapers throughout Botswana. These are categorized according to their frequency of production. Dailies refers to those issued at least 4 times a week while Non Dailies refers to those issued once a week, Magazines are those issued once a month and Advertising Magazines are the ones issued once a week.

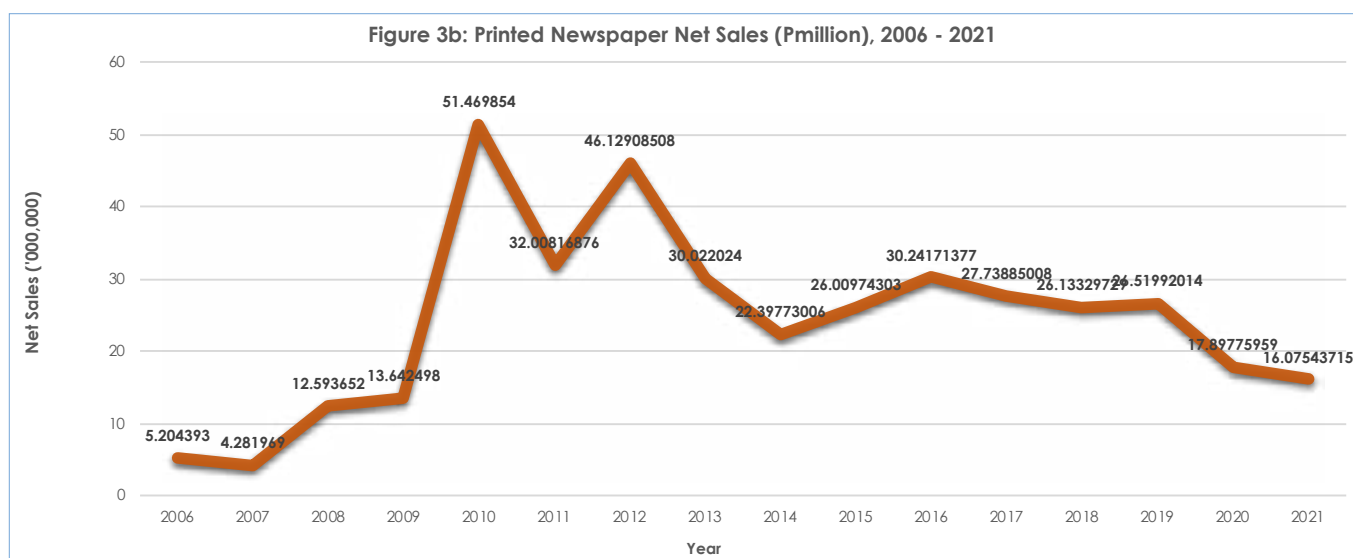
2.1 Printed Newspapers and Magazines by Frequency

Figure 3a below shows the number of printed newspapers and magazines for the period 2006 to 2021. The number of printed dailies remained stable in 2021 as was in the previous year. In 2021, printed non-dailies went down by 3.5 percent, after a sharp decline of 44.1 percent recorded in 2020. In the two years print media realised a huge decline as mostly communication was done through the social media rather than printing. Printed magazines issued once a month remained constant in 2021. Those issued once a week (advertising magazines) rose by 1.3 percent, compared to 2020. More details are illustrated in **Tables 5-6** in **Appendix II**.



2.2 Private Newspaper Net Sales

A graphical presentation of net sales of private newspapers from 2006 to 2021 is shown below in Figure 3b. It can be observed that there has been a decline in net sales of private newspapers during this period due to competition from other forms of media such as social media. Net sales having reached a total net of P17.9 million in 2020 from P26.5 million registered in 2019. The sales dropped by 10.2 percent in 2021 from P17.9



million in 2020 to P16.1million. Refer to **Tables 7- 8** in **Appendix II** for details.

2.3 ICT Usage by Private Newspaper Employees

There was a wide usage of computers, intranet, and internet amongst private newspaper employees in 2021. Out of a total of 259 male employees, 94.6 percent of them used computers in their work and 93.8 percent were connected to the internet. Those using the intranet and having access to the website represented 27.4 and 68.7 percent respectively. Females totaled 179 and 79.3 percent of them used computers and were connected to the internet as well, with 27.9 percent of them using the intranet and 71.5 percent having access to the website. Details are in **Table 9** in **Appendix II**.

3. RADIO AND TELEVISION

3.1. Public and Private Radio Station Broadcasting Hours

Public and private radio weekly broadcasting hours for the year 2021 are displayed in Table 3.1 below. The figures suggest that highly broadcasted programs were General programmes followed by English and Setswana programmes. In 2021, a total of 25,944 hours were used for broadcasting General programs, while English and Setswana programs broadcasted a total of 20,928 and 8,659 hours respectively. The least covered in terms of hours were Religious programs and Instructional/ Special programs. See [Table 10](#) in [Appendix III](#).

Table 3.1: Public and Private Radio Weekly Broadcasting Hours by Quarter, 2021

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Broadcasting Programme					
General Programmes	6,486	6,486	6,486	6,486	25,944
Religious Programmes	210	210	210	210	840
Instructional/ Special Programmes	234	234	234	234	936
Commercial / Advertising Programmes	705	705	705	705	2,820
Setswana Programmes	2,165	2,165	2,165	2,165	8,659
English Programmes	5,232	5,232	5,232	5,232	20,928

Source: Information and Communication Technology Statistics, Statistics Botswana

3.2. ICT Access by Public and Private Radio Station Employees

Amongst public and private radio employees there was a wide access to Information and Communication Technologies in 2021. From a total of 64 male employees, 62 used computers while 63 were connected to the internet. A total of 68 females were employed, with 63 of them using computers and 66 connected to the internet. The radio employees also had access to the website, of which 52 were males and 53 females. Both male and female employees had no access to the intranet in 2021. This is shown in [Table 11](#) of [Appendix III](#) for details.

3.3. Television Broadcasting Hours

[Table 3.2](#) below, illustrates the television weekly broadcasting hours for the year 2021. It indicates that in 2021, English programmes recorded the highest broadcasting hours compared to other programmes. English programs recorded a total of 17,862 broadcasting hours followed by General programmes with a total of 17,638 hours, while Instructional/ Special programmes were the least covered. Refer to [Table 12](#) of [Appendix III](#).

Table 3.2: Television Weekly Broadcasting Hours by Quarter, 2021

Broadcasting Programme	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
General Programmes	4,610	4,344	4,510	4,174	17,638
Religious Programmes	707	707	708	709	2,831
Instructional/ Special Programmes	54	54	54	54	216
Commercial / Advertising Programmes	566	560	551	575	2,252
Setswana Programmes	543	529	529	529	2,130
English Programmes	4,442	4,456	4,398	4,566	17,862

Source: Information and Communication Technology Statistics, Statistics Botswana

3.4. ICT Usage by Television Employees

There was usage of ICTs amongst television employees in 2021, with the highest use among female employees compared to their male counterparts. A total of 76 females were employed; 75 of them used computers and were also connected to the internet whilst 73 used both the intranet and website. Amongst the 47 male employees, 45 used computers, intranet, were connected to the internet, and had access to the website. More details are in [Table 13](#) in [Appendix III](#).

4. CONTRIBUTION OF COMMUNICATION AND POSTAL SERVICES TO GDP

Table 4.1 below illustrates the contribution of Information and Communication Technology (ICT) as well as Postal and Courier Services to the Gross Domestic Product (GDP) in 2021. In current prices, the ICT sector contributed a value added of P5, 498.9 million to the economy in 2021, which was 2.8 percent of total Gross Domestic Product. The Postal and Courier Services sector's value added amounted to P253.2 million in current prices, which constituted 0.1 percent of the total GDP. In real terms, the ICT sector's value added stood at P4, 644.3 million, which made up 2.5 percent of total GDP, while that of Postal and Courier Services was P176.2 million. See **Table 14** in **Appendix IV**.

Table 4.1: Contribution of Communication and Postal Services To GDP, 2014 - 2021

ICT and Postal & Courier Services	2014	2015	2016	2017	2018	2019	2020	2021
Current Prices								
Total GDP (P Million)	138,860.8	137,052.8	164,418.2	166,646.8	173,725.4	179,579.7	171,041.9	195,290.0
ICT Value Added (P Million)	3,312.6	3,595.3	3,936.4	4,236.0	4,524.0	4,843.6	5,065.0	5,498.9
ICT Contribution To GDP (%)	2.4	2.6	2.4	2.5	2.6	2.7	3.0	2.8
ICT Annual Growth Rates (%)	...	8.5	9.5	7.6	6.8	7.1	4.6	8.6
Postal & Courier Services Value Added (P Million)	179.7	182.6	178.8	198.9	227.4	229.5	227.9	253.2
Postal & Courier Services Contribution To GDP (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Postal & Courier Services Annual Growth Rates (%)	...	1.6	-2.1	11.3	14.3	0.9	-0.7	11.1
Constant Prices								
Total GDP (P Million)	161,191.9	153,372.5	164,418.1	171,180.8	178,352.9	183,761.7	167,725.9	186,786.5
ICT Value Added (P Million)	3,667.2	3,769.8	3,936.4	4,100.3	4,157.2	4,363.1	4,448.5	4,644.3
ICT Contribution To GDP (%)	2.3	2.5	2.4	2.4	2.3	2.4	2.7	2.5
ICT Annual Growth Rates (%)	...	2.8	4.4	4.2	1.4	5.0	2.0	4.4
Postal & Courier Services Value Added (P Million)	207.7	191.1	178.8	182.3	179.8	181.5	174.2	176.2
Postal & Courier Services Contribution To GDP (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Postal & Courier Services Annual Growth Rates (%)	...	-8.0	-6.5	2.0	-1.3	0.9	-4.0	1.1

Source: National Accounts, Statistics Botswana

5. ICT E-Waste Generated in the Country

The report covers ICT e-waste in Botswana up to the year 2020. E-waste measured relates to temperature exchange equipment; screens, monitors and equipment containing screens; lamps; large equipment (excluding photovoltaic panels); photovoltaic panels (including converters); small equipment and small information technology (IT) and telecommunication equipment.

5.1 Electric and Electronic Equipment (EEE) Put on Market (POM)

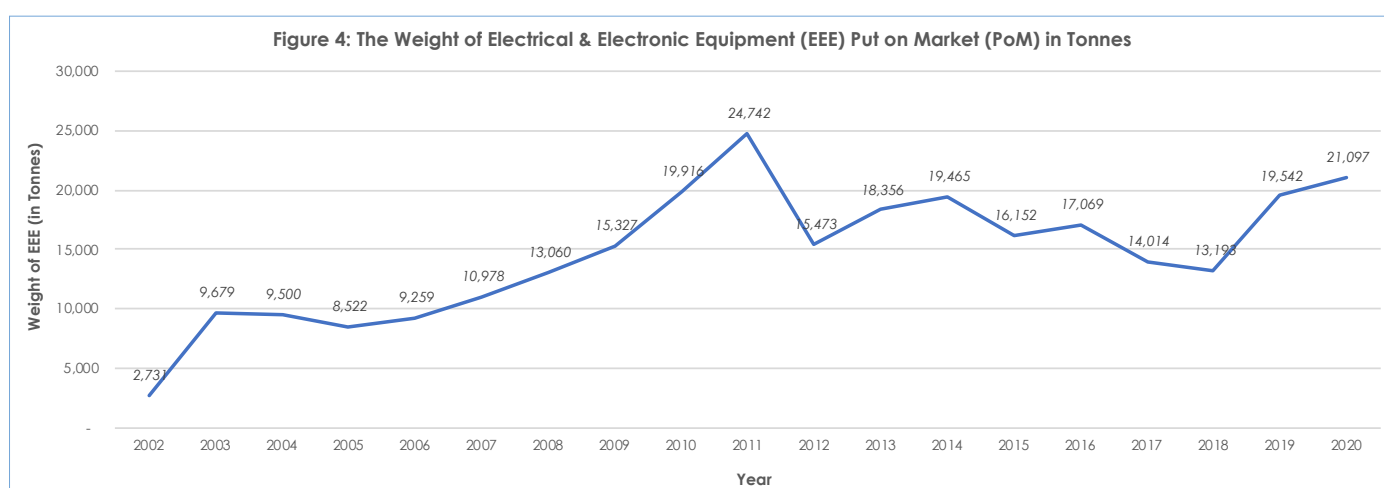


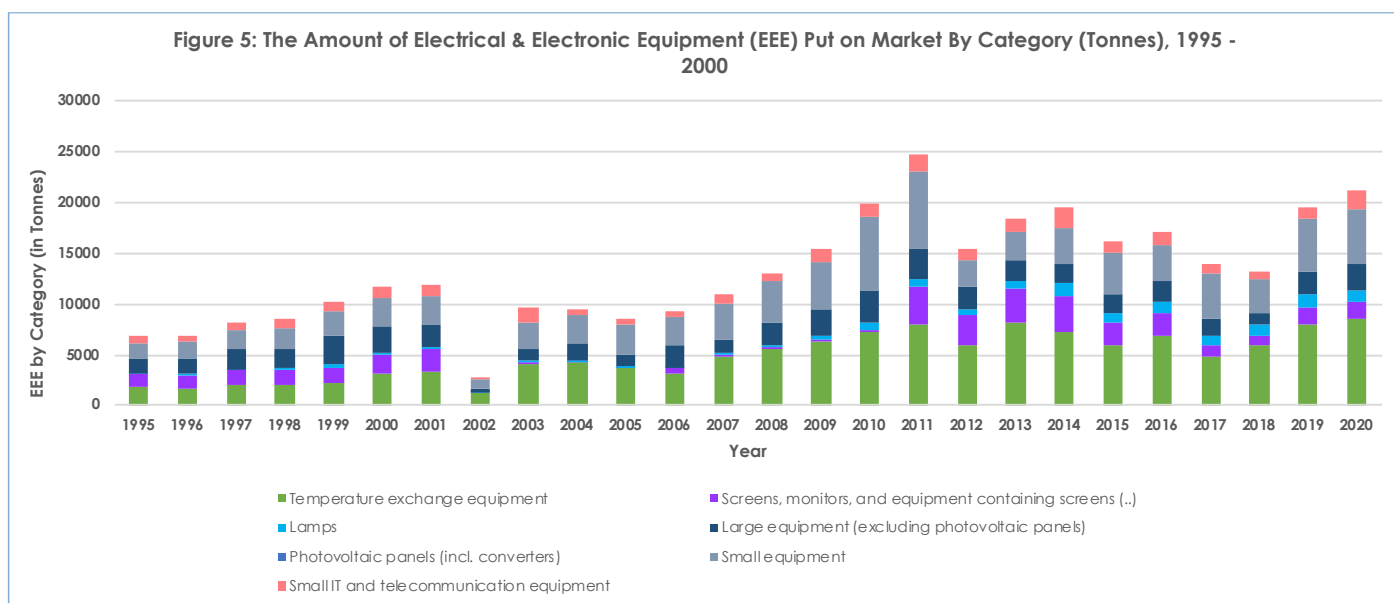
Figure 4 above illustrates ICT electrical and electronic equipment (EEE) put on market (PoM) in Botswana for the period 2002 to 2020.

In 2020, a total of 21,097 tonnes of ICT electrical and electronic equipment was put on the market for use compared to 19,542 tonnes in 2019. This was an increase of 8.0 percent.

As the graph in Figure 8 indicates, the trend shows an increase in EEE put on the market from 2002 to 2011 (which had the highest electrical and electronic equipment put on market of 24,742 tonnes). From 2011 it declined until 2018 when the amount of EEE on the market started increasing again up to 2020. See more details in **Tables 15** of **Appendix V**.

5.2 Components of ICT Electric and Electronic Equipment (EEE) Put on Market (POM)

Of the 21,097 tonnes of ICT electrical and electronic equipment which was put on market in 2020, 40.2 percent amounted to temperature exchange equipment (at 8,490 tonnes) while 25.8 percent was small equipment. Large equipment (excluding photovoltaic panels), small IT and telecommunication equipment as well as screens, monitors, and equipment containing screens made up 12.2, 8.5 and 8.2 percent respectively. Lamps constituted the least at 4.9 percent of total ICT electrical and electronic equipment put on the market. This is shown in **Table 15** of **Appendix V** and **Figure 5** below.



5.3 E-waste Generated

Table 5.1 below shows e-waste generated in Botswana from 2015 to 2020. The year 2020 generated the highest total amount of e-waste amounting to 13,494 tonnes, which equates to 575.2 kg per 100 inhabitants. This indicates an increase of 4.4 percent from 12,920 tonnes generated in 2019. Refer to **Tables 18** and **19** of **Appendix V**.

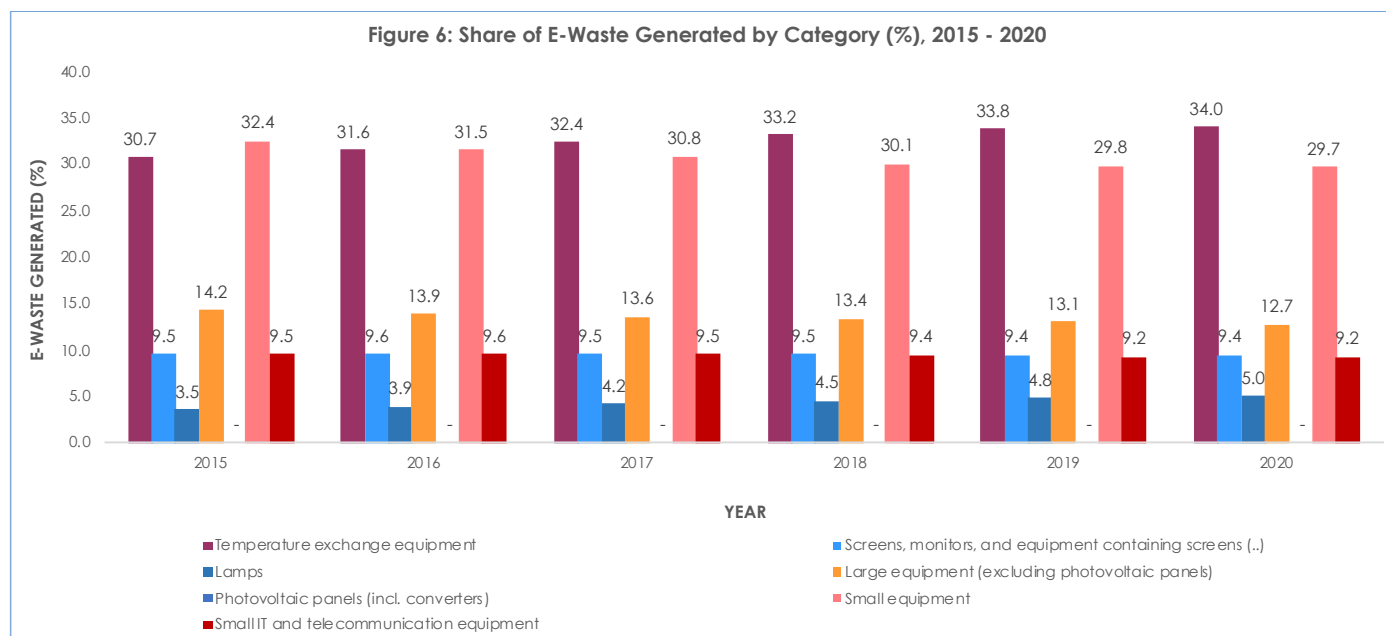
Table 5.1: Share of E-waste Generated by Category, 2015 - 2020

E-Waste Categories	2015	2016	2017	2018	2019	2020
E-waste (in Tonnes)						
Temperature exchange equipment	3,431	3,690	3,923	4,141	4,365	4,592
Screens, monitors, and equipment containing screens (..)	1,066	1,116	1,153	1,184	1,218	1,265
Lamps	395	456	508	558	617	671
Large equipment (excluding photovoltaic panels)	1,588	1,620	1,648	1,667	1,687	1,714
Photovoltaic panels (incl. converters)	-	-	-	-	-	-
Small equipment	3,621	3,682	3,735	3,746	3,849	4,007
Small IT and telecommunication equipment	1,063	1,117	1,158	1,167	1,184	1,244
Total E-waste Generated	11,164	11,681	12,124	12,462	12,920	13,494
Quarterly Percentage Change						
Temperature exchange equipment	...	7.6	6.3	5.6	5.4	5.2
Screens, monitors, and equipment containing screens (..)	...	4.7	3.3	2.6	2.9	3.9
Lamps	...	15.5	11.4	9.9	10.6	8.8
Large equipment (excluding photovoltaic panels)	...	2.0	1.7	1.2	1.2	1.6
Photovoltaic panels (incl. converters)	...	-	-	-	-	-
Small equipment	...	1.7	1.4	0.3	2.8	4.1
Small IT and telecommunication equipment	...	5.1	3.6	0.8	1.4	5.1
Total E-waste Generated	...	4.6	3.8	2.8	3.7	4.4

Source: Information and Communication Technology Statistics, Statistics Botswana

5.4 Components of E-waste Generated

Figure 6 below indicates that out of a total of 13,494 tonnes of e-waste generated in 2020, 4,592 tonnes (34.0 percent) came from temperature exchange equipment. Small equipment generated 4,007 tonnes (29.7 percent) of e-waste while large equipment (excluding photovoltaic panels) emitted 1,714 tonnes (12.7 percent). E-waste generated from screens, monitors, and equipment containing screens as well as from small IT and telecommunication equipment amounted to 1,265 (9.4 percent) and 1,244 (9.2 percent) tonnes respectively. The least e-waste came from lamps at 671 tonnes (5.0 percent).



A digital globe with binary code and data lines. The globe is rendered in shades of blue and orange, with glowing lines and binary digits (0s and 1s) scattered across its surface. The background is dark, making the glowing elements stand out.

Appendix I

Telecommunications

Table 1: Information & Communication Technology Infrastructure and Access, 2009 - 2021

Year	ICT Infrastructure and Access										Number
	Fixed Tele- phone Lines	Fixed Telephone Lines per 100 Inhabitants	Mobile Cellular Telephone Subscriptions	Mobile Cellular Telephone Subscriptions per 100 inhabitants	Internet Subscriptions	Internet Subscriptions per 100 Inhabitants	Fixed Broad- band/ADSL Subscriptions	Fixed Broad- band/ADSL Subscriptions per 100 Inhabitants	Mobile Broadband Subscriptions	Mobile Broadband per 100 Inhabitants	
2009	144,195	8.0	2,390,868	133.0	110,600	6.0	10,000	0.6	100,600	6.0	
2010	139,695	8.0	2,644,982	145.0	140,360	8.0	11,978	0.7	128,382	7.0	
2011	149,578	7.0	2,900,263	143.0	228,025	13.0	14,671	1.0	213,354	11.0	
2012	160,488	7.9	3,081,726	152.2	476,979	39.0	17,627	1.0	459,353	37.0	
2013	174,165	8.6	3,246,787	153.5	1,214,026	72.0	23,935	1.3	1,190,091	68.0	
2014	169,236	8.0	3,410,507	158.2	2,082,497	117.1	25,561	1.3	2,056,936	115.8	
2015	160,490	7.0	3,475,327	158.3	1,314,409	64.7	35,798	1.7	1,278,611	63.1	
2016	142,122	6.0	3,288,986	147.4	1,384,894	65.0	39,249	1.9	1,345,645	63.2	
2017	141,207	6.2	3,249,903	143.4	1,452,460	69.8	47,424	2.2	1,405,036	67.6	
2018	142,481	6.2	3,381,228	146.8	1,680,586	77.2	53,412	2.4	1,627,174	74.8	
2019	141,896	6.1	3,999,244	171.0	1,918,068	86.7	59,959	2.7	1,858,109	84.0	
2020	140,015	5.9	3,792,157	159.7	2,172,256	90.8	65,588	2.8	2,106,669	88.7	
2021	135,810	5.6	3,993,042	165.7	2,416,651	100.3	91,271	3.8	2,325,381	96.5	
Annual Percentage Change											
2009	...	...	...	...	...	...	...	...	...	...
2010	(3.1)	0.0	10.6	9.0	26.9	33.3	19.8	16.7	27.6	16.7	
2011	7.1	(12.5)	9.7	(1.4)	62.5	62.5	22.5	42.9	66.2	57.1	
2012	7.3	13.2	6.3	6.4	109.2	200.0	20.1	0.0	115.3	236.4	
2013	8.5	8.5	5.4	0.9	154.5	84.6	35.8	30.0	159.1	83.8	
2014	(2.8)	(7.0)	5.0	3.1	71.5	62.6	6.8	(0.6)	72.8	70.3	
2015	(5.2)	(12.5)	1.9	0.1	(36.9)	(44.7)	40.1	29.9	(37.8)	(45.5)	
2016	(11.4)	(14.3)	(5.4)	(6.9)	5.4	0.5	9.6	11.7	5.2	0.1	
2017	(0.6)	3.8	(1.2)	(2.7)	4.9	7.3	20.8	15.0	4.4	7.0	
2018	0.9	(0.7)	4.0	2.4	15.7	10.6	12.6	9.8	15.8	10.6	
2019	(0.4)	(1.9)	18.3	16.5	14.1	12.4	12.3	12.0	14.2	12.4	
2020	(1.3)	(2.8)	(5.2)	(6.6)	13.3	4.8	9.4	4.1	13.4	5.6	
2021	(3.0)	(4.4)	5.3	3.7	11.3	10.4	39.2	37.1	10.4	8.7	

Source: Botswana Communications Regulatory Authority (BOCRA)

Note: "..." denotes no data

"-" denotes zero

Table 2: Telephone Subscriptions by Year, 2012 - 2021

Year	Telephone Subscriptions							
	Mobile Cellular			Fixed Telephone	Mobile Cellular			Fixed Telephone
	Pre-Paid	Post Paid	Total		Pre-Paid	Post Paid	Total	
Numbers				Annual Percentage Change				
2012	3,017,884	63,842	3,081,726	160,488	...	...	...	...
2013	3,169,148	77,639	3,246,787	174,165	5.0	21.6	5.4	8.5
2014	3,328,284	82,223	3,410,507	169,236	5.0	5.9	5.0	(2.8)
2015	3,395,758	79,569	3,475,327	160,490	2.0	(3.2)	1.9	(5.2)
2016	3,209,519	79,467	3,288,986	142,122	(5.5)	(0.1)	(5.4)	(11.4)
2017	3,168,194	81,709	3,249,903	141,207	(1.3)	2.8	(1.2)	(0.6)
2018	3,295,636	85,592	3,381,228	142,481	4.0	4.8	4.0	0.9
2019	3,891,733	107,511	3,999,244	141,896	18.1	25.6	18.3	(0.4)
2020	3,660,785	131,372	3,792,157	140,015	(5.9)	22.2	(5.2)	(1.3)
2021	3,845,606	147,436	3,993,042	135,810	5.0	12.2	5.3	(3.0)

Source: Botswana Communications Regulatory Authority

Note: "..." denotes no data

Table 3: Internet Subscriptions by Year, 2011 - 2021

Year	Internet Subscriptions					
	ADSL/ Fixed wireless	Mobile Internet	Total	ADSL/ Fixed wireless	Mobile Internet	Total
	Numbers			Annual Percentage Change		
2011	14,671	213,354	228,025	...	...	...
2012	17,627	459,353	476,979	20.1	115.3	109.2
2013	23,935	1,190,091	1,214,026	35.8	159.1	154.5
2014	25,561	2,056,936	2,082,497	6.8	72.8	71.5
2015	35,798	1,278,611	1,314,409	40.1	(37.8)	(36.9)
2016	39,249	1,345,645	1,384,894	9.6	5.2	5.4
2017	47,424	1,405,036	1,452,460	20.8	4.4	4.9
2018	53,412	1,627,174	1,680,586	12.6	15.8	15.7
2019	59,959	1,858,109	1,918,068	12.3	14.2	14.1
2020	65,588	2,106,669	2,172,256	9.4	13.4	13.3
2021	91,271	2,325,381	2,416,651	39.2	10.4	11.3

Source: Botswana Communications Regulatory Authority

Note: "..." denotes no data

Table 4: Domestic and International Telephone Traffic by Year (Minutes), 2012 - 2021

Telephone and Short Message Service Traffic										
	Domestic Calls					International Calls			Short Message Service	
	Fixed to Fixed Telephone Traffic	Fixed to Mobile Telephone Traffic	On Net Mobile Telephone Traffic	Off Net Mobile Telephone Traffic	Mobile to Fixed Telephone Traffic	Outgoing Fixed Telephone Traffic	Incoming Fixed Telephone Traffic	Outgoing Mobile Telephone Traffic	On Net	Off Net
Year	Numbers									
2012	180,023,710	120,777,738	1,476,951,319	498,071,407	57,988,866	23,111,572	-	60,537,589	813,670,066	461,501,381
2013	164,112,553	130,260,542	2,012,563,382	507,520,871	44,363,268	25,506,911	-	70,447,823	888,916,435	319,509,736
2014	190,398,448	142,935,835	2,017,304,306	639,476,627	47,799,787	23,226,096	-	64,944,902	866,038,692	571,605,111
2015	145,349,554	147,431,252	2,290,626,178	698,003,464	38,735,981	31,541,508	-	59,571,104	814,896,796	596,797,881
2016	180,151,714	105,291,424	2,135,768,302	719,460,328	36,150,079	29,334,885	-	54,968,279	734,996,577	555,018,219
2017	125,396,404	132,231,992	1,677,396,502	529,125,900	30,443,995	16,245,364	-	37,022,908	600,508,567	626,385,527
2018	125,402,557	126,239,183	2,274,354,118	471,662,469	26,662,896	14,776,700	-	34,839,230	552,999,004	549,260,865
2019	103,642,312	120,863,735	4,425,255,173	587,242,577	37,243,099	11,928,670	-	40,540,260	594,224,351	525,309,238
2020	81,526,005	111,158,848	6,309,222,742	760,731,393	229,955,631	9,458,172	-	28,688,944	456,376,319	278,349,883
2021	67,206,515	103,636,781	7,751,692,015	735,669,996	211,720,028	5,410,689	-	23,278,560	406,501,918	230,644,048
Annual Percentage Change										
2012	...	...	...	...	...	...	...	...	...	...
2013	(8.8)	7.9	36.3	1.9	(23.5)	10.4	-	16.4	9.2	(30.8)
2014	16.0	9.7	0.2	26.0	7.7	(8.9)	-	(7.8)	(2.6)	78.9
2015	(23.7)	3.1	13.5	9.2	(19.0)	35.8	-	(8.3)	(5.9)	4.4
2016	23.9	(28.6)	(6.8)	3.1	(6.7)	(7.0)	-	(7.7)	(9.8)	(7.0)
2017	(30.4)	25.6	(21.5)	(26.5)	(15.8)	(44.6)	-	(32.6)	(18.3)	12.9
2018	0.0	(4.5)	35.6	(10.9)	(12.4)	(9.0)	-	(5.9)	(7.9)	(12.3)
2019	(17.4)	(4.3)	94.6	24.5	39.7	(19.3)	-	16.4	7.5	(4.4)
2020	(21.3)	(8.0)	42.6	29.5	517.4	(20.7)	-	(29.2)	(23.2)	(47.0)
2021	(17.6)	(6.8)	22.9	(3.3)	(7.9)	(42.8)	-	(18.9)	(10.9)	(17.1)

Source: Botswana Communications Regulatory Authority

Note: "-" denotes zero

A digital globe with binary code and data points. The globe is rendered in shades of blue and orange, with a grid of dots and lines. Binary digits (0s and 1s) are scattered across the surface, and several orange lines curve across it, suggesting data flow or connections.

Appendix II

Print Media

Table 5: The Volume of Private & Government Owned Newspapers/ Magazines Printed by Type and Year, 2006 - 2021

Year	Newspapers/ Magazines by Type									
	Dailies (issued at least 4 times a week)	Non Dailies (issued once a week)	Magazines (issued once a month)	Advertising magazines (issued once a week)	Total	Dailies (issued at least 4 times a week)	Non Dailies (issued once a week)	Magazines (issued once a month)	Advertising magazines (issued once a week)	Total
	Numbers ('000)					Annual Percentage Change				
2006	16,250	8,263	180	4,380	29,073	...	...	...	...	...
2007	16,250	4,829	10	6,171	27,260	-	(41.6)	(94.4)	40.9	(6.2)
2008	13,790	6,728	120	1,260	21,898	(15.1)	39.3	1,100.0	(79.6)	(19.7)
2009	13,790	9,537	120	3,780	27,227	-	41.8	-	200.0	24.3
2010	19,680	6,865	225	504	27,274	42.7	(28.0)	87.5	(86.7)	0.2
2011	19,920	8,457	180	504	29,061	1.2	23.2	(20.0)	-	6.6
2012	21,120	9,438	225	3,097	33,880	6.0	11.6	25.0	514.6	16.6
2013	18,400	7,583	155	2,913	29,051	(12.9)	(19.6)	(31.1)	(5.9)	(14.3)
2014	18,400	8,342	180	3,205	30,126	-	10.0	16.1	10.0	3.7
2015	21,120	9,033	225	4,320	34,698	14.8	8.3	25.0	34.8	15.2
2016	21,120	7,675	120	4,176	33,091	-	(15.0)	(46.7)	(3.3)	(4.6)
2017	21,120	8,461	173	4,560	31,321	-	10.2	44.2	9.2	(5.4)
2018	21,120	9,328	213	4,569	35,230	-	10.2	22.8	0.2	12.5
2019	21,120	9,512	210	4,663	35,505	-	2.0	(1.2)	2.1	0.8
2020	21,120	5,321	210	4,543	31,194	-	(44.1)	-	(2.6)	(12.1)
2021	21,120	5,137	210	4,603	31,070	-	(3.5)	-	1.3	(0.4)

Source: Information and Communication Technology Statistics Unit, Statistics Botswana

Note: "..." denotes no data

"-" denotes zero

Table 6: The Number of Printed Privately Owned Newspapers by Month and Year, 2006 - 2021

Month	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	Number															
January	572,434	340,720	461,391	632,517	418,973	658,123	595,693	586,647	608,048	646,987	599,487	509,336	432,742	761,179	451,837	409,687
February	694,802	357,677	604,447	801,715	498,455	812,390	871,829	665,157	637,540	689,548	624,453	731,187	856,164	758,326	490,873	420,223
March	787,541	392,175	534,186	802,539	567,707	836,280	850,444	648,765	797,760	724,630	729,693	784,555	843,542	818,942	503,343	449,693
April	663,814	357,036	584,023	852,783	617,902	789,167	761,515	628,962	501,706	741,897	678,641	685,258	691,940	784,852	363,982	380,570
May	724,504	365,211	568,159	851,490	604,632	768,373	861,115	671,085	515,936	826,371	651,729	718,277	791,620	779,440	421,672	434,810
June	676,516	427,459	558,389	808,970	608,058	848,233	825,964	641,294	481,969	798,645	676,374	735,189	799,118	804,481	465,186	464,836
July	658,407	376,658	554,682	913,116	625,864	712,975	763,340	658,698	509,934	780,945	676,430	705,847	736,542	756,378	415,850	388,750
August	754,851	483,463	617,680	827,198	589,192	768,248	918,330	717,488	533,694	757,663	630,559	725,559	834,871	871,114	489,164	469,284
September	713,158	397,410	575,578	838,034	633,606	762,816	774,668	632,072	469,059	766,957	638,659	730,689	835,981	823,728	451,158	459,508
October	703,419	577,447	634,043	835,735	557,581	576,388	813,928	612,044	548,909	796,869	621,124	720,660	836,146	795,481	422,241	431,091
November	738,119	434,445	570,150	745,706	588,202	496,411	797,548	649,758	496,359	792,113	617,604	720,751	841,125	833,664	499,664	453,614
December	575,711	319,182	465,416	627,595	555,102	427,923	603,158	471,242	346,288	709,918	530,275	694,044	908,392	724,259	346,034	374,834
Total	8,263,276	4,828,883	6,728,144	9,537,398	6,865,274	8,457,327	9,437,532	7,583,212	6,447,202	9,032,542	7,675,028	8,461,352	9,408,184	9,511,843	5,321,002	5,136,898
	Percent of Total															
January	6.9	7.1	6.9	6.6	6.1	7.8	6.3	7.7	9.4	7.2	7.8	6.0	4.6	8.0	8.5	8.0
February	8.4	7.4	9.0	8.4	7.3	9.6	9.2	8.8	9.9	7.6	8.1	8.6	9.1	8.0	9.2	8.2
March	9.5	8.1	7.9	8.4	8.3	9.9	9.0	8.6	12.4	8.0	9.5	9.3	9.0	8.6	9.5	8.8
April	8.0	7.4	8.7	8.9	9.0	9.3	8.1	8.3	7.8	8.2	8.8	8.1	7.4	8.3	6.8	7.4
May	8.8	7.6	8.4	8.9	8.8	9.1	9.1	8.8	8.0	9.1	8.5	8.5	8.4	8.2	7.9	8.5
June	8.2	8.9	8.3	8.5	8.9	10.0	8.8	8.5	7.5	8.8	8.8	8.7	8.5	8.5	8.7	9.0
July	8.0	7.8	8.2	9.6	9.1	8.4	8.1	8.7	7.9	8.6	8.8	8.3	7.8	8.0	7.8	7.6
August	9.1	10.0	9.2	8.7	8.6	9.1	9.7	9.5	8.3	8.4	8.2	8.6	8.9	9.2	9.2	9.1
September	8.6	8.2	8.6	8.8	9.2	9.0	8.2	8.3	7.3	8.5	8.3	8.6	8.9	8.7	8.5	8.9
October	8.5	12.0	9.4	8.8	8.1	6.8	8.6	8.1	8.5	8.8	8.1	8.5	8.9	8.4	7.9	8.4
November	8.9	9.0	8.5	7.8	8.6	5.9	8.5	8.6	7.7	8.8	8.0	8.5	8.9	8.8	9.4	8.8
December	7.0	6.6	6.9	6.6	8.1	5.1	6.4	6.2	5.4	7.9	6.9	8.2	9.7	7.6	6.5	7.3
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100.0	100.0	100.0

Source: Information and Communication Technology Statistics Unit, Statistics Botswana

Table 7: Privately Owned Newspapers Net Sales (Puia) by Month and Year, 2006 - 2021

Month	Number												Percent of Total																				
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
January	392,453	306,431	710,140	1,028,788	3,186,647	2,893,823	3,881,509	2,837,965	2,073,606	1,958,842	1,983,139	1,719,309	1,490,578	1,845,599	1,337,723	1,149,157	7.5	7.2	5.6	7.5	6.2	9.0	8.4	9.5	9.3	7.5	6.6	6.2	5.7	7.0	7.5	7.1	
February	441,645	312,205	975,323	1,175,741	3,571,801	3,449,813	3,615,286	2,058,640	2,420,135	1,873,932	2,233,009	2,281,211	2,330,455	2,081,482	1,555,302	1,287,665	8.5	7.3	7.7	8.6	6.9	10.8	7.8	6.9	10.8	7.4	8.2	8.9	7.8	8.7	8.7	8.0	
March	497,758	346,141	987,664	1,203,103	4,100,713	3,277,294	3,686,678	2,481,614	2,276,847	1,996,141	2,254,371	2,763,825	3,388,408	2,599,445	1,946,472	1,701,388	9.6	8.1	7.8	8.8	8.0	10.2	8.0	8.3	10.2	7.5	10.0	13.0	9.8	10.9	10.9	10.6	
April	407,146	316,287	1,070,427	1,261,137	4,345,546	3,400,752	3,776,656	2,135,025	1,656,983	1,911,649	3,085,248	2,215,176	1,590,473	2,245,840	1,286,366	1,256,628	7.8	7.4	8.5	9.2	8.4	10.6	8.2	7.1	7.4	10.2	8.0	6.1	8.5	7.2	7.8	7.8	
May	463,419	357,987	1,091,130	1,276,410	4,436,465	3,498,560	4,028,812	3,189,260	1,727,390	2,127,370	2,730,675	2,382,270	2,078,319	2,554,672	1,691,057	1,606,850	8.9	8.4	8.7	9.4	8.6	10.9	8.7	10.6	7.7	9.0	8.6	8.0	9.6	9.4	10.2	10.0	
June	394,671	378,947	1,045,520	1,357,492	4,997,284	3,411,179	3,863,449	2,420,023	1,612,306	2,023,951	2,508,660	2,396,686	2,289,710	2,556,287	1,828,143	1,595,893	7.6	8.8	8.3	10.0	9.7	10.7	8.4	8.1	7.2	8.3	8.6	8.8	9.6	10.2	9.9	9.9	
July	411,179	321,626	1,178,626	1,292,613	4,446,676	3,485,139	3,930,546	2,435,725	1,719,958	2,473,195	3,298,816	2,463,139	1,839,162	1,932,578	1,397,544	1,177,399	7.9	7.5	9.4	9.5	8.6	10.9	8.5	8.1	7.7	10.9	8.9	7.0	7.3	7.8	7.3	7.3	
August	469,901	420,546	1,243,599	1,436,136	4,863,301	3,476,922	4,275,886	2,759,900	1,997,449	2,279,348	2,989,096	2,512,412	2,111,747	2,546,785	1,498,747	1,480,183	9.0	9.8	9.9	10.5	9.4	10.9	9.3	9.2	8.9	9.9	9.1	8.1	9.6	8.4	9.2	9.2	
September	455,736	342,162	1,114,352	1,402,042	5,229,182	1,992,258	3,425,863	2,321,429	1,729,617	2,247,143	3,146,598	2,533,678	2,040,147	2,097,485	1,422,792	1,350,542	8.8	8.0	8.8	10.3	10.2	6.2	7.4	7.7	7.7	10.4	9.1	7.8	7.9	7.9	8.4	8.4	
October	439,286	523,206	1,214,594	835,735	4,118,812	2,348,016	4,022,016	2,648,675	2,060,603	2,458,700	2,043,808	2,112,020	2,182,509	2,162,888	1,530,784	1,304,020	8.4	12.2	9.6	6.1	8.0	7.3	8.7	8.8	9.2	6.8	7.6	8.4	8.2	8.6	8.6	8.1	8.1
November	458,258	376,393	1,084,030	745,706	4,442,403	414,935	4,138,606	2,685,132	1,931,195	2,341,734	2,055,663	2,200,536	2,355,618	2,156,699	1,432,517	1,221,640	8.8	8.8	8.6	5.5	8.6	1.3	9.0	8.9	8.6	6.8	7.9	9.0	8.1	8.0	8.0	7.6	7.6
December	372,941	280,038	878,247	627,595	3,731,024	359,478	3,483,780	2,048,637	1,191,640	2,317,738	1,912,631	2,158,586	2,436,171	1,740,161	970,312	944,073	7.2	6.5	7.0	4.6	7.2	1.1	7.6	6.8	5.3	6.3	7.8	9.3	6.6	5.4	5.4	5.9	5.9
Total	5,204,393	4,281,969	12,593,652	13,642,498	51,469,854	32,008,169	46,129,085	30,022,024	22,397,730	26,009,743	30,241,714	27,738,850	26,133,297	26,519,920	17,897,760	16,075,437	100	100	100	100	100	100	100	100	100	100	100	100.0	100.0	100.0	100.0	100.0	

Source: Information and Communication Technology Statistics Unit, Statistics Botswana

Table 8: Privately Owned Newspapers Printed and Their Net Sales by Year, 2011 - 2021

Year	Private Newspapers & Magazines			
	Printed		Net Sales (Pula)	
	Number	Annual Percentage Change	Number	Annual Percentage Change
2011	8,457,327	...	32,008,169	...
2012	9,437,532	11.6	46,129,085	44.1
2013	7,583,212	(19.6)	30,022,024	(34.9)
2014	6,447,202	(15.0)	22,397,730	(25.4)
2015	9,032,542	40.1	26,009,743	16.1
2016	7,675,028	(15.0)	30,241,714	16.3
2017	8,461,352	10.2	27,738,850	(8.3)
2018	9,408,184	11.2	26,133,297	(5.8)
2019	9,511,843	1.1	26,519,920	1.5
2020	5,321,002	(44.1)	17,897,760	(32.5)
2021	5,136,898	(3.5)	16,075,437	(10.2)

Source: Information and Communication Technology Statistics, Statistics Botswana

Table 9: Private Newspaper Employees by Gender and ICT Access, 2011 - 2021

Year	Male					Female				
	Total Number	Using Computers	Connected to Internet	Using Intranet	Have Access To Website	Total Number	Using Computers	Connected to Internet	Using Intranet	Have Access To Website
	Numbers									
2011	176	154	154	145	140	142	117	115	106	106
2012	208	169	149	129	129	176	125	125	112	112
2013	115	105	94	91	91	135	134	107	114	20
2014	250	174	165	73	111	177	127	107	56	84
2015	353	266	214	134	198	280	192	162	94	137
2016	242	204	202	78	201	173	141	141	61	141
2017	257	211	206	62	145	181	145	145	39	108
2018	249	207	204	70	173	177	143	143	50	125
2019	256	244	244	70	177	178	142	142	51	126
2020	258	243	242	70	177	177	144	144	51	124
2021	259	245	243	71	178	179	142	142	50	128
	Annual Percentage Change									
2011	...	...	...	...	...	...	...	...	...	...
2012	18.2	9.7	(3.2)	(11.0)	(7.9)	23.9	6.8	8.7	5.7	5.7
2013	(44.7)	(37.9)	(36.9)	(29.5)	(29.5)	(23.3)	7.2	(14.4)	1.8	(82.1)
2014	117.4	65.7	75.5	(19.8)	22.0	31.1	(5.2)	-	(50.9)	320.0
2015	41.2	52.9	29.7	83.6	78.4	58.2	51.2	51.4	67.9	63.1
2016	(31.4)	(23.5)	(5.5)	(41.8)	1.6	(38.4)	(26.7)	(13.3)	(35.6)	3.1
2017	5.9	3.4	2.0	(20.5)	(28.0)	4.9	3.0	3.2	(35.5)	(23.4)
2018	(2.8)	(1.7)	(1.0)	12.9	19.4	(2.3)	(1.5)	(1.6)	27.6	15.2
2019	2.5	17.9	19.2	-	2.4	0.4	(0.4)	(0.4)	2.0	0.6
2020	1.0	(0.4)	(0.6)	-	(0.1)	(0.3)	1.2	1.2	0.5	(1.2)
2021	0.4	0.8	0.4	1.4	0.6	1.1	(1.4)	(1.4)	(2.0)	3.2

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

A digital globe with binary code and data points. The globe is rendered in shades of blue and orange, with a grid of dots and lines. Binary digits (0s and 1s) are scattered across the surface, and several orange lines curve across it, suggesting data flow or network connections.

Appendix III

Radio & Television

Table 10: Public and Private Radio Broadcasting Hours by Year, 2011 - 2021

Year	Programme					
	General	Religious	Instructional/ Special	Commercial/ Advertising	Setswana	English
	Numbers					
2011	31,740	828	984	2,856	20,316	15,804
2012	10,580	276	328	952	6,772	5,268
2013	33,240	1,303	1,584	2,160	19,680	17,136
2014	21,912	789	956	1,556	13,228	11,204
2015	18,881	816	792	3,264	6,744	7,260
2016	18,624	576	876	3,336	4,224	6,240
2017	16,656	576	432	3,024	4,224	6,240
2018	21,224	751	672	3,050	5,232	10,272
2019	24,384	1,056	912	3,480	6,864	14,016
2020	25,656	822	816	2,748	7,603	19,512
2021	25,944	840	936	2,820	8,659	20,928
	Annual Percentage Change					
2011	...	...	...	...	...	...
2012	(66.7)	(66.7)	(66.7)	(66.7)	(66.7)	(66.7)
2013	214.2	372.1	382.9	126.9	190.6	225.3
2014	(34.1)	(39.4)	(39.6)	(28.0)	(32.8)	(34.6)
2015	(13.8)	3.4	(17.2)	109.8	(49.0)	(35.2)
2016	(1.4)	(29.4)	10.6	2.2	(37.4)	(14.0)
2017	(10.6)	-	(50.7)	(9.4)	-	-
2018	27.4	30.4	55.6	0.9	23.9	64.6
2019	14.9	40.6	35.7	14.1	31.2	36.4
2020	5.2	(22.2)	(10.5)	(21.0)	10.8	39.2
2021	1.1	2.2	14.7	2.6	13.9	7.3

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Table 11: Public and Private Radio Employees by Gender and ICT Access by Year, 2011 - 2021

Year	Male					Female					
	Total Number	Using Computers	Connected to Internet	Using Intranet	Have Access To Website	Total Number	Using Computers	Connected to Internet	Using Intranet	Have Access To Website	
	Numbers										
2011	58	58	58	18	-	42	30	30	12	-	
2012	48	48	48	24	24	42	38	38	26	26	
2013	50	47	47	36	36	46	44	44	32	32	
2014	20	20	20	20	20	11	11	11	11	11	
2015	51	50	50	-	50	52	50	50	-	50	
2016	75	71	61	45	42	98	72	75	63	61	
2017	58	55	58	-	47	61	57	60	-	47	
2018	65	65	65	-	57	69	64	67	-	54	
2019	67	66	67	-	59	71	66	69	-	56	
2020	60	58	59	-	48	69	64	67	-	54	
2021	64	62	63	-	52	68	63	66	-	53	
	Annual Percentage Change										
2011	...	...	...	...	...	...	...	...	...	...
2012	(17.2)	(17.2)	(17.2)	33.3	-	-	26.7	26.7	116.7	-	
2013	4.2	(2.1)	(2.1)	50.0	50.0	9.5	15.8	15.8	23.1	23.1	
2014	(60.0)	(57.4)	(57.4)	(44.4)	(44.4)	(76.1)	(75.0)	(75.0)	(65.6)	(65.6)	
2015	155.0	150.0	150.0	-	150.0	372.7	354.5	354.5	-	354.5	
2016	46.6	42.5	22.0	-	(16.0)	88.0	44.5	50.5	-	22.5	
2017	(22.7)	(23.2)	(5.3)	-	11.3	(37.9)	(21.8)	(19.9)	-	(24.1)	
2018	13.0	18.3	13.0	-	21.1	13.0	13.3	11.8	-	15.9	
2019	2.7	2.3	1.9	-	4.2	3.8	2.7	2.8	-	3.5	
2020	(10.4)	(12.5)	(11.3)	-	(18.6)	(3.2)	(2.7)	(3.2)	-	(3.1)	
2021	6.7	6.9	6.8	-	8.3	(1.4)	(1.6)	(1.5)	-	(1.9)	

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Note: "-" denotes zero

Table 12: Television Weekly Broadcasting Hours by Year, 2011 - 2021

Year	Programme					
	General	Religious	Instructional/ Special	Commercial/ Advertising	Setswana	English
Numbers						
2011	5,664	96	192	96	2,112	3,552
2012	2,554	720	192	336	544	1,040
2013	7,680	6,252	192	3,922	3,702	14,304
2014	5,116	6,252	192	5,058	3,672	14,304
2015	10,710	2,111	192	94	2,095	10,747
2016	10,485	2,204	216	2,298	2,066	10,587
2017	10,584	2,173	216	2,103	2,056	10,679
2018	10,534	2,189	216	2,201	2,062	10,633
2019	10,693	2,607	216	2,201	2,104	10,763
2020	14,124	2,580	216	2,166	2,106	14,282
2021	17,638	2,831	216	2,225	2,130	17,862
Annual Percentage Change						
2011	...	...	...	...	...	...
2012	(54.9)	650.0	-	250.0	(74.2)	(70.7)
2013	200.8	768.3	-	1,067.3	580.5	1,275.4
2014	(33.4)	-	-	29.0	(0.8)	-
2015	109.3	(66.2)	-	(98.1)	(42.9)	(24.9)
2016	(2.1)	4.4	12.5	2,344.7	(1.4)	(1.5)
2017	0.9	(1.4)	-	(8.5)	(0.5)	0.9
2018	(0.5)	0.7	-	4.6	0.3	(0.4)
2019	1.5	19.1	-	0.0	2.1	1.2
2020	32.1	(1.0)	-	(1.6)	0.1	32.7
2021	24.9	9.7	-	2.7	1.1	25.1

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Table 13: Public Television Employees by Gender and ICT Access by Year, 2011 - 2021

Year	Male					Female				
	Total Number	Using Computers	Connected to Internet	Using Intranet	Have Access To Website	Total Number	Using Computers	Connected to Internet	Using Intranet	Have Access To Website
	Numbers									
2011	77	77	77	77	77	75	75	75	75	75
2012	91	91	85	91	85	114	114	87	114	87
2013	45	42	27	20	19	75	73	32	54	18
2014	46	43	29	22	21	77	76	34	56	20
2015	36	34	34	20	24	85	83	44	57	-
2016	33	32	23	20	16	74	72	37	57	40
2017	30	29	28	19	20	69	67	67	57	57
2018	41	40	40	40	40	79	78	78	78	78
2019	41	39	39	37	37	72	71	71	68	68
2020	44	42	42	42	42	75	74	74	72	72
2021	47	45	45	45	45	76	75	75	73	73
	Annual Percentage Change									
2011	...	...	...	...	...	...	...	...	...	...
2012	18.2	18.2	10.4	18.2	10.4	52.0	52.0	16.0	52.0	16.0
2013	(50.5)	(53.8)	(68.2)	(78.0)	(77.6)	(34.2)	(36.0)	(63.2)	(52.6)	(79.3)
2014	2.2	2.4	7.4	10.0	10.5	2.7	4.1	6.3	3.7	11.1
2015	(21.7)	(20.9)	17.2	(9.1)	14.3	10.4	9.2	29.4	1.8	(100.0)
2016	(7.6)	(6.6)	(31.6)	(2.5)	(33.3)	(13.5)	(13.0)	(16.5)	0.4	-
2017	(10.5)	(9.4)	21.5	(2.6)	25.0	(6.8)	(6.9)	82.3	(0.4)	43.4
2018	36.1	40.0	39.8	107.9	97.5	15.3	16.0	16.4	36.8	36.8
2019	-	(3.1)	(1.3)	(5.7)	(5.7)	(8.9)	(9.3)	(9.0)	(13.5)	(13.1)
2020	8.6	7.7	7.7	12.8	12.8	4.2	4.6	4.2	6.7	6.3
2021	6.8	7.1	7.1	7.1	7.1	1.3	1.4	1.4	1.4	1.4

Source: Information and Communications Technology Statistics Unit, Statistics Botswana
 Note: "-" denotes zero



Appendix IV

Contribution of ICT & Postal Services to GDP

Table 14: Contribution of Communication & Postal Services To Gross Domestic Product, 2014 - 2021

Year	Current Prices							Constant Prices						
	Total GDP (P Million)	ICT Value Added (P Million)	ICT Contribution To GDP (%)	ICT Annual Growth Rates (%)	Postal & Courier Services Value Added (P Million)	Postal & Courier Services Contribution To GDP (%)	Postal & Courier Services Annual Growth Rates (%)	Total GDP (P Million)	ICT Value Added (P Million)	ICT Contribution To GDP (%)	ICT Annual Growth Rates (%)	Postal & Courier Services Value Added (P Million)	Postal & Courier Services Contribution To GDP (%)	Postal & Courier Services Annual Growth Rates (%)
2014	138,860.8	3,312.6	2.4	...	179.7	0.1	...	161,191.9	3,667.2	2.3	...	207.7	0.1	...
2015	137,052.8	3,595.3	2.6	8.5	182.6	0.1	1.6	153,372.5	3,769.8	2.5	2.8	191.1	0.1	-8.0
2016	164,418.2	3,936.4	2.4	9.5	178.8	0.1	-2.1	164,418.1	3,936.4	2.4	4.4	178.8	0.1	-6.5
2017	166,646.8	4,236.0	2.5	7.6	198.9	0.1	11.3	171,180.8	4,100.3	2.4	4.2	182.3	0.1	2.0
2018	173,725.4	4,524.0	2.6	6.8	227.4	0.1	14.3	178,352.9	4,157.2	2.3	1.4	179.8	0.1	-1.3
2019	179,579.7	4,843.6	2.7	7.1	229.5	0.1	0.9	183,761.7	4,363.1	2.4	5.0	181.5	0.1	0.9
2020	171,041.9	5,065.0	3.0	4.6	227.9	0.1	-0.7	167,725.9	4,448.5	2.7	2.0	174.2	0.1	-4.0
2021	195,290.0	5,498.9	2.8	8.6	253.2	0.1	11.1	186,786.5	4,644.3	2.5	4.4	176.2	0.1	1.1

Source: National Accounts, Statistics Botswana



Appendix IV

E-Waste Generated in The Country

Table 15: The Amount of Electrical & Electronic Equipment (EEE) Put on Market By Category (Tonnes), 1995 - 2020

E-Waste Categories		EEE Put on Market (Tonnes) by Year												
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
		EEE PoM (in Tonnes)												
1	Temperature exchange equipment	1,806	1,635	2,108	2,082	2,300	3,132	3,315	1,222	4,155	4,208	3,687	3,245	4,893
2	Screens, monitors, and equipment containing screens (..)	1,279	1,312	1,350	1,409	1,503	1,829	2,226	6	152	124	63	432	113
3	Lamps	129	123	153	179	205	185	190	48	201	122	116	123	134
4a	Large equipment (excluding photovoltaic panels)	1,383	1,513	1,885	1,940	2,897	2,677	2,252	388	1,062	1,653	1,095	2,083	1,283
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	1,611	1,672	1,861	2,086	2,395	2,746	2,827	864	2,654	2,833	3,065	2,827	3,650
6	Small IT and telecommunication equipment	684	706	800	860	926	1,144	1,162	204	1,455	561	496	549	907
Total EEE		6,891	6,962	8,157	8,555	10,225	11,715	11,973	2,731	9,679	9,500	8,522	9,259	10,978
		Percentage of Total												
1	Temperature exchange equipment	26.2	23.5	25.8	24.3	22.5	26.7	27.7	44.8	42.9	44.3	43.3	35.0	44.6
2	Screens, monitors, and equipment containing screens (..)	18.6	18.8	16.6	16.5	14.7	15.6	18.6	0.2	1.6	1.3	0.7	4.7	1.0
3	Lamps	1.9	1.8	1.9	2.1	2.0	1.6	1.6	1.8	2.1	1.3	1.4	1.3	1.2
4a	Large equipment (excluding photovoltaic panels)	20.1	21.7	23.1	22.7	28.3	22.9	18.8	14.2	11.0	17.4	12.9	22.5	11.7
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	23.4	24.0	22.8	24.4	23.4	23.4	23.6	31.6	27.4	29.8	36.0	30.5	33.2
6	Small IT and telecommunication equipment	9.9	10.1	9.8	10.1	9.1	9.8	9.7	7.5	15.0	5.9	5.8	5.9	8.3
Total EEE		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Table 15: The Amount of Electrical & Electronic Equipment (EEE) Put on Market By Category (Tonnes), 1995 - 2020 (Continued)

E-Waste Categories														
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
		EEE PoM (in Tonnes)												
1	Temperature exchange equipment	5,662	6,298	7,222	8,060	6,029	8,252	7,283	5,989	6,952	4,745	5,999	7,892	8,490
2	Screens, monitors, and equipment containing screens (..)	119	140	231	3,692	2,966	3,171	3,490	2,258	2,224	1,263	956	1,756	1,739
3	Lamps	240	394	635	689	450	829	1,249	836	1,100	851	992	1,299	1,042
4a	Large equipment (excluding photovoltaic panels)	2,138	2,651	3,234	2,998	2,197	2,000	1,957	1,904	1,976	1,722	1,146	2,246	2,580
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	4,131	4,681	7,268	7,574	2,567	2,806	3,552	4,089	3,556	4,384	3,294	5,173	5,444
6	Small IT and telecommunication equipment	770	1,164	1,326	1,729	1,264	1,298	1,934	1,076	1,262	1,048	805	1,176	1,803
Total EEE		13,060	15,327	19,916	24,742	15,473	18,356	19,465	16,152	17,069	14,014	13,193	19,542	21,097
		Percentage of Total												
1	Temperature exchange equipment	43.4	41.1	36.3	32.6	39.0	45.0	37.4	37.1	40.7	33.9	45.5	40.4	40.2
2	Screens, monitors, and equipment containing screens (..)	0.9	0.9	1.2	14.9	19.2	17.3	17.9	14.0	13.0	9.0	7.2	9.0	8.2
3	Lamps	1.8	2.6	3.2	2.8	2.9	4.5	6.4	5.2	6.4	6.1	7.5	6.6	4.9
4a	Large equipment (excluding photovoltaic panels)	16.4	17.3	16.2	12.1	14.2	10.9	10.1	11.8	11.6	12.3	8.7	11.5	12.2
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	31.6	30.5	36.5	30.6	16.6	15.3	18.2	25.3	20.8	31.3	25.0	26.5	25.8
6	Small IT and telecommunication equipment	5.9	7.6	6.7	7.0	8.2	7.1	9.9	6.7	7.4	7.5	6.1	6.0	8.5
Total EEE		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Table 16: EEE PoM (kg) Per 100 Inhabitants, 2011 - 2020

Year	EEE PoM		
	Total POM	PoM in kg	PoM (Kg) Per 100 Inhabitants
2011	24,742	12.2	1221.9
2012	15,473	7.5	747.1
2013	18,356	8.7	867.9
2014	19,465	9.0	902.7
2015	16,152	7.4	735.8
2016	17,069	7.7	765.1
2017	14,014	6.2	618.2
2018	13,193	5.7	572.9
2019	19,542	8.4	835.6
2020	21,097	8.9	888.4

Source: ICT Statistics Unit, Statistics Botswana

Table 17: E-Waste Generated in the Country by Category, 1995 - 2020

E-Waste Categories		E-waste generated (Tonnes) by Year													
		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
		E-waste (in Tonnes)													
1	Temperature exchange equipment	570	641	714	789	868	949	1,038	1,125	1,220	1,322	1,433	1,547	1,675	1,820
2	Screens, monitors, and equipment containing screens (..)	605	667	728	790	852	916	984	1,046	1,094	1,127	1,141	1,140	1,122	1,083
3	Lamps	64	72	80	91	102	114	125	128	133	136	137	138	139	143
4a	Large equipment (excluding photovoltaic panels)	648	716	788	863	950	1,047	1,146	1,227	1,285	1,331	1,363	1,386	1,404	1,417
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	913	987	1,064	1,151	1,244	1,351	1,459	1,493	1,578	1,722	1,882	2,031	2,210	2,399
6	Small IT and telecommunication equipment	304	351	406	465	525	603	683	705	789	821	827	825	834	835
TOTAL		3,104	3,434	3,781	4,149	4,541	4,980	5,435	5,723	6,099	6,459	6,784	7,065	7,382	7,697
		Percentage of Total													
1	Temperature exchange equipment	18.4	18.7	18.9	19.0	19.1	19.1	19.1	19.7	20.0	20.5	21.1	21.9	22.7	23.6
2	Screens, monitors, and equipment containing screens (..)	19.5	19.4	19.3	19.0	18.8	18.4	18.1	18.3	17.9	17.5	16.8	16.1	15.2	14.1
3	Lamps	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.0	1.9	1.9
4a	Large equipment (excluding photovoltaic panels)	20.9	20.9	20.8	20.8	20.9	21.0	21.1	21.4	21.1	20.6	20.1	19.6	19.0	18.4
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	29.4	28.7	28.1	27.7	27.4	27.1	26.8	26.1	25.9	26.7	27.7	28.7	29.9	31.2
6	Small IT and telecommunication equipment	9.8	10.2	10.7	11.2	11.6	12.1	12.6	12.3	12.9	12.7	12.2	11.7	11.3	10.9
Total EEE		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Table 17: E-Waste Generated in the Country by Category, 1995 - 2020 (Continued)

E-Waste Categories	E-waste generated (Tonnes) by Year												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
E-waste (in Tonnes)													
1	Temperature exchange equipment	1,977	2,163	2,392	2,626	2,892	3,167	3,431	3,690	3,923	4,141	4,365	4,592
2	Screens, monitors, and equipment containing screens (..)	1,025	954	945	952	975	1,021	1,066	1,116	1,153	1,184	1,218	1,265
3	Lamps	155	181	214	242	279	339	395	456	508	558	617	671
4a	Large equipment (excluding photovoltaic panels)	1,433	1,454	1,482	1,510	1,535	1,561	1,588	1,620	1,648	1,667	1,687	1,714
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	2,613	2,978	3,314	3,430	3,483	3,539	3,621	3,682	3,735	3,746	3,849	4,007
6	Small IT and telecommunication equipment	864	913	963	967	967	1,013	1,063	1,117	1,158	1,167	1,184	1,244
TOTAL		8,067	8,643	9,310	9,726	10,132	10,639	11,164	11,681	12,124	12,462	12,920	13,494
Percentage of Total													
1	Temperature exchange equipment	24.5	25.0	25.7	27.0	28.5	29.8	30.7	31.6	32.4	33.2	33.8	34.0
2	Screens, monitors, and equipment containing screens (..)	12.7	11.0	10.2	9.8	9.6	9.6	9.5	9.6	9.5	9.5	9.4	9.4
3	Lamps	1.9	2.1	2.3	2.5	2.8	3.2	3.5	3.9	4.2	4.5	4.8	5.0
4a	Large equipment (excluding photovoltaic panels)	17.8	16.8	15.9	15.5	15.1	14.7	14.2	13.9	13.6	13.4	13.1	12.7
4b	Photovoltaic panels (incl. converters)	-	-	-	-	-	-	-	-	-	-	-	-
5	Small equipment	32.4	34.5	35.6	35.3	34.4	33.3	32.4	31.5	30.8	30.1	29.8	29.7
6	Small IT and telecommunication equipment	10.7	10.6	10.3	9.9	9.5	9.5	9.5	9.6	9.5	9.4	9.2	9.2
Total EEE		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Information and Communications Technology Statistics Unit, Statistics Botswana

Table 18: E-Waste Generated (kg) Per 100 Inhabitants, 2011 - 2020

Year	E-Waste Generated		
	Total E-Waste Generated	E-Waste Generated in kg	E-Waste Generated (Kg) Per 100 Inhabitants
2011	9,310	4.0	396.8
2012	9,726	4.1	414.6
2013	10,132	4.3	431.8
2014	10,639	4.5	453.5
2015	11,164	4.8	475.8
2016	11,681	5.0	497.9
2017	12,124	5.2	516.8
2018	12,462	5.3	531.2
2019	12,920	5.5	550.7
2020	13,494	5.8	575.2

Source: ICT Statistics Unit, Statistics Botswana

A digital globe with binary code and data lines. The globe is rendered in shades of blue and orange, with glowing lines and binary digits (0s and 1s) scattered across its surface. The background is dark blue with a grid of small white dots.

Appendix VI

ICT Development Index (IDI)

Table 19: Botswana ICT Development Index (IDI) by Year, 2012 - 2018

Year	IDI	Regional Rank	Global Rank
2018	4.59	5	109
2017	4.59	5	109
2016	4.17	5	109
2015	4.07	5	109
2014	3.82	6	111
2013	4.01	5	104
2012	3.94		100

Source: International Telecommunications Union

A digital globe with binary code and data lines. The globe is rendered in shades of blue and orange, with glowing lines and binary digits (0s and 1s) scattered across its surface. The background is dark blue with a grid of small white dots.

Appendix VII

Methodology for E-Waste Generated

Background to the report

Technical capacity building was requested by Botswana from ITU in the assessment of baseline data on volumes of e-waste generated, to enable the country to monitor e-waste quantities.

The project was positively welcomed and supported by the Botswana Communication Regulatory Authority (BOCRA), Statistics Botswana, and the Ministry of Environment, Natural Resource Conservation and Tourism. A capacity building workshop occurred in May 2021 and was attended by stakeholder groups from BOCRA, Statistics Botswana, Botswana Unified Revenue Service, Ministry of Environment, Natural Resources Conservation and Tourism and Ministry of Local Government and Rural Development. The workshop was delivered in cooperation with the Ugandan Statistics Office, allowing for experiences in conducting national e-waste quantitative assessments to be shared.

The present report summarizes the outcomes obtained from the application of the international framework to measure e-waste statistics, and from the use of the E-waste Tools delivered by UNITAR – SCYCLE Programme, previously hosted by UNU-ViE. Quantifying e-waste stocks and flows in a country helps to identify best practices in policies, to set and evaluate appropriate targets, develop better management programs, achieve some of the SDGs, and assess progress over time.

The development of a National E-waste Monitor for Botswana constitutes the first step of this process, and will ensure an updated baseline where to start improving the capacity of the country in managing effectively the sector. Comprehensive collection of e-waste data provides a basis for Botswana to implement policies, recycling infrastructure, and regulatory instruments more efficiently. In addition, data will help Botswana set their own national targets for e-waste collection and recycling.

The International Telecommunication Union (ITU) are also providing technical assistance to Botswana in the development of national strategy on the management of e-waste linked to extended producer responsibility (EPR).

What is EEE and e-waste?

Electric and Electronic Equipment (EEE) is defined as equipment which is dependent on electric currents or electromagnetic fields in order to function, and equipment for the generation, transfer and measurements of such currents and fields. The production and use of EEE continues to rise significantly worldwide due to a rapid increase in the adoption of information and communications technology and its incorporation into other products. As people acquire more than one set of mobile phones, television sets, refrigerators, washing machines, radios, computers, printers, photocopy machines and many others, the more there is old and end-of-life equipment in the economy and thus equipment available for collection and recycling. This is leading to an increase in the amount of waste electrical and electronic equipment (WEEE).

Also known as e-waste, WEEE is all items of EEE and its parts which have reached their end of life and are discarded as waste without the intent of re-use. Currently, there is inadequate handling, recycling and disposal of e-waste in Botswana, which is leading to challenges in the adoption of a circular economy for EEE.

E-waste classification

EEE and e-waste can be classified according to several possible systems.

For statistical purposes, however, in this report EEE is classified following the internationally accepted and adopted UNU-KEYs system, which consists of 54 different product-centric categories, and it is described in the E-waste Statistics Guidelines on Classification Reporting and Indicators – Second Edition. The UNU-KEYs group the EEE by similar function, comparable material composition, average




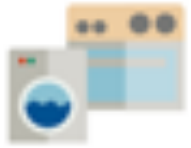


International framework for e-waste

The measurement framework of e-waste statistics follows a mass balance approach over the entire life cycle of EEE. This covers the manufacturing phase, the EEE placed on the market (EEE POM), the use phase and then the e-waste generated phase. Then, different flows should be distinguished to determine the amount of e-waste which is formally collected and recycled, and the amount which undergoes other activities such as uncontrolled picking, disposal, illegal export etc.

As a first step, the framework quantifies the amount of EEE placed on market (EEE POM). EEE POM covers any product supplied to the national market for consumption and use by households, businesses and public authorities.

The UNU-KEYS classification system which is used, can allow several operations from a statistical point of view. First of all, the UNU-KEYS are correlated to other e-waste classifications, so they can be converted, for instance, to the six categories of the European Union (EU) WEEE Directive (see Annex A). Secondly, it can be used to collect statistical data on EEE placed on the market, through the link with the Harmonized Commodity Description and Coding System (HS codes) and converting the data in number of units to weight by applying the specific average weights of the UNU-KEYS. The life-times of the UNU-KEYS are also homogeneous, which enables to determine the amount of e-waste generated per year. In fact, the e-waste generated is based on a dataset of EEE Put on Market weight, and similar end-of-life attributes. The full list of UNU-KEYS can be viewed in Annex A of this report.

The 54 EEE product categories are then grouped into six general categories that correspond closely to their waste management characteristics. The six categories are:

I		Temperature exchange equipment, including refrigerators, freezers, air conditioners and heat pumps.
II		Screens and monitors, comprising liquid crystal displays (LCDs) and light-emitting diodes (LEDs) used in televisions, monitors, laptops and tablets.
III		Lamps, including LED lamps, high intensity discharge lamps, compact fluorescent lamps and straight tube fluorescent lamps.
IV		Large equipment, including dishwashers, washing machines, ovens, central heating systems, large printing systems and photovoltaic panels.
V		Small equipment, comprising microwaves, grills, toasters, personal care products, speakers, cameras, audio sets, headphones, toys, household tools, medical equipment and monitoring systems.
VI		Small information technology (IT) and telecommunication equipment, including desktop personal computers, printers, mobile telephones, cordless telephones, keyboards, routers and consoles.

Over a time series and the average life-time of a product. Since the product composition of the products within a UNU-KEYs is homogeneous, the classification is also suitable for material flow analysis of the raw material components in EEE and e-waste.

To capture the most important dynamics of e-waste, the following indicators are defined for SDGs and e-waste international guidelines:

- **Indicator 1:** EEE POM
- **Indicator 2:** E-waste generated
- **Indicator 3:** E-waste managed in an environmentally sound manner (also referred to as e-waste formally collected) - f.i. under e-waste legislation
- **Indicator 4:** E-waste collection rate (indicator 3 divided by indicator 2)

The performance of the entire e-waste management is expressed using the e-waste collection rate, defined as Indicator 4, which is expressed as a percentage. The collection rate can be an indication of the progress made by the country towards achieving a proper management of the e-waste sector.

Currently, the six categories classification is compliant with both the EU Directive 2012/19/EU on waste electrical and electronic equipment, known as the WEEE Directive, and the internationally recognized framework for e waste statistics described in the aforementioned E-waste Statistics Guidelines on Classification Reporting and Indicators – Second Edition.

UNU-KEYs classification and link to the six categories.

UNU-KEY	Full Name	Six Categories
1	Central Heating (household-installed)	IV
2	Photovoltaic Panels	IV
101	Professional Heating & Ventilation (excl. cooling equipment)	IV
102	Dishwashers	IV
103	Kitchen (e.g. large furnaces, ovens, cooking equipment)	IV
104	Washing Machines (incl. combined dryers)	IV
105	Dryers (wash dryers, centrifuges)	IV
106	Household Heating & Ventilation (e.g. hoods, ventilators, space heaters)	IV
108	Fridges (incl. combi-fridges)	I
109	Freezers	I
111	Air Conditioners (household-installed and portable)	I
112	Other Cooling (e.g. dehumidifiers, heat pump dryers)	I
113	Professional Cooling (e.g. large air conditioners, cooling displays)	I
114	Microwaves (incl. combined, excl. grills)	V
201	Other Small Household (e.g. small ventilators, irons, clocks, adapters)	V
202	Food (e.g. toaster, grills, food processing, frying pans)	V
203	Hot Water (e.g. coffee, tea, water cookers)	V
204	Vacuum Cleaners (excl. professional)	V
205	Personal Care (e.g. tooth brushes, hair dryers, razors)	V
301	Small IT (e.g. routers, mice, keyboards, external drives & accessories)	VI
302	Desktop personal computers (excl. monitors, accessories)	VI
303	Laptops (incl. tablets)	II
304	Printers (e.g. scanners, multi-functionals, faxes)	VI
305	Telecom (e.g. [cordless] phones, answering machines)	VI
306	Mobile Phones (incl. smartphones, pagers)	VI
307	Professional IT (e.g. servers, routers, data storage, copiers)	IV
308	Cathode Ray Tube Monitors	II
309	Flat Display Panel Monitors (LCD, LED)	II
401	Small Consumer Electronics (e.g. headphones, remote controls)	V
402	Portable Audio & Video (e.g. MP3, e-readers, car navigation)	V
403	Music Instruments, Radio, Hi-Fi (incl. audio sets)	V
404	Video (e.g. video recorders, DVD, Blu-ray, set-top boxes)	V
405	Speakers	V
406	Cameras (e.g. camcorders, photo, and digital still cameras)	V
407	Cathode Ray Tube TVs	II
408	Flat Display Panel TVs (LCD, LED, Plasma)	II
501	Lamps (e.g. pocket, Christmas, excl. LED and incandescent)	V
502	Compact Fluorescent Lamps (incl. retrofit and non-retrofit)	III
503	Straight Tube Fluorescent Lamps	III
504	Special Lamps (e.g. professional mercury, high & low pressure sodium)	III
505	LED Lamps (incl. retrofit LED lamps and household LED luminaires)	III
506	Household Luminaires (incl. household incandescent fittings)	V
507	Professional Luminaires (offices, public space, industry)	V
601	Household Tools (e.g. drills, saws, high-pressure cleaners, lawnmowers)	V
602	Professional Tools (e.g. for welding, soldering, milling)	IV
701	Toys (e.g. car racing sets, electric trains, music toys, biking computers)	V
702	Game Consoles	VI
703	Leisure (e.g. large exercise, sports equipment)	IV
801	Household Medical (e.g. thermometers, blood pressure meters)	V
802	Professional Medical (e.g. hospital, dentist, diagnostics)	IV
901	Household Monitoring & Control (alarm, heat, smoke, excl. screens)	V
902	Professional Monitoring & Control (e.g. laboratory, control panels and invertors)	IV
1001	Non-Cooled Dispensers (e.g. for vending, hot drinks, tickets, money)	IV

A digital globe with binary code and data points. The globe is rendered in shades of blue and orange, with a grid of dots and lines. Binary digits (0s and 1s) are scattered across the surface, and several orange lines curve across it, suggesting data flow or connections.

Appendix VIII

Definitions

1.1 Radio

A radio is a device capable of receiving broadcasting radio signals, using popular frequencies such as FM, AM, LW and SW. It includes a radio set intergraded in a car or an alarm clock but excludes radios integrated with a mobile phone, a digital audio player.

1.2 Television

A TV (Television) is a stand – alone device capable of receiving broadcasting television signals, using popular access means such as over – the – air , cable and satellite. It excludes TV functionality intergraded with another device, such as a computer or a mobile.

1.3 Fixed Telephone

Fixed telephone lines refer to a telephone line connecting a customer's terminal equipment (e.g. telephone set, facsimile machine) to the public switched telephone network (PSTN) and which has a dedicated port on a telephone exchange. This term is synonymous with the terms main station or Direct Exchange Line (DEL) that are commonly used in telecommunication documents. It may not be the same as an access line or a subscriber.

1.4 Mobile Cellular Phone

A mobile cellular phone refers to a portable telephone subscribing to a public mobile telephone service using cellular technology, which provides access to the PSTN. This includes analogue and digital cellular systems, as well as IMT-2000 (3G). Users of both post-paid subscriptions and pre-paid accounts are included.

1.5 Internet

A world-wide public computer network which provides access to a number of communication services including services including the World – Wide Web and carries email, news, entertainment and data files. Access may be any device enabling internet access (not only a computer). It may also be by mobile phone. PDA, Games Machine, Digital TV etc.

1.6 Broadband

Connection to the internet at speed equal to/ or greater than 256 kilobits per second, as the sum of capacity in both directions.

1.7 Digital Subscriber Line (DSL)

Technologies that provide digital data transmission.

1.8 Asymmetric Digital Subscriber line (ADSL)

DSL with different speed for upstream and downstream.

1.9 Intranet

Refers to a network using the same protocol as the internet and allowing communication within an organization. It is typically set up behind a firewall to control access.

1.10 Extranet

An extranet is a private, secure extension of an internet running on Internet protocol. It allows selected external users to access some parts of an organization's intranet.

1.11 Website

Location on the wide world web identified by a web address. Collection of web files on a particular subject that includes a beginning file called a home page. Information is encoded with specific languages (Hypertext mark – up language (HTML), XML, Java) readable with a web browser, like Netscape's Navigator or Microsoft's Internet Explorer.

1.12 Local fixed telephone traffic (minutes)

It consists of effective (completed) fixed telephone line traffic exchanged within the local charging area in which the calling station is situated. This is the area within which one subscriber can call another on payment of the local charge (if applicable). This indicator should be reported in the number of minutes.

1.13 National (fixed) trunk telephone traffic (minutes)

National (fixed) trunk (toll) traffic consists of effective (completed) fixed national telephone traffic exchange with a station outside the local charging area of the calling station. The indicator should be reported as the number of minutes of traffic.

1.14 International outgoing fixed telephone traffic (minutes)

This covers the effective (completed) fixed traffic originating in a given country to destinations outside that country. The indicator should be reported as the number of minutes of traffic.

1.15 International incoming fixed telephone traffic (minutes)

Effective (completed) fixed traffic originating outside the country with a destination inside the country. The indicator should be reported as the number of minutes of traffic.

1.16 Outgoing national mobile minutes

Total number of minutes made by mobile subscribers within a country (including minutes to fixed lines and minutes to other mobile subscribers).

1.17 SMS Traffic

Total number of mobile Short Message Service (SMS) sent, both to national and international destinations

1.18 Electric and Electronic Equipment (EEE)

Electric and Electronic Equipment (EEE) is defined as equipment which is dependent on electric currents or electromagnetic fields in order to function, and equipment for the generation, transfer and measurements of such currents and fields.

1.19 Waste Electrical and Electronic Equipment (WEEE) or E-waste

Also known as e-waste, WEEE is all items of EEE and its parts which have reached their end of life and are discarded as waste without the intent of re-use.



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