

ELECTRICITY GENERATION AND DISTRIBUTION

STATS BRIEF, THIRD QUARTER 2021



STATISTICS BOTSWANA

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Preface

Statistics Botswana is mandated to compile data on industrial production in Botswana, hence electricity indices are only confined to electricity generated locally. However, importation and distribution volumes, and their percentage changes are included as well. This indicates Botswana's progress over time, towards generating adequate electricity to meet her demand. The data used in this brief is sourced from the Botswana Power Corporation.

This statistical brief is intended to apprise on Electricity Generation, Importation and Distribution by presenting Monthly, Quarterly and Yearly Volumes as well as Indices for Electricity Generation in Botswana. Also included are Year-on-Year and Quarter-on-Quarter Percentage Changes in Indices of Electricity Generation from 2010 to the third quarter of 2021. In subsequent sections of this report, emphasis will be on the third quarter of 2021, compared with the corresponding quarter in 2020, and the second quarter in 2021. This report uses 2013 as the base year.

The Index of Electricity Generation (IEG) stood at 137.7 during the third quarter of 2021, reflecting a year-on-year decrease of 4.2 percent compared to 143.8 recorded during the corresponding quarter in 2020. The quarter-on-quarter comparison shows an increase of 14.6 percent, from 120.2 during the second quarter of 2021.

The release further shows changes in the volume of electricity generation in a given period against the base year (2013), and hence provides a reflection of the trend in the local electricity sector.

For more information, contact the Directorate of Stakeholder Relations at 3671300. All Statistics Botswana outputs/publications are available on the website at www.statsbots.org.bw and also at Statistics Botswana Information Resource Centre (Head-Office, Gaborone).

I sincerely thank all stakeholders involved in the formulation of this brief for their continued support, as we strive to better serve users of our products and services.



Dr. Burton S. Mguni
Statistician General
December 2021

1.0 Summary of Findings of the Index of Electricity Generation (IEG)

All figures in this report are not seasonally adjusted.

Key indicators of Electricity Generation from the first quarter of 2013 to the third quarter of 2021 are presented in **Table 1**.

The Index of Electricity Generation (IEG) stood at 137.7 during the third quarter of 2021, reflecting a decrease of 4.2 percent compared to 143.8 recorded during the same period in 2020. The quarter-on-quarter comparison shows an increase of 14.6 percent, from the index of 120.2 during the second quarter of 2021.

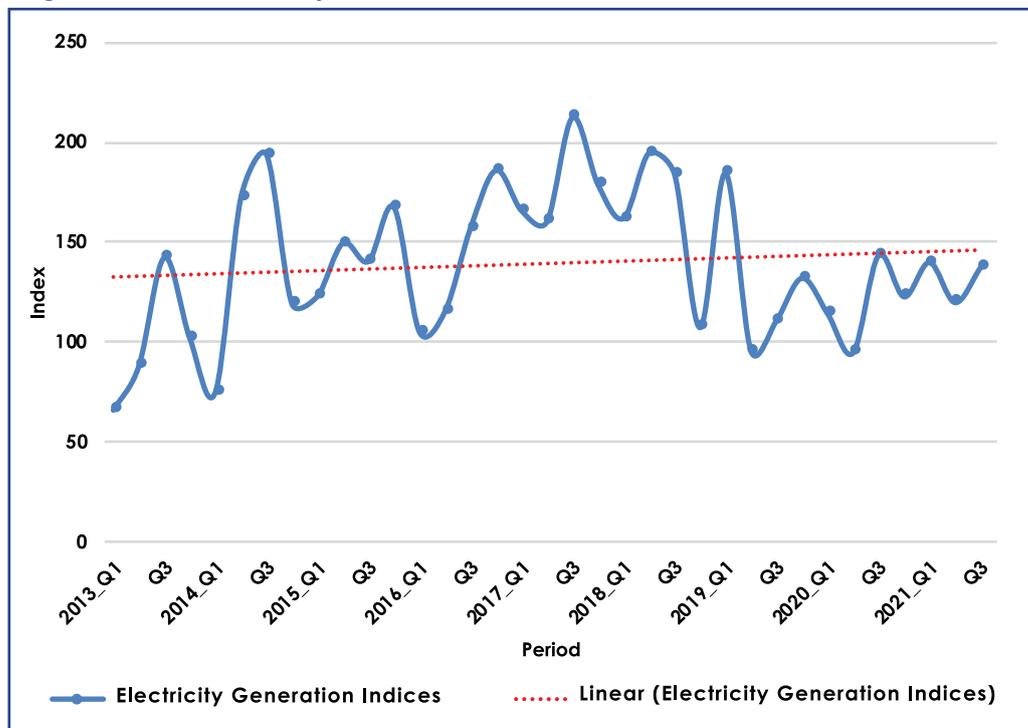
Table 1: Selected Key Indicators of Electricity Generation: 2013 First Quarter to 2021 Third Quarter

| Period | Index of the Physical Volume of Electricity Generation | Year-on-Year Percentage Change | Quarter-on-Quarter Percentage Change |
|---------|--------------------------------------------------------|--------------------------------|--------------------------------------|
| 2013_Q1 | 66.5 | 151.4 | 0.0 |
| Q2 | 88.5 | 202.8 | 32.9 |
| Q3 | 142.7 | 216.7 | 61.3 |
| Q4 | 102.3 | 53.8 | (28.3) |
| 2014_Q1 | 75.5 | 13.4 | (26.2) |
| Q2 | 172.6 | 95.1 | 128.6 |
| Q3 | 194.2 | 36.1 | 12.6 |
| Q4 | 119.6 | 16.9 | (38.4) |
| 2015_Q1 | 123.4 | 63.5 | 3.2 |
| Q2 | 149.9 | (13.2) | 21.4 |
| Q3 | 140.8 | (27.5) | (6.0) |
| Q4 | 167.8 | 40.2 | 19.1 |
| 2016_Q1 | 105.5 | (14.5) | (37.1) |
| Q2 | 115.7 | (22.8) | 9.6 |
| Q3 | 157.3 | 11.7 | 36.0 |
| Q4 | 186.3 | 11.1 | 18.4 |
| 2017_Q1 | 166.1 | 57.4 | (10.8) |
| Q2 | 160.6 | 38.8 | (3.4) |
| Q3 | 212.6 | 35.2 | 32.4 |
| Q4 | 179.1 | (3.9) | (15.8) |
| 2018_Q1 | 162.3 | (2.3) | (9.4) |
| Q2 | 195.0 | 21.4 | 20.1 |
| Q3 | 184.3 | (13.3) | (5.5) |
| Q4 | 107.7 | (39.8) | (41.5) |
| 2019_Q1 | 184.8 | 13.8 | 71.5 |
| Q2 | 96.0 | (50.8) | (48.0) |
| Q3 | 111.3 | (39.6) | 16.0 |
| Q4 | 132.4 | 22.9 | 18.9 |
| 2020_Q1 | 114.7 | (37.9) | (13.4) |
| Q2 | 95.1 | (0.9) | (17.0) |
| Q3 | 143.8 | 29.2 | 51.2 |
| Q4 | 123.1 | (7.0) | (14.4) |
| 2021_Q1 | 140.3 | 22.4 | 14.0 |
| Q2 | 120.2 | 26.4 | (14.3) |
| Q3 | 137.7 | (4.2) | 14.6 |

Note: 1. () Indicates negative figures

Figure 1 presents the trend of the Index of Electricity Generation from the first quarter of 2013 to the third quarter of 2021. This figure shows some slight improvement in local generation as evidenced by the upward trend, albeit with fluctuations between the years.

Figure 1: Index of Electricity Generation (MWH): 2013 First Quarter to 2021 Third Quarter



1.1 Electricity Generation

This Sub-Section discusses the physical volume of electricity generated locally as presented in **Table 2**. The table forms the basis for computation of indices of electricity generation in **Table 3**. The Year-on-Year and Quarter-on-Quarter percentage changes in the volume of electricity generated are presented in **Table 4** and **Table 5**, covering the period 2011 to 2021 third quarter.

The physical volume of electricity generated decreased by 4.2 percent (25,611 MWH), from 604,647 MWH during the third quarter of 2020 to 579,036 MWH during the current quarter.

The quarter-on-quarter perspective shows that local electricity generation increased by 14.6 percent (73,723 MWH), from 505,313 MWH during the second quarter of 2021. This increase was mainly on account of the improved performance of Morupule A and B power stations.

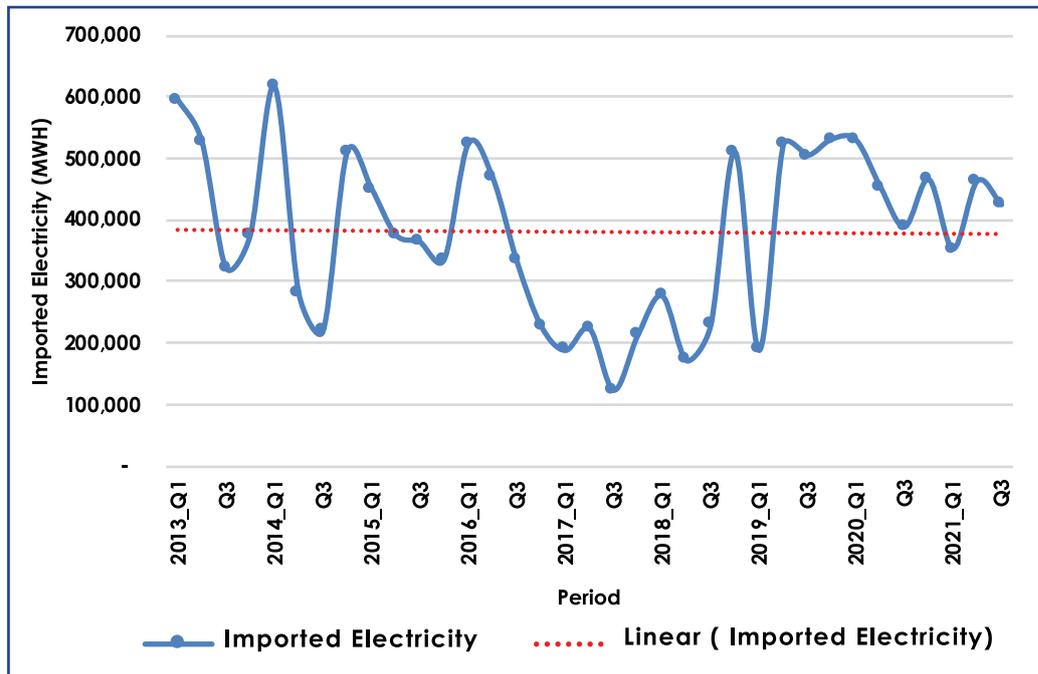
1.2 Imported Electricity

The discussions in this section are based on **Table 6**, and **Table 7** as well as **Figure 2**.

During the third quarter of 2021, the physical volume of imported electricity increased by 9.2 percent (35,798 MWH), from 388,905 MWH during the third quarter of 2020 to 424,703 MWH during the quarter under review.

Compared to the previous quarter, imported electricity during the third quarter of 2021 shows a decrease of 8.3 percent (38,468 MWH), from 463,171 MWH during the second quarter of 2021 to 424,703 MWH.

Figure 2 shows that even though there are fluctuations in the physical volume of imported electricity, generally importation of electricity shows a downward trend. This indicates the country's continued effort to generate adequate electricity to meet demand, hence the decreased reliance on electricity imports.

Figure 2: Physical Volume of Imported Electricity (MWH): 2013 First Quarter to 2021 Third Quarter

Botswana imported 42.3 percent of total electricity distributed during the third quarter of 2021. Eskom was the main source of imported electricity at 53.7 percent of total electricity imports. ZESCO accounted for 26.7 percent, while the remaining 13.1, 4.8 and 1.7 percent were sourced from the Southern African Power Pool (SAPP), Cross-border electricity markets and Nampower (Table 8). Cross-border electricity markets is an arrangement whereby towns and villages along the border are supplied with electricity directly from neighbouring countries such as Namibia and Zambia.

1.3 Distribution of Electricity

The section combines the local generation and imported electricity to come up with electricity that is available for distribution in Botswana. This does not take into account electricity used for auxiliary services, pumping, network losses as well as production of electricity through incineration of waste. The computation of electricity distribution is guided by the International Recommendations for Industrial Statistics (IRIS) 2008. Tables 9, 10 and 11 form the basis for discussion under this subsection.

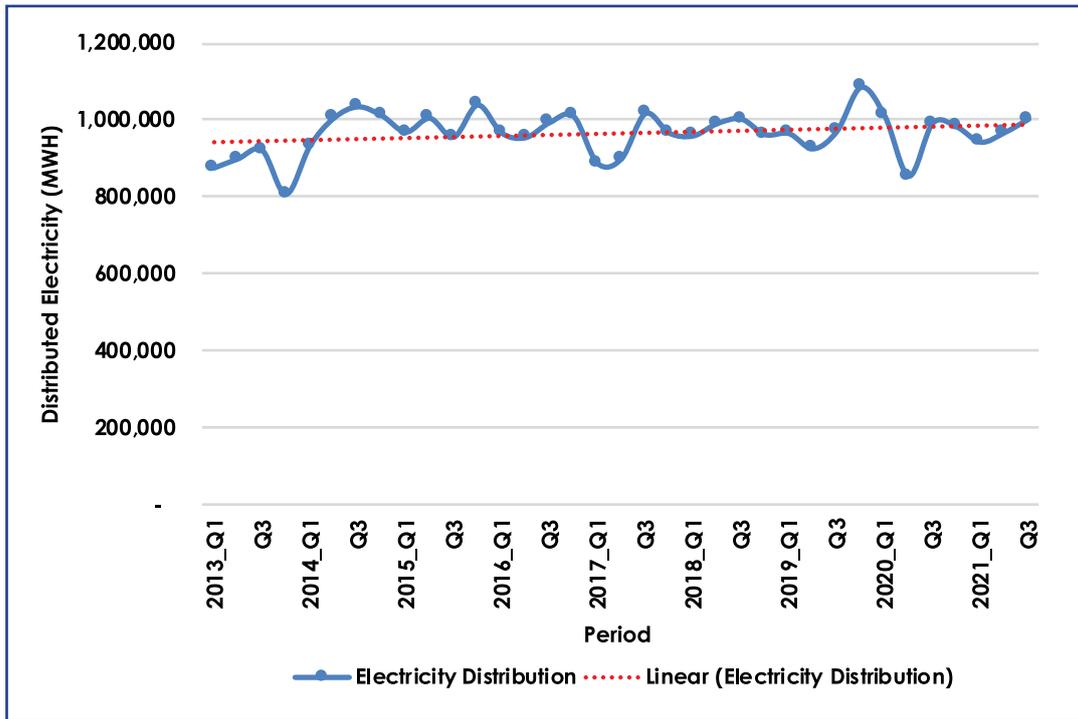
Table 9 shows the physical volume of electricity distributed from 2011 to the third quarter of 2021, while Table 10 presents annual percentage changes in the volume of electricity distributed from 2011 to the third quarter of 2021. These tables can also be used as guidance with regard to whether electricity distributed is improving over time, thereby indicating that there are ongoing efforts to meet the domestic demand.

The year-on-year perspective shows that the amount of distributed electricity increased by 1.0 percent (10,186 MWH), from 993,552 MWH during the third quarter of 2020 to 1,003,738 MWH during the current quarter.

The quarter-on-quarter comparison of distributed electricity shows an increase of 3.6 percent (35,255 MWH), from 968,484 MWH during the second quarter of 2021 to 1,003,738 MWH during the review quarter.

Figure 3 shows that there has been a gradual increase in distributed electricity from the first quarter of 2013 to the third quarter of 2021, even though there are fluctuations.

Figure 3: Physical Volume of Distributed Electricity (MWH): 2013 First Quarter to 2021 Third Quarter



1.3.1 Contribution of Electricity Generation to Distribution

Electricity generation given as a percentage of electricity distributed is of paramount importance in assessing whether the local generation is improving overtime to reduce reliance on imported electricity. This information is displayed in **Table 11**.

It can be observed from **Table 11** that electricity generated locally contributed 57.7 percent to electricity distributed during the third quarter of 2021, compared to a contribution of 60.9 percent during the same quarter in 2020. This gives a decrease of 3.2 percentage points.

The quarter-on-quarter comparison shows that the contribution of electricity generated to electricity distributed increased by 5.5 percentage points compared to the 52.2 percent contribution of locally generated electricity during the second quarter of 2021.

Table 2: Physical Volume of Electricity Generation (MWH): January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|--------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| January | 39,195 | 26,574 | 110,960 | 137,802 | 158,907 | 206,381 | 245,598 | 209,333 | 272,140 | 148,376 | 199,148 |
| February | 32,847 | 16,938 | 80,410 | 77,067 | 180,520 | 127,975 | 216,264 | 227,955 | 235,908 | 187,925 | 186,121 |
| March | 20,079 | 67,761 | 88,358 | 102,377 | 179,400 | 109,272 | 236,589 | 245,092 | 268,605 | 145,683 | 204,630 |
| April | 29,593 | 34,069 | 94,011 | 151,675 | 195,568 | 112,765 | 195,703 | 210,965 | 163,206 | 102,898 | 118,600 |
| May | 15,762 | 39,826 | 140,454 | 252,235 | 206,905 | 179,837 | 205,705 | 310,500 | 125,266 | 98,692 | 185,311 |
| June | 23,045 | 48,928 | 137,414 | 321,453 | 227,503 | 193,586 | 273,639 | 298,291 | 115,104 | 198,314 | 201,403 |
| July | 27,814 | 81,013 | 158,120 | 318,627 | 240,314 | 213,841 | 311,655 | 293,739 | 125,091 | 217,448 | 186,631 |
| August | 24,536 | 11,205 | 223,420 | 296,036 | 177,052 | 219,402 | 315,552 | 289,885 | 152,822 | 199,437 | 196,681 |
| September | 21,063 | 97,177 | 218,222 | 201,802 | 174,617 | 228,002 | 266,623 | 191,199 | 190,061 | 187,763 | 195,723 |
| October | 27,166 | 77,236 | 32,183 | 71,243 | 301,913 | 299,945 | 234,090 | 73,018 | 195,637 | 158,411 | - |
| November | 23,044 | 113,384 | 203,228 | 244,723 | 213,798 | 213,303 | 296,547 | 121,910 | 208,940 | 176,030 | - |
| December | 19,231 | 89,101 | 194,717 | 186,915 | 189,490 | 269,893 | 222,240 | 258,009 | 151,998 | 183,186 | - |
| Q1 | 92,120 | 111,274 | 279,728 | 317,245 | 518,828 | 443,628 | 698,451 | 682,380 | 776,653 | 481,984 | 589,899 |
| Q2 | 68,400 | 122,823 | 371,879 | 725,363 | 629,976 | 486,188 | 675,047 | 819,755 | 403,576 | 399,903 | 505,313 |
| Q3 | 73,413 | 189,395 | 599,762 | 816,465 | 591,983 | 661,245 | 893,831 | 774,822 | 467,974 | 604,647 | 579,036 |
| Q4 | 69,441 | 279,721 | 430,128 | 502,881 | 705,201 | 783,141 | 752,877 | 452,938 | 556,576 | 517,627 | - |
| TOTAL | 303,374 | 703,213 | 1,681,497 | 2,361,954 | 2,445,988 | 2,374,202 | 3,020,206 | 2,729,895 | 2,204,779 | 2,004,162 | 1,674,248 |

Note:

1. – Indicates data is not available

2. 2021* Data is up to the third quarter only

Table 3: Indices of Physical Volume of Electricity Generation: January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|--------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| Jan | 28.0 | 19.0 | 79.2 | 98.3 | 113.4 | 147.3 | 175.3 | 149.4 | 194.2 | 105.9 | 142.1 |
| Feb | 23.4 | 12.1 | 57.4 | 55.0 | 128.8 | 91.3 | 154.3 | 162.7 | 168.4 | 134.1 | 132.8 |
| March | 14.3 | 48.4 | 63.1 | 73.1 | 128.0 | 78.0 | 168.8 | 174.9 | 191.7 | 104.0 | 146.0 |
| April | 21.1 | 24.3 | 67.1 | 108.2 | 139.6 | 80.5 | 139.7 | 150.6 | 116.5 | 73.4 | 84.6 |
| May | 11.2 | 28.4 | 100.2 | 180.0 | 147.7 | 128.3 | 146.8 | 221.6 | 89.4 | 70.4 | 132.2 |
| June | 16.4 | 34.9 | 98.1 | 229.4 | 162.4 | 138.2 | 195.3 | 212.9 | 82.1 | 141.5 | 143.7 |
| July | 19.8 | 57.8 | 112.8 | 227.4 | 171.5 | 152.6 | 222.4 | 209.6 | 89.3 | 155.2 | 133.2 |
| August | 17.5 | 8.0 | 159.4 | 211.3 | 126.4 | 156.6 | 225.2 | 206.9 | 109.1 | 142.3 | 140.4 |
| September | 15.0 | 69.4 | 155.7 | 144.0 | 124.6 | 162.7 | 190.3 | 136.4 | 135.6 | 134.0 | 139.7 |
| October | 19.4 | 55.1 | 23.0 | 50.8 | 215.5 | 214.1 | 167.1 | 52.1 | 139.6 | 113.1 | - |
| November | 16.4 | 80.9 | 145.0 | 174.6 | 152.6 | 152.2 | 211.6 | 87.0 | 149.1 | 125.6 | - |
| December | 13.7 | 63.6 | 139.0 | 133.4 | 135.2 | 192.6 | 158.6 | 184.1 | 108.5 | 130.7 | - |
| Q1 | 21.9 | 26.5 | 66.5 | 75.5 | 123.4 | 105.5 | 166.1 | 162.3 | 184.8 | 114.7 | 140.3 |
| Q2 | 16.3 | 29.2 | 88.5 | 172.6 | 149.9 | 115.7 | 160.6 | 195.0 | 96.0 | 95.1 | 120.2 |
| Q3 | 17.5 | 45.1 | 142.7 | 194.2 | 140.8 | 157.3 | 212.6 | 184.3 | 111.3 | 143.8 | 137.7 |
| Q4 | 16.5 | 66.5 | 102.3 | 119.6 | 167.8 | 186.3 | 179.1 | 107.7 | 132.4 | 123.1 | - |
| TOTAL | 18.0 | 41.8 | 100.0 | 140.5 | 145.5 | 141.2 | 179.6 | 162.3 | 131.1 | 119.2 | 99.6 |

Note:

1. – Indicates data is not available

2. 2021* Data is up to the third quarter only

Table 4: Annual Percentage Changes in the Indices of the Physical Volume of Electricity Generation: January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|--------------|---------------|--------------|--------------|-------------|------------|--------------|-------------|--------------|---------------|--------------|---------------|
| Jan | (11.8) | (32.2) | 317.5 | 24.2 | 15.3 | 29.9 | 19.0 | (14.8) | 30.0 | (45.5) | 34.2 |
| Feb | (15.0) | (48.4) | 374.7 | (4.2) | 134.2 | (29.1) | 69.0 | 5.4 | 3.5 | (20.3) | (1.0) |
| March | (63.8) | 237.5 | 30.4 | 15.9 | 75.2 | (39.1) | 116.5 | 3.6 | 9.6 | (45.8) | 40.5 |
| April | (27.6) | 15.1 | 175.9 | 61.3 | 28.9 | (42.3) | 73.5 | 7.8 | (22.6) | (37.0) | 15.3 |
| May | (62.4) | 152.7 | 252.7 | 79.6 | (18.0) | (13.1) | 14.4 | 50.9 | (59.7) | (21.2) | 87.8 |
| June | (24.9) | 112.3 | 180.9 | 133.9 | (29.2) | (14.9) | 41.4 | 9.0 | (61.4) | 72.3 | 1.6 |
| July | (16.1) | 191.3 | 95.2 | 101.5 | (24.6) | (11.0) | 45.7 | (5.7) | (57.4) | 73.8 | (14.2) |
| August | (38.0) | (54.3) | 1,893.9 | 32.5 | (40.2) | 23.9 | 43.8 | (8.1) | (47.3) | 30.5 | (1.4) |
| September | (40.1) | 361.4 | 124.6 | (7.5) | (13.5) | 30.6 | 16.9 | (28.3) | (0.6) | (1.2) | 4.2 |
| October | (28.0) | 184.3 | (58.3) | 121.4 | 323.8 | (0.7) | (22.0) | (68.8) | 167.9 | (19.0) | - |
| November | 10.3 | 392.0 | 79.2 | 20.4 | (12.6) | (0.2) | 39.0 | (58.9) | 71.4 | (15.8) | - |
| December | (50.0) | 363.3 | 118.5 | (4.0) | 1.4 | 42.4 | (17.7) | 16.1 | (41.1) | 20.5 | - |
| Q1 | (33.5) | 20.8 | 151.4 | 13.4 | 63.5 | (14.5) | 57.4 | (2.3) | 13.8 | (37.9) | 22.4 |
| Q2 | (39.7) | 79.6 | 202.8 | 95.1 | (13.2) | (22.8) | 38.8 | 21.4 | (50.8) | (0.9) | 26.4 |
| Q3 | (32.0) | 158.0 | 216.7 | 36.1 | (27.5) | 11.7 | 35.2 | (13.3) | (39.6) | 29.2 | (4.2) |
| Q4 | (28.5) | 302.8 | 53.8 | 16.9 | 40.2 | 11.1 | (3.9) | (39.8) | 22.9 | (7.0) | - |
| TOTAL | (33.6) | 131.8 | 139.1 | 40.5 | 3.6 | (2.9) | 27.2 | (9.6) | (19.2) | (9.1) | (16.5) |

Note:

1. () Denotes negative numbers
2. - Indicates data is not available
3. 2021* Data is up to the third quarter only

Table 5: Quarter-on-Quarter Percentage Changes: 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|--------|--------|------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
| Q1 | (5.1) | 60.2 | 0.0 | (26.2) | 3.2 | (37.1) | (10.8) | (9.4) | 71.5 | (13.4) | 14.0 |
| Q2 | (25.7) | 10.4 | 32.9 | 128.6 | 21.4 | 9.6 | (3.4) | 20.1 | (48.0) | (17.0) | (14.3) |
| Q3 | 7.3 | 54.2 | 61.3 | 12.6 | (6.0) | 36.0 | 32.4 | (5.5) | 16.0 | 51.2 | 14.6 |
| Q4 | (5.4) | 47.7 | (28.3) | (38.4) | 19.1 | 18.4 | (15.8) | (41.5) | 18.9 | (14.4) | - |

Note:

1. () Denotes negative numbers
2. - Indicates data is not available
3. 2021* Data is up to the third quarter only

Table 6: Physical Volume of Imported Electricity (MWH): January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|--------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------|------------------|------------------|------------------|------------------|
| Jan | 243,795 | 272,338 | 193,786 | 192,251 | 184,564 | 140,172 | 57,679 | 124,148 | 54,922 | 196,457 | 126,434 |
| Feb | 229,027 | 274,079 | 185,022 | 216,031 | 113,430 | 166,303 | 56,951 | 77,257 | 66,228 | 138,489 | 102,376 |
| March | 269,723 | 249,777 | 216,621 | 207,923 | 153,098 | 217,261 | 74,422 | 75,865 | 67,915 | 194,406 | 124,438 |
| April | 256,694 | 253,390 | 206,965 | 162,767 | 129,605 | 196,075 | 88,783 | 94,226 | 139,549 | 156,520 | 191,548 |
| May | 277,975 | 271,135 | 169,159 | 85,246 | 129,487 | 138,677 | 92,379 | 39,052 | 188,760 | 174,404 | 140,355 |
| June | 279,130 | 275,063 | 151,442 | 33,474 | 117,155 | 134,100 | 43,156 | 39,179 | 193,713 | 122,808 | 131,268 |
| July | 275,387 | 245,151 | 161,866 | 39,365 | 99,695 | 110,932 | 34,746 | 55,772 | 196,021 | 123,768 | 141,798 |
| August | 268,187 | 296,226 | 82,084 | 48,497 | 132,541 | 119,340 | 35,332 | 45,131 | 187,294 | 132,273 | 148,437 |
| September | 256,871 | 200,082 | 78,365 | 132,060 | 132,191 | 103,083 | 54,534 | 128,524 | 120,800 | 132,864 | 134,468 |
| October | 264,952 | 240,631 | 123,785 | 266,785 | 59,516 | 57,653 | 83,734 | 249,015 | 174,433 | 172,022 | - |
| November | 274,539 | 209,811 | 123,785 | 96,415 | 115,763 | 116,517 | 36,094 | 200,025 | 159,650 | 146,901 | - |
| December | 272,789 | 212,114 | 128,060 | 147,112 | 160,652 | 54,373 | 94,307 | 61,258 | 196,953 | 146,777 | - |
| Q1 | 742,544 | 796,194 | 595,429 | 616,206 | 451,092 | 523,736 | 189,052 | 277,270 | 189,065 | 529,352 | 353,248 |
| Q2 | 813,799 | 799,587 | 527,566 | 281,487 | 376,248 | 468,852 | 224,318 | 172,457 | 522,021 | 453,733 | 463,171 |
| Q3 | 800,444 | 741,459 | 322,315 | 219,922 | 364,427 | 333,355 | 124,612 | 229,427 | 504,115 | 388,905 | 424,703 |
| Q4 | 812,281 | 662,556 | 375,630 | 510,311 | 335,931 | 228,543 | 214,135 | 510,298 | 531,036 | 465,701 | - |
| TOTAL | 3,169,068 | 2,999,797 | 1,820,940 | 1,627,926 | 1,527,697 | 1,554,486 | 752,117 | 1,189,452 | 1,746,238 | 1,837,690 | 1,241,121 |

Note:

1. – Indicates data is not available
2. 2021* Data is up to the third quarter only

Table 7: Annual Percentage Changes in the Physical Volume of Imported Electricity: January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|--------------|------------|--------------|---------------|---------------|--------------|------------|---------------|-------------|-------------|------------|---------------|
| Jan | 3.3 | 11.7 | (28.8) | (0.8) | (4.0) | (24.1) | (58.9) | 115.2 | (55.8) | 257.7 | (35.6) |
| Feb | 4.2 | 19.7 | (32.5) | 16.8 | (47.5) | 46.6 | (65.8) | 35.7 | (14.3) | 109.1 | (26.1) |
| March | 7.6 | (7.4) | (13.3) | (4.0) | (26.4) | 41.9 | (65.7) | 1.9 | (10.5) | 186.2 | (36.0) |
| April | 9.5 | (1.3) | (18.3) | (21.4) | (20.4) | 51.3 | (54.7) | 6.1 | 48.1 | 12.2 | 22.4 |
| May | (1.0) | (2.5) | (37.6) | (49.6) | 51.9 | 7.1 | (33.4) | (57.7) | 383.4 | (7.6) | (19.5) |
| June | 1.4 | (1.5) | (44.9) | (77.9) | 250.0 | 14.5 | (67.8) | (9.2) | 394.4 | (36.6) | 6.9 |
| July | (0.3) | (11.0) | (34.0) | (75.7) | 153.3 | 11.3 | (68.7) | 60.5 | 251.5 | (36.9) | 14.6 |
| August | 3.5 | 10.5 | (72.3) | (40.9) | 173.3 | (10.0) | (70.4) | 27.7 | 315.0 | (29.4) | 12.2 |
| September | 3.3 | (22.1) | (60.8) | 68.5 | 0.1 | (22.0) | (47.1) | 135.7 | (6.0) | 10.0 | 1.2 |
| October | (0.8) | (9.2) | (48.6) | 115.5 | (77.7) | (3.1) | 45.2 | 197.4 | (30.0) | (1.4) | - |
| November | 1.1 | (23.6) | (41.0) | (22.1) | 20.1 | 0.7 | (69.0) | 454.2 | (20.2) | (8.0) | - |
| December | 1.8 | (22.2) | (39.6) | 14.9 | 9.2 | (66.2) | 73.4 | (35.0) | 221.5 | (25.5) | - |
| Q1 | 5.1 | 7.2 | (25.2) | 3.5 | (26.8) | 16.1 | (63.9) | 46.7 | (31.8) | 180.0 | (33.3) |
| Q2 | 2.9 | (1.7) | (34.0) | (46.6) | 33.7 | 24.6 | (52.2) | (23.1) | 202.7 | (13.1) | 2.1 |
| Q3 | 2.1 | (7.4) | (56.5) | (31.8) | 65.7 | (8.5) | (62.6) | 84.1 | 119.7 | (22.9) | 9.2 |
| Q4 | 0.7 | (18.4) | (43.3) | 35.9 | (34.2) | (32.0) | (6.3) | 138.3 | 4.1 | (12.3) | - |
| TOTAL | 2.6 | (5.3) | (39.3) | (10.6) | (6.2) | 1.8 | (51.6) | 58.1 | 46.8 | 5.2 | (32.5) |

Note:

1. () Denotes negative numbers
2. – Indicates data is not available
3. 2021* Data is up to the third quarter only

Table 8: Imported Electricity by Source in MWH: Third Quarter 2021

| Source | MWH | % |
|----------------------|----------------|--------------|
| Eskom | 228,076 | 53.7 |
| Nampower | 7,122 | 1.7 |
| Cross Boarder | 20,462 | 4.8 |
| SAPP | 55,740 | 13.1 |
| ZESCO | 113,302 | 26.7 |
| Total | 424,703 | 100.0 |

Table 9: Physical Volume of Electricity Distribution (MWH): January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| January | 282,990 | 298,912 | 304,746 | 330,053 | 343,471 | 346,553 | 303,277 | 333,481 | 327,062 | 344,833 | 325,582 |
| February | 261,873 | 291,017 | 265,432 | 293,098 | 293,950 | 294,278 | 273,215 | 305,212 | 302,136 | 326,413 | 288,497 |
| March | 289,801 | 317,538 | 304,979 | 310,300 | 332,498 | 326,533 | 311,011 | 320,957 | 336,520 | 340,090 | 329,067 |
| April | 286,287 | 287,459 | 300,976 | 314,442 | 325,173 | 308,840 | 284,486 | 305,191 | 302,755 | 259,418 | 310,147 |
| May | 293,737 | 310,961 | 309,613 | 337,481 | 336,392 | 318,514 | 298,084 | 349,552 | 314,026 | 273,096 | 325,666 |
| June | 302,176 | 323,990 | 288,856 | 354,927 | 344,658 | 327,686 | 316,795 | 337,470 | 308,817 | 321,122 | 332,671 |
| July | 303,201 | 326,165 | 319,986 | 357,992 | 340,009 | 324,773 | 346,401 | 349,511 | 321,112 | 341,216 | 328,429 |
| August | 292,723 | 307,431 | 305,504 | 344,533 | 309,593 | 338,742 | 350,884 | 335,016 | 340,116 | 331,710 | 345,119 |
| September | 277,934 | 297,258 | 296,587 | 333,861 | 306,808 | 331,085 | 321,157 | 319,722 | 310,861 | 320,627 | 330,191 |
| October | 292,118 | 317,867 | 155,968 | 338,027 | 361,429 | 357,598 | 317,824 | 322,033 | 370,071 | 330,434 | - |
| November | 297,584 | 323,195 | 327,013 | 341,138 | 329,561 | 329,820 | 332,641 | 321,935 | 368,591 | 322,931 | - |
| December | 292,020 | 301,215 | 322,777 | 334,027 | 350,142 | 324,266 | 316,547 | 319,267 | 348,951 | 329,963 | - |
| Q1 | 834,665 | 907,468 | 875,157 | 933,451 | 969,920 | 967,364 | 887,503 | 959,650 | 965,718 | 1,011,335 | 943,147 |
| Q2 | 882,199 | 922,411 | 899,445 | 1,006,850 | 1,006,224 | 955,040 | 899,365 | 992,212 | 925,597 | 853,636 | 968,484 |
| Q3 | 873,857 | 930,854 | 922,077 | 1,036,387 | 956,410 | 994,600 | 1,018,442 | 1,004,249 | 927,090 | 993,552 | 1,003,738 |
| Q4 | 881,721 | 942,277 | 805,758 | 1,013,192 | 1,041,132 | 1,011,684 | 967,012 | 963,235 | 1,087,612 | 983,328 | - |
| Year | 3,472,442 | 3,703,010 | 3,502,437 | 3,989,880 | 3,973,685 | 3,928,688 | 3,772,322 | 3,919,347 | 3,951,017 | 3,841,852 | 2,915,369 |

Note:

1. – Indicates data is not available
2. 2021* Data is up to the third quarter only

Table 10: Annual Percentage Changes for the Physical Volume of Electricity Distribution: January 2011 – September 2021

| Period | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021* |
|-----------|-------|------|--------|-------|--------|-------|--------|-------|--------|--------|--------|
| January | 0.9 | 5.6 | 2.0 | 8.3 | 4.1 | 0.9 | (12.5) | 10.0 | (1.9) | 5.4 | (5.6) |
| February | 1.3 | 11.1 | (8.8) | 10.4 | 0.3 | 0.11 | (7.2) | 11.7 | (1.0) | 8.0 | (11.6) |
| March | (5.3) | 9.6 | (4.0) | 1.7 | 7.2 | (1.8) | (4.8) | 3.2 | 4.8 | 1.1 | (3.2) |
| April | 4.0 | 0.4 | 4.7 | 4.5 | 3.4 | (5.0) | (7.9) | 7.3 | (0.8) | (14.3) | 19.6 |
| May | (9.0) | 5.9 | (0.4) | 9.0 | (0.3) | (5.3) | (6.4) | 17.3 | (10.2) | (13.0) | 19.2 |
| June | (1.3) | 7.2 | (10.8) | 22.9 | (2.9) | (4.9) | (3.3) | 6.5 | (8.5) | 10.1 | 3.6 |
| July | (2.0) | 7.6 | (1.9) | 11.9 | (5.0) | (4.5) | 6.7 | 0.9 | (8.1) | 6.3 | (3.7) |
| August | (2.0) | 5.0 | (0.6) | 12.8 | (10.1) | 9.4 | 3.6 | (4.5) | 1.5 | (2.5) | 4.0 |
| September | (2.1) | 7.0 | (0.2) | 12.6 | (8.1) | 7.9 | (3.0) | (0.4) | (2.8) | 3.1 | 3.0 |
| October | (4.1) | 8.8 | (50.9) | 116.7 | 6.9 | (1.1) | (11.1) | 1.3 | 14.9 | (10.7) | - |
| November | 1.7 | 8.6 | 1.2 | 4.3 | (3.4) | 0.1 | 0.9 | (3.2) | 14.5 | (12.4) | - |
| December | (4.7) | 3.1 | 7.2 | 3.5 | 4.8 | (7.4) | (2.4) | 0.9 | 9.3 | (5.4) | - |
| Q1 | (1.2) | 8.7 | (3.6) | 6.7 | 3.9 | (0.3) | (8.3) | 8.1 | 0.6 | 4.7 | (6.7) |
| Q2 | (2.4) | 4.6 | (2.5) | 11.9 | (0.1) | (5.1) | (5.8) | 10.3 | (6.7) | (7.8) | 13.5 |
| Q3 | (2.0) | 6.5 | (0.9) | 12.4 | (7.7) | 4.0 | 2.4 | (1.4) | (3.2) | 2.2 | 1.0 |
| Q4 | (2.4) | 6.9 | (14.5) | 25.7 | 2.8 | (2.8) | (4.4) | (0.4) | 12.9 | (9.6) | - |
| Year | (2.0) | 6.6 | (5.4) | 13.9 | (0.4) | (1.1) | (4.0) | 3.9 | 0.8 | (2.8) | (24.1) |

Note:

1. () Denotes negative numbers

2. - Indicates data is not available

3. 2021* Data is up to the third quarter only

Table 11: Generation of Electricity (MWH) as a Percentage of Distribution: 2011 – September 2021

| Year\ Utility | Electricity Generation | Imported Electricity | Electricity Distribution | % Contribution of Generated Electricity to Distributed |
|---------------|------------------------|----------------------|--------------------------|--------------------------------------------------------|
| 2011 | 303,374 | 3,169,068 | 3,472,442 | 8.7 |
| 2012 | 703,213 | 2,999,797 | 3,703,010 | 19.0 |
| 2013 | 1,681,497 | 1,820,940 | 3,502,437 | 48.0 |
| 2014 | 2,361,954 | 1,627,925 | 3,989,879 | 59.2 |
| 2015 | 2,445,988 | 1,527,697 | 3,973,685 | 61.6 |
| 2016 | 2,374,202 | 1,554,486 | 3,928,688 | 60.4 |
| 2017 | 3,020,206 | 752,117 | 3,772,322 | 80.1 |
| 2018 | 2,729,895 | 1,189,452 | 3,919,347 | 69.7 |
| 2019 | 2,204,779 | 1,746,238 | 3,951,017 | 55.8 |
| 2020 | 2,004,162 | 1,837,690 | 3,841,852 | 52.2 |
| 2013_Q1 | 279,728 | 595,429 | 875,157 | 32.0 |
| Q2 | 371,879 | 527,566 | 899,445 | 41.3 |
| Q3 | 599,762 | 322,315 | 922,077 | 65.0 |
| Q4 | 430,128 | 375,630 | 805,758 | 53.4 |
| 2014_Q1 | 317,245 | 616,206 | 933,451 | 34.0 |
| Q2 | 725,363 | 281,487 | 1,006,850 | 72.0 |
| Q3 | 816,465 | 219,922 | 1,036,387 | 78.8 |
| Q4 | 502,881 | 510,311 | 1,013,192 | 49.6 |
| 2015_Q1 | 518,828 | 451,092 | 969,920 | 53.5 |
| Q2 | 629,976 | 376,248 | 1,006,224 | 62.6 |
| Q3 | 591,983 | 364,427 | 956,410 | 61.9 |
| Q4 | 705,201 | 335,931 | 1,041,132 | 67.7 |
| 2016_Q1 | 443,628 | 523,736 | 967,364 | 45.9 |
| Q2 | 486,188 | 468,852 | 955,040 | 50.9 |
| Q3 | 661,245 | 333,355 | 994,600 | 66.5 |
| Q4 | 783,141 | 228,543 | 1,011,684 | 77.4 |
| 2017_Q1 | 698,451 | 189,052 | 887,503 | 78.7 |
| Q2 | 675,047 | 224,318 | 899,365 | 75.1 |
| Q3 | 893,831 | 124,612 | 1,018,442 | 87.8 |
| Q4 | 752,877 | 214,135 | 967,012 | 77.9 |
| 2018_Q1 | 682,380 | 277,270 | 959,650 | 71.1 |
| Q2 | 819,755 | 172,457 | 992,212 | 82.6 |
| Q3 | 774,882 | 229,427 | 1,004,249 | 77.2 |
| Q4 | 452,938 | 510,298 | 963,235 | 47.0 |
| 2019_Q1 | 776,653 | 189,065 | 965,718 | 80.4 |
| Q2 | 403,576 | 522,021 | 925,597 | 43.6 |
| Q3 | 467,974 | 504,115 | 972,090 | 48.1 |
| Q4 | 556,576 | 531,036 | 1,087,612 | 51.2 |
| 2020_Q1 | 481,984 | 529,352 | 1,011,335 | 47.7 |
| Q2 | 399,903 | 453,733 | 853,636 | 46.8 |
| Q3 | 604,647 | 388,905 | 993,552 | 60.9 |
| Q4 | 517,627 | 465,701 | 983,328 | 52.6 |
| 2021_Q1 | 589,899 | 353,248 | 943,147 | 62.5 |
| Q2 | 505,313 | 463,171 | 968,484 | 52.2 |
| Q3 | 579,036 | 424,703 | 1,003,738 | 57.7 |

2.0 Technical Notes

2.1 Background

The generation of electricity in Botswana started in 1985 with a coal fired thermal power station at Morupule operating at a capacity of 132 MWH. Prior to this period, most of Botswana's electricity was imported from South Africa's power utility, Eskom. In 2008 South Africa's electricity demand started to exceed its supply, resulting in the South African government restricting power exports. As a result, Botswana and the entire Southern African region experienced massive power shortages because of the reduced electricity exports from South Africa (http://en.wikipedia.org/wiki/Energy_in_Botswana).

To avert the situation, Botswana Government opted for alternative ways of sourcing electricity for the country; hence the plan to increase local generation of electricity at Morupule Power Station. The Morupule Power A plant of capacity 132 MWH was augmented with Morupule Power B which is to have a capacity of 600 MWH upon completion (BPC Annual Report, 2010).

2.2 Concepts and formula of the Index of Electricity Generation, Importation and Distribution

The Index of Electricity Generation is a Laspeyres index. The weighted average for electricity generation equals one because there are no various electricity products. The index is thus calculated using the formula;

$$I = \frac{\sum R_i * W_i}{\sum W_i}$$

Where;

I is the index

R is the electricity generation relative

W is the weight

The electricity generation relative for the quarter has been calculated by using the formula:

$$R_i = \frac{P_{ic}}{P_{i0}} * 100$$

Where P_{ic} is the electricity generation of the current quarter and P_{i0} is the generation of electricity of the base year.

The calculation of the monthly generation indices is based on the volume of electricity units produced.

2.3 Base Year

The base year, also referred to as **reference period** used in this brief is 2013, which is set at 100. The selection of the reference period was informed by the availability of relevant data and synchronization of data with other sectors within the industry.



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