

# Index Of The Physical Volume Of Mining Production

Fourth Quarter 2019



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## 1.0 Preface

This statistical release presents quarterly Indices of Mining Production (IMP) for the period 2012 to the fourth quarter of 2019. Also carried in the report are the annual IMP for the period 2012 to 2019, derived as the average of the four quarters of the year. This report uses 2013 as a reference year. Data used in this publication are sourced from the Department of Mines under the Ministry of Mineral Resources, Green Technology and Energy Security.

The Index of Mining Production stood at 87.8 during the fourth quarter of 2019, showing a year-on-year decrease of 7.9 percent from the index of 95.3 recorded during the fourth quarter of 2018. Comparison on a quarter-on-quarter basis shows an increase of 2.3 percent, from the index of 85.8 realised during the third quarter of 2019 to 87.8 registered during the fourth quarter of 2019.

The release further shows the contribution of each mineral and mineral group to the Year-on-Year Percentage Change in the Volume of Mining Production, and hence provides a reflection of the trend in the local mining sector.

Statistics Botswana is mandated to compile data on industrial production in Botswana, hence index of mining production is only confined to minerals extracted across the country. This is intended to monitor the performance of the mining sector in Botswana.

For more information, contact the Directorate of Stakeholder Relations on (+267) 3671300. All Statistics Botswana outputs/publications are available on the website at [www.statsbots.org.bw](http://www.statsbots.org.bw) and at the Statistics Botswana Information Resource Centre.

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



**Dr Burton S. Mguni**  
**Statistician General**  
March 2020

## 2.0 Summary of Findings

*All figures in this report are not seasonally adjusted.*

Table 1 presents a summary of findings for the Index of Mining Production (IMP) from the first quarter of 2012 to the fourth quarter of 2019. This table forms the basis for the discussions under Sub-Section 2.1. Reference, however, will be made to this table and other tables throughout the report.

### 2.1 Index of Mining Production

The Index of Mining Production stood at **87.8** during the fourth quarter of 2019, showing a year-on-year decrease of 7.9 percent from 95.3 registered during the fourth quarter of 2018. The main contributor to the decrease was Diamonds contributing negative 6.8 percentage points as shown in **Table 2**. The unstable commodity prices resulted in all the minerals registering negative year on year growth rates.

The quarter-on-quarter analysis shows an increase of 2.3 percent, from the index of 85.8 during the third quarter of 2019 to **87.8** observed during the reference period.

The **annualized total Index of Mining Production** reflects a decline of 3.9 percent, with an index of 87.3 observed for the year 2019 compared to 90.8 observed in the year 2018, as reflected in **Table 4** and **Table 6**.

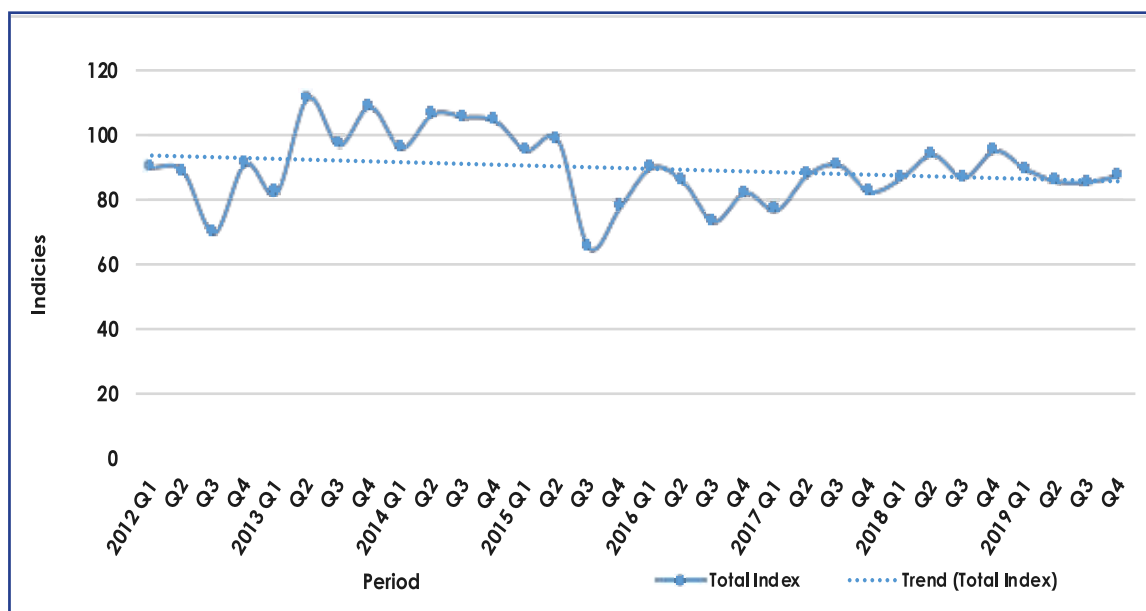
**Table 1: Key Figures in the Volume of Mining Production**

Base Period : 2013=100			
Period	Index of the physical volume of mining production	Year-on-Year percentage change	Quarter-on-Quarter percentage change
Q1_2013	82.5	(8.7)	(9.7)
Q2_2013	111.6	25.2	35.3
Q3_2013	97.1	38.4	(12.9)
Q4_2013	108.8	19.1	12.0
Q1_2014	96.2	16.7	(11.5)
Q2_2014	106.6	(4.5)	10.8
Q3_2014	105.7	8.9	(0.8)
Q4_2014	104.5	(4.0)	(1.2)
Q1_2015	95.6	(0.7)	(8.6)
Q2_2015	98.7	(7.4)	3.3
Q3_2015	65.6	(37.9)	(33.5)
Q4_2015	77.9	(25.5)	18.7
Q1_2016	90.1	(5.7)	15.7
Q2_2016	86.0	(12.9)	(4.5)
Q3_2016	73.7	12.3	(14.3)
Q4_2016	82.4	5.8	11.8
Q1_2017	77.1	(14.4)	(6.4)
Q2_2017	87.9	2.1	13.9
Q3_2017	91.0	23.4	3.5
Q4_2017	82.8	0.5	(9.0)
Q1_2018	86.9	12.6	4.9
Q2_2018	94.0	7.0	8.3
Q3_2018	87.1	(4.2)	(7.4)
Q4_2018	95.3	15.1	9.4
Q1_2019	89.6	3.1	(6.0)
Q2_2019	85.9	(8.6)	(4.1)
Q3_2019	85.8	(1.5)	(0.1)
Q4_2019	87.8	(7.9)	2.3

Note: 1. ( ) denotes negative numbers

Figure 1 shows the graphical presentation of the Total Index from the first quarter of 2012 to the fourth quarter of 2019. The graph shows that, on average, production has been declining, gradually, between the years 2012 and 2019.

Figure 1: Total Index Of Mining Production For The First Quarter Of 2012 To The Fourth Quarter Of 2019



## 2.2 Mineral Production

Discussions on mineral production, which compare production during the fourth quarter of 2019 to the same quarter of 2018, are based on **Table 2** and **Table 6**. **Table 5** provides quarter-on-quarter analysis of the mineral production, for the quarter under review, giving comparison to the preceding quarter.

**Diamond production** declined by 7.1 percent during the fourth quarter of 2019 compared to the same quarter of the previous year. The decline resulted from the initiative of reducing bulky production in order to align output to the trading conditions in the diamond market. The quarter-on-quarter analysis, on the other hand, shows a growth of 2.9 percent when the period under review is compared to the third quarter of 2019.

**Gold production** declined for the fourth consecutive quarter, decreasing by 26.0 percent during the fourth quarter of 2019 compared to the same quarter in 2018. Similarly, quarter-on-quarter analysis reflects a decrease of 18.7 percent during the fourth quarter of 2019 compared to the third quarter of 2019. This decline was as a result of lower than expected gold recoveries, from the ore.

**Soda Ash production** decreased for the second consecutive quarter, declining by 26.8 percent during the fourth quarter of 2019, compared to the same quarter of the previous year. Similarly, the quarter-on-quarter analysis shows that production decreased by 18.2 percent during the period under review. The decrease in production can be attributable to the inefficiency of the plants to operate at full capacity as well as the impact from the rainy season as production is weather dependent.

**Salt production** declined for the second consecutive quarter, declining by 30.6 percent during the fourth quarter of 2019 compared to the same quarter in 2018. The quarter-on-quarter comparison, shows an increase of 14.5 percent during the fourth quarter of 2019 compared to the preceding quarter.

**Coal production** declined for the fifth consecutive quarter, declining by 17.3 percent during the fourth quarter of 2019 compared to production during the same quarter of the previous year. The quarter-on-quarter comparison, likewise reflects a decrease, of 4.1 percent compared to the preceding quarter. The decline can be attributable to low uptake by Morupule B Power station which has resumed remedial works on the boilers. Although production fell, it is important to note that there was no shortfall in supply of coal due to stockpiling.

**Copper-Nickel-Cobalt Matte, Copper in Concentrates and Silver** recorded zero production during the period under review. The instability and uncertainty of commodity prices affected production at the associated mines, leading to provisional liquidation as mining operations could not be sustained at the current prices.

**Table 2: Index of Mining Production for the latest Quarter by Mineral Groups and Minerals**

Base:2013=100					
Mineral	Weights (2013)	Oct-Dec 2018	Oct-Dec 2019	Year-on-Year Percentage Change	Contribution (% points) to the Percentage Change in the total Mining Production
Diamonds	82.5	111.1	103.3	(7.0)	(6.8)
Copper-Nickel-Cobalt Matte	8.6	n.a.	n.a.	n.a.	0.0
Copper in Concentrates	5.5	2.2	n.a.	(100.0)	(0.1)
Gold	1.4	95.5	70.5	(26.1)	(0.4)
Soda Ash	0.9	149.9	109.7	(26.8)	(0.4)
Salt	0.5	109.6	76.0	(30.6)	(0.2)
Silver	0.4	n.a.	n.a.	n.a.	0.0
Coal	0.3	147.8	122.3	(17.3)	(0.1)
<b>Total</b>	<b>100</b>	<b>95.3</b>	<b>87.8</b>	<b>(7.9)</b>	<b>(7.9)</b>

- Note: 1. The contribution (percentage points) of a mineral to the percentage change in the total mining production is calculated by multiplying the difference in the index for the mineral by the weight of the mineral and then dividing by the previous period's total index.  
 2. ( ) denotes negative numbers  
 3. n.a. signifies data not available/no production during the specified period.



Table 3: Physical Volume of Mineral Production

Mineral	Diamonds	Copper-Nickel-Cobalt (CNC)Matte				Copper in Concentrates	Gold	Soda Ash	Salt	Sliver	Coal	
		CNC Matte	Copper	Nickel	Cobalt							
Unit of measure	'000 carats	tonnes	tonnes	tonnes	tonnes	tonnes	Kg	tonnes	tonnes	Kg	tonnes	
Year												
<b>2012</b>	20,619	35,757	17,620	17,942	195	8,743	1,377	248,629	367,749	n.a.	1,454,404	
<b>2013</b>	23,134	44,396	21,300	22,848	248	28,146	1,207	227,913	521,306	22,597	1,495,653	
<b>2014</b>	24,658	29,782	14,628	14,958	196	32,093	958	268,529	515,311	22,288	1,711,555	
<b>2015</b>	20,823	30,993	13,888	16,789	316	8,396	753	243,369	404,295	2,801	2,065,778	
<b>2016</b>	20,892	30,279	13,120	16,878	281	n.a.	832	280,457	399,837	n.a.	1,870,939	
<b>2017</b>	22,941	n.a.	n.a.	n.a.	n.a.	n.a.	921	226,667	369,613	n.a.	2,215,782	
<b>2018</b>	24,496	n.a.	n.a.	n.a.	n.a.	n.a.	1,105	297,237	392,244	n.a.	2,482,313	
<b>2019</b>	23,687	n.a.	n.a.	n.a.	n.a.	n.a.	943	264,119	383,779	n.a.	2,110,891	
<b>2012</b>	<b>Q1</b>	5,352	12,216	6,183	5,970	63	1,676	406	60,354	85,746	n.a.	234,213
	<b>Q2</b>	5,346	11,054	5,462	5,532	60	1,609	361	56,541	101,983	n.a.	224,757
	<b>Q3</b>	4,384	2,843	1,424	1,404	14	2,881	329	73,583	75,854	n.a.	444,360
	<b>Q4</b>	5,537	9,645	4,551	5,036	58	2,577	281	58,151	104,166	n.a.	551,074
<b>2013</b>	<b>Q1</b>	4,658	9,766	4,501	5,203	62	6,612	231	70,049	126,420	5,777	401,939
	<b>Q2</b>	6,462	12,471	6,047	6,358	66	8,127	297	50,710	152,223	6,670	278,947
	<b>Q3</b>	5,541	11,961	5,894	6,000	67	6,555	309	64,311	154,529	6,099	425,630
	<b>Q4</b>	6,473	10,198	4,858	5,287	53	6,852	370	42,843	88,134	4,051	389,137
<b>2014</b>	<b>Q1</b>	5,870	5,193	2,447	2,715	31	6,819	291	62,090	89,417	4,136	355,096
	<b>Q2</b>	6,364	8,148	3,964	4,134	50	8,069	224	65,846	131,405	4,998	463,235
	<b>Q3</b>	6,321	5,732	2,880	2,810	42	9,573	255	66,818	151,481	7,648	488,335
	<b>Q4</b>	6,103	10,709	5,337	5,299	73	7,632	188	73,775	143,008	5,506	404,889
<b>2015</b>	<b>Q1</b>	5,734	9,724	4,423	5,169	132	5,230	156	41,836	80,244	2,801	474,619
	<b>Q2</b>	6,022	11,675	5,127	6,439	109	2,135	150	55,199	79,655	n.a.	505,016
	<b>Q3</b>	4,207	2,204	989	1,194	21	1,031	235	71,562	138,924	n.a.	578,979
	<b>Q4</b>	4,860	7,390	3,349	3,987	54	n.a.	212	74,772	105,472	n.a.	507,164
<b>2016</b>	<b>Q1</b>	5,429	13,208	5,777	7,303	128	n.a.	181	67,204	87,696	n.a.	427,894
	<b>Q2</b>	5,305	10,370	4,464	5,801	105	n.a.	244	47,850	73,695	n.a.	350,987
	<b>Q3</b>	4,601	6,701	2,879	3,774	48	n.a.	194	79,397	113,305	n.a.	549,352
	<b>Q4</b>	5,557	n.a.	n.a.	n.a.	n.a.	n.a.	213	86,006	125,141	n.a.	542,706
<b>2017</b>	<b>Q1</b>	5,280	n.a.	n.a.	n.a.	n.a.	n.a.	141	40,975	59,926	n.a.	490,650
	<b>Q2</b>	5,976	n.a.	n.a.	n.a.	n.a.	689	209	35,780	52,853	n.a.	575,250
	<b>Q3</b>	6,117	n.a.	n.a.	n.a.	n.a.	340	297	71,868	153,283	n.a.	583,719
	<b>Q4</b>	5,568	n.a.	n.a.	n.a.	n.a.	210	274	78,044	103,551	n.a.	566,163
<b>2018</b>	<b>Q1</b>	5,885	n.a.	n.a.	n.a.	n.a.	135	238	64,510	85,987	n.a.	597,298
	<b>Q2</b>	6,360	n.a.	n.a.	n.a.	n.a.	547	314	51,189	58,972	n.a.	664,448
	<b>Q3</b>	5,825	n.a.	n.a.	n.a.	n.a.	625	265	96,136	104,507	n.a.	667,782
	<b>Q4</b>	6,426	n.a.	n.a.	n.a.	n.a.	155	288	85,402	142,778	n.a.	552,785
<b>2019</b>	<b>Q1</b>	6,081	n.a.	n.a.	n.a.	n.a.	n.a.	198	73,940	111,468	n.a.	554,636
	<b>Q2</b>	5,828	n.a.	n.a.	n.a.	n.a.	n.a.	270	51,229	86,686	n.a.	622,620
	<b>Q3</b>	5,785	n.a.	n.a.	n.a.	n.a.	n.a.	262	76,432	86,539	n.a.	476,494
	<b>Q4</b>	5,973	n.a.	n.a.	n.a.	n.a.	n.a.	213	62,518	99,086	n.a.	457,141

Source: Department of Mines  
EVP: Estimated Value of Production

**Table 4: Index of the Volume of Mining Production by Mineral Group and Mineral**

Base 2013 = 100									
	Diamonds	Copper-Nickel-Cobalt Matte	Copper in concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
<b>Weights</b>	<b>82.5</b>	<b>8.6</b>	<b>5.5</b>	<b>1.4</b>	<b>0.9</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>100.0</b>
<b>2012</b>	89.1	80.5	31.1	114.1	109.1	70.5	n.a.	97.2	<b>85.3</b>
<b>2013</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	<b>100.0</b>
<b>2014</b>	106.6	67.1	114.0	79.4	117.8	98.9	98.6	114.4	<b>103.3</b>
<b>2015</b>	90.0	69.8	29.8	62.4	95.8	71.7	12.4	138.1	<b>84.5</b>
<b>2016</b>	90.3	68.2	n.a.	69.0	123.1	76.7	n.a.	125.1	<b>83.1</b>
<b>2017</b>	99.2	n.a.	4.4	76.3	99.5	70.9	n.a.	148.1	<b>84.7</b>
<b>2018</b>	105.9	n.a.	5.2	91.6	130.4	75.2	n.a.	166.0	<b>90.8</b>
<b>2019</b>	102.4	n.a.	n.a.	78.1	115.9	73.6	n.a.	141.1	<b>87.3</b>
<b>2012 Q1</b>	92.5	110.1	23.8	134.6	105.9	65.8	n.a.	62.6	<b>90.4</b>
<b>Q2</b>	92.4	99.6	22.9	119.8	99.2	78.3	n.a.	60.1	<b>89.1</b>
<b>Q3</b>	75.8	25.6	41.0	108.9	129.1	58.2	n.a.	118.8	<b>70.2</b>
<b>Q4</b>	95.7	86.9	36.6	93.1	102.1	79.9	n.a.	147.4	<b>91.4</b>
<b>2013 Q1</b>	80.5	88.0	94.0	76.6	122.9	97.0	102.3	107.5	<b>82.5</b>
<b>Q2</b>	111.7	112.4	115.5	98.5	89.0	116.8	118.1	74.6	<b>111.6</b>
<b>Q3</b>	95.8	107.8	93.2	102.4	112.9	118.6	108.0	113.8	<b>97.1</b>
<b>Q4</b>	111.9	91.9	97.4	122.5	75.2	67.6	71.7	104.1	<b>108.8</b>
<b>2014 Q1</b>	101.5	46.8	96.9	96.4	109.0	68.6	73.2	95.0	<b>96.2</b>
<b>Q2</b>	110.0	73.4	114.7	74.3	115.6	100.8	88.5	123.9	<b>106.6</b>
<b>Q3</b>	109.3	51.6	136.0	84.5	117.3	116.2	135.4	130.6	<b>105.7</b>
<b>Q4</b>	105.5	96.5	108.5	62.3	129.5	109.7	97.5	108.3	<b>104.5</b>
<b>2015 Q1</b>	99.1	87.6	74.3	51.7	73.4	61.6	49.6	126.9	<b>95.6</b>
<b>Q2</b>	104.1	105.2	30.3	49.7	96.9	61.1	n.a.	135.1	<b>98.7</b>
<b>Q3</b>	72.7	19.9	14.7	77.9	125.6	106.6	n.a.	154.8	<b>65.6</b>
<b>Q4</b>	84.0	66.6	n.a.	70.3	131.2	80.9	n.a.	135.6	<b>77.9</b>
<b>2016 Q1</b>	93.9	119.0	n.a.	60.0	117.9	67.3	n.a.	114.4	<b>90.1</b>
<b>Q2</b>	91.7	93.4	n.a.	80.9	84.0	56.5	n.a.	93.9	<b>86.0</b>
<b>Q3</b>	79.6	60.4	n.a.	64.3	139.3	86.9	n.a.	146.9	<b>73.7</b>
<b>Q4</b>	96.1	n.a.	n.a.	70.6	150.9	96.0	n.a.	145.1	<b>82.4</b>
<b>2017 Q1</b>	91.3	n.a.	n.a.	46.7	71.9	46.0	n.a.	131.2	<b>77.1</b>
<b>Q2</b>	103.3	n.a.	9.8	69.2	62.8	40.6	n.a.	153.8	<b>87.9</b>
<b>Q3</b>	105.8	n.a.	4.8	98.5	126.1	117.6	n.a.	156.1	<b>91.0</b>
<b>Q4</b>	96.3	n.a.	3.0	90.8	137.0	79.5	n.a.	151.4	<b>82.8</b>
<b>2018 Q1</b>	101.8	n.a.	1.9	78.9	113.2	66.0	n.a.	159.7	<b>86.9</b>
<b>Q2</b>	110.0	n.a.	7.8	104.1	89.8	45.2	n.a.	177.7	<b>94.0</b>
<b>Q3</b>	100.7	n.a.	8.9	87.8	168.7	80.2	n.a.	178.6	<b>87.1</b>
<b>Q4</b>	111.1	n.a.	2.2	95.5	149.9	109.6	n.a.	147.8	<b>95.3</b>
<b>2019 Q1</b>	105.1	n.a.	n.a.	65.6	129.8	85.5	n.a.	148.3	<b>89.6</b>
<b>Q2</b>	100.8	n.a.	n.a.	89.5	89.9	66.5	n.a.	166.5	<b>85.9</b>
<b>Q3</b>	100.0	n.a.	n.a.	87.0	134.1	66.4	n.a.	127.4	<b>85.6</b>
<b>Q4</b>	103.3	n.a.	n.a.	70.5	109.7	76.0	n.a.	122.3	<b>87.8</b>

Note: 1. n.a. Signifies data not available/no production during the specified period.



**Table 5: Quarter on Quarter Percentage Change in the Volume of Mining Production by Mineral Group and Mineral**

Base 2013 = 100									
	Diamonds	Copper-Nickel-Cobalt Matte	Copper in Concentrate	Gold	Soda Ash	Salt	Silver	Coal	Total
<b>Year/Weights</b>	<b>82.5</b>	<b>8.6</b>	<b>5.5</b>	<b>1.4</b>	<b>0.9</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>100.0</b>
<b>2012 Q1</b>	15.2	10.8	3.0	(16.0)	(12.7)	(30.6)	n.a.	142.7	<b>13.1</b>
<b>Q2</b>	(0.1)	(9.5)	(4.0)	(11.0)	(6.3)	18.9	n.a.	(4.0)	<b>(1.4)</b>
<b>Q3</b>	(18.0)	(74.3)	79.1	(9.1)	30.1	(25.6)	n.a.	97.7	<b>(21.2)</b>
<b>Q4</b>	26.3	239.3	(10.6)	(14.5)	(21.0)	37.3	n.a.	24.0	<b>30.2</b>
<b>2013 Q1</b>	(15.9)	1.3	156.6	(17.7)	20.5	21.4	...	(27.1)	<b>(9.7)</b>
<b>Q2</b>	38.7	27.7	22.9	28.6	(27.6)	20.4	15.5	(30.6)	<b>35.3</b>
<b>Q3</b>	(14.3)	(4.1)	(19.3)	4.0	26.8	1.5	(8.6)	52.6	<b>(12.9)</b>
<b>Q4</b>	16.8	(14.7)	4.5	19.6	(33.4)	(43.0)	(33.6)	(8.6)	<b>12.0</b>
<b>2014 Q1</b>	(9.3)	(49.1)	(0.5)	(21.4)	44.9	1.5	2.1	(8.7)	<b>(11.5)</b>
<b>Q2</b>	8.4	56.9	18.3	(22.9)	6.0	47.0	20.8	30.5	<b>10.8</b>
<b>Q3</b>	(0.7)	(29.7)	18.6	13.8	1.5	15.3	53.0	5.4	<b>(0.8)</b>
<b>Q4</b>	(3.4)	86.8	(20.3)	(26.3)	10.4	(5.6)	(28.0)	(17.1)	<b>(1.2)</b>
<b>2015 Q1</b>	(6.0)	(9.2)	(31.5)	(17.0)	(43.3)	(43.9)	(49.1)	17.2	<b>(8.6)</b>
<b>Q2</b>	5.0	20.1	(59.2)	(3.8)	31.9	(0.7)	(100.0)	6.4	<b>3.3</b>
<b>Q3</b>	(30.1)	(81.1)	(51.7)	56.7	29.6	74.4	n.a.	14.6	<b>(33.5)</b>
<b>Q4</b>	15.5	235.3	(100.0)	(9.7)	4.5	(24.1)	n.a.	(12.4)	<b>18.7</b>
<b>2016 Q1</b>	11.7	78.7	n.a.	(14.7)	(10.1)	(16.9)	n.a.	(15.6)	<b>15.7</b>
<b>Q2</b>	(2.3)	(21.5)	n.a.	34.8	(28.8)	(16.0)	n.a.	(18.0)	<b>(4.5)</b>
<b>Q3</b>	(13.3)	(35.4)	n.a.	(20.5)	65.9	53.7	n.a.	56.5	<b>(14.3)</b>
<b>Q4</b>	20.8	(100.0)	n.a.	9.8	8.3	10.4	n.a.	(1.2)	<b>11.8</b>
<b>2017 Q1</b>	(5.0)	n.a.	n.a.	(33.8)	(52.4)	(52.1)	n.a.	(9.6)	<b>(6.4)</b>
<b>Q2</b>	13.2	n.a.	n.a.	48.2	(12.7)	(11.8)	n.a.	17.2	<b>13.9</b>
<b>Q3</b>	2.4	n.a.	(50.7)	41.9	100.9	190.0	n.a.	1.5	<b>3.5</b>
<b>Q4</b>	(9.0)	n.a.	(38.2)	(7.6)	8.6	(32.4)	n.a.	(3.0)	<b>(9.0)</b>
<b>2018 Q1</b>	5.7	n.a.	(35.7)	(13.2)	(17.3)	(17.0)	n.a.	5.5	<b>4.9</b>
<b>Q2</b>	8.1	n.a.	305.2	32.0	(20.6)	(31.4)	n.a.	11.2	<b>8.3</b>
<b>Q3</b>	(8.4)	n.a.	14.3	(15.6)	87.8	77.2	n.a.	0.5	<b>(7.4)</b>
<b>Q4</b>	10.3	n.a.	(75.2)	8.7	(11.2)	36.6	n.a.	(17.2)	<b>9.4</b>
<b>2019 Q1</b>	(5.4)	n.a.	(100.0)	(31.3)	(13.4)	(21.9)	n.a.	0.3	<b>(6.0)</b>
<b>Q2</b>	(4.2)	n.a.	n.a.	36.6	(30.7)	(22.2)	n.a.	12.3	<b>(4.1)</b>
<b>Q3</b>	(0.7)	n.a.	n.a.	(2.9)	49.2	(0.2)	n.a.	(23.5)	<b>(0.4)</b>
<b>Q4</b>	2.9	n.a.	n.a.	(18.9)	(18.2)	14.5	n.a.	(4.1)	<b>2.3</b>

Note: 1. ( ) Denote negative numbers

2. n.a. Signifies data not available/no production during the specified period

**Table 6: Year-on-Year Percentage Change in the Volume of Mining Production by Mineral Group and Mineral**

Base 2013 = 100									
	Diamonds	Copper Nickel – Cobalt Matte	Copper in Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total
<b>Weights</b>	<b>82.5</b>	<b>8.6</b>	<b>5.5</b>	<b>1.4</b>	<b>0.9</b>	<b>0.5</b>	<b>0.4</b>	<b>0.3</b>	<b>100.0</b>
<b>2012</b>	(10.0)	12.0	40.6	(11.8)	(3.6)	(17.6)	n.a.	84.7	<b>(7.7)</b>
<b>2013</b>	12.2	24.2	221.9	(12.4)	(8.3)	41.8	...	2.8	<b>17.3</b>
<b>2014</b>	6.6	(32.9)	14.0	(20.6)	17.8	(1.1)	(1.4)	14.4	<b>3.3</b>
<b>2015</b>	(15.6)	4.1	(71.5)	(21.4)	(9.4)	(21.5)	(87.4)	20.7	<b>(18.2)</b>
<b>2016</b>	0.3	(2.3)	(100.0)	10.5	15.2	(1.1)	(100.0)	(9.4)	<b>(1.6)</b>
<b>2017</b>	9.8	(100.0)	...	10.7	(19.2)	(7.6)	n.a.	18.4	<b>2.0</b>
<b>2018</b>	6.8	n.a.	18.0	20.0	31.1	6.1	n.a.	12.0	<b>7.3</b>
<b>2019</b>	(3.3)	n.a.	(100.0)	(14.7)	(11.1)	(2.2)	n.a.	(15.0)	<b>(3.9)</b>
<b>2012 Q1</b>	(0.8)	15.6	51.4	21.1	7.3	(8.4)	n.a.	12.7	<b>1.6</b>
<b>Q2</b>	(9.8)	15.9	(3.9)	7.2	(2.3)	12.6	n.a.	(17.0)	<b>(7.3)</b>
<b>Q3</b>	(36.7)	255.4	59.1	(18.9)	(1.3)	(45.4)	n.a.	109.0	<b>(32.9)</b>
<b>Q4</b>	19.2	(12.5)	58.4	(42.0)	(15.9)	(15.6)	n.a.	471.1	<b>14.4</b>
<b>2013 Q1</b>	(13.0)	(20.1)	294.5	(43.1)	16.1	47.4	...	71.6	<b>(8.7)</b>
<b>Q2</b>	20.9	12.8	405.1	(17.8)	(10.3)	49.3	...	24.1	<b>25.2</b>
<b>Q3</b>	26.4	320.7	127.4	(5.9)	(12.6)	103.7	...	(4.2)	<b>38.4</b>
<b>Q4</b>	16.9	5.7	165.9	31.6	(26.3)	(15.4)	...	(29.4)	<b>19.1</b>
<b>2014 Q1</b>	26.0	(46.8)	3.1	25.8	(11.4)	(29.3)	(28.4)	(11.7)	<b>16.7</b>
<b>Q2</b>	(1.5)	(34.7)	(0.7)	(24.6)	29.8	(13.7)	(25.1)	66.1	<b>(4.5)</b>
<b>Q3</b>	14.1	(52.1)	46.0	(17.5)	3.9	(2.0)	25.4	14.7	<b>8.9</b>
<b>Q4</b>	(5.7)	5.0	11.4	(49.1)	72.2	62.3	35.9	4.0	<b>(4.0)</b>
<b>2015 Q1</b>	(2.3)	87.3	(23.3)	(46.3)	(32.6)	(10.3)	(32.3)	33.7	<b>(0.7)</b>
<b>Q2</b>	(5.4)	43.3	(73.5)	(33.0)	(16.2)	(39.4)	(100.0)	9.0	<b>(7.4)</b>
<b>Q3</b>	(33.4)	(61.5)	(89.2)	(7.8)	7.1	(8.3)	(100.0)	18.6	<b>(37.9)</b>
<b>Q4</b>	(20.4)	(31.0)	(100.0)	12.9	1.4	(26.2)	(100.0)	25.3	<b>(25.5)</b>
<b>2016 Q1</b>	(5.3)	35.8	(100.0)	16.0	60.6	9.3	(100.0)	(9.8)	<b>(5.7)</b>
<b>Q2</b>	(11.9)	(11.2)	(100.0)	62.7	(13.3)	(7.5)	n.a.	(30.5)	<b>(12.9)</b>
<b>Q3</b>	9.4	204.0	(100.0)	(17.4)	10.9	(18.4)	n.a.	(5.1)	<b>12.3</b>
<b>Q4</b>	14.3	(100.0)	n.a.	0.4	15.0	18.6	n.a.	7.0	<b>5.8</b>
<b>2017 Q1</b>	(2.7)	(100.0)	n.a.	(22.1)	(39.0)	(31.7)	n.a.	14.7	<b>(14.4)</b>
<b>Q2</b>	12.6	(100.0)	n.a.	(14.5)	(25.2)	(28.3)	n.a.	63.9	<b>2.1</b>
<b>Q3</b>	32.9	(100.0)	n.a.	53.1	(9.5)	35.3	n.a.	6.3	<b>23.4</b>
<b>Q4</b>	0.2	n.a.	...	28.6	(9.3)	(17.3)	n.a.	4.3	<b>0.5</b>
<b>2018 Q1</b>	11.5	n.a.	...	68.7	57.4	43.5	n.a.	21.7	<b>12.6</b>
<b>Q2</b>	6.4	n.a.	(20.6)	50.2	43.1	11.6	n.a.	15.5	<b>7.0</b>
<b>Q3</b>	(4.8)	n.a.	83.8	(10.6)	33.8	(31.8)	n.a.	14.4	<b>(4.2)</b>
<b>Q4</b>	15.4	n.a.	(26.2)	5.1	9.4	37.9	n.a.	(2.4)	<b>15.1</b>
<b>2019 Q1</b>	3.3	n.a.	(100.0)	(16.9)	14.6	29.6	n.a.	(7.1)	<b>3.1</b>
<b>Q2</b>	(8.4)	n.a.	(100.0)	(14.0)	0.1	47.0	n.a.	(6.3)	<b>(8.6)</b>
<b>Q3</b>	(0.7)	n.a.	(100.0)	(1.0)	(20.5)	(17.2)	n.a.	(28.6)	<b>(1.5)</b>
<b>Q4</b>	(7.0)	n.a.	(100.0)	(26.1)	(26.8)	(30.6)	n.a.	(17.3)	<b>(7.9)</b>

Note: 1. ( ) Denote negative numbers  
 2. ... Data is not zero, but the figure is not significant enough to be measured  
 3. "n.a." Signifies data not available/no production during the specified period

**Table 7: Contribution of Each Mineral Group and Mineral to the Year-on-Year Percentage Change in the Volume of Mining Production**

Base 2013 = 100									
	Diamonds	Copper-Nickel-Cobalt Matte	Copper in Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total
<b>Weights</b>	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	<b>100.0</b>
<b>2012</b>	(8.8)	0.8	0.5	(0.2)	(0.0)	(0.1)	0.0	0.1	<b>(7.7)</b>
<b>2013</b>	10.5	2.0	4.4	(0.2)	(0.1)	0.2	0.5	0.0	<b>17.3</b>
<b>2014</b>	5.4	(2.8)	0.8	(0.3)	0.2	(0.0)	(0.0)	0.0	<b>3.3</b>
<b>2015</b>	(13.2)	0.2	(4.5)	(0.2)	(0.1)	(0.1)	(0.4)	0.1	<b>(18.2)</b>
<b>2016</b>	0.3	(0.2)	(1.9)	0.1	0.2	(0.0)	(0.1)	(0.0)	<b>(1.6)</b>
<b>2017</b>	8.8	(7.0)	0.3	0.1	(0.3)	(0.0)	0.0	0.1	<b>2.0</b>
<b>2018</b>	6.5	0.0	0.1	0.3	0.3	0.0	0.0	0.1	<b>7.3</b>
<b>2019</b>	(3.2)	0.0	(0.3)	(0.2)	(0.1)	(0.0)	0.0	(0.1)	<b>(3.9)</b>
<b>2012 Q1</b>	(0.7)	1.4	0.5	0.4	0.1	(0.0)	0.0	0.0	<b>1.6</b>
<b>Q2</b>	(8.6)	1.2	(0.1)	0.1	(0.0)	0.0	0.0	(0.0)	<b>(7.3)</b>
<b>Q3</b>	(34.7)	1.5	0.8	(0.3)	(0.0)	(0.2)	0.0	0.1	<b>(32.9)</b>
<b>Q4</b>	15.9	(1.3)	0.9	(1.2)	(0.2)	(0.1)	0.0	0.4	<b>14.4</b>
<b>2013 Q1</b>	(11.0)	(2.1)	4.3	(0.9)	0.2	0.2	0.5	0.1	<b>(8.7)</b>
<b>Q2</b>	17.9	1.2	5.7	(0.3)	(0.1)	0.2	0.6	0.0	<b>25.2</b>
<b>Q3</b>	23.5	10.0	4.1	(0.1)	(0.2)	0.4	0.8	(0.0)	<b>38.4</b>
<b>Q4</b>	14.6	0.5	3.6	0.5	(0.3)	(0.1)	0.4	(0.1)	<b>19.1</b>
<b>2014 Q1</b>	21.0	(4.3)	0.2	0.3	(0.2)	(0.2)	(0.2)	(0.0)	<b>16.7</b>
<b>Q2</b>	(1.3)	(3.0)	(0.0)	(0.3)	0.2	(0.1)	(0.1)	0.1	<b>(4.5)</b>
<b>Q3</b>	11.4	(5.0)	2.4	(0.3)	0.0	(0.0)	0.1	0.0	<b>8.9</b>
<b>Q4</b>	(4.8)	0.4	0.6	(0.8)	0.4	0.2	0.1	0.0	<b>(4.0)</b>
<b>2015 Q1</b>	(2.0)	3.6	(1.3)	(0.6)	(0.3)	(0.0)	(0.1)	0.1	<b>(0.7)</b>
<b>Q2</b>	(4.6)	2.6	(4.3)	(0.3)	(0.2)	(0.2)	(0.4)	0.0	<b>(7.4)</b>
<b>Q3</b>	(28.5)	(2.6)	(6.3)	(0.1)	0.1	(0.0)	(0.6)	0.1	<b>(37.9)</b>
<b>Q4</b>	(17.0)	(2.5)	(5.7)	0.1	0.0	(0.1)	(0.4)	0.1	<b>(25.5)</b>
<b>2016 Q1</b>	(4.6)	2.8	(4.3)	0.1	0.4	0.0	(0.2)	(0.0)	<b>(5.7)</b>
<b>Q2</b>	(10.4)	(1.0)	(1.7)	0.4	(0.1)	(0.0)	0.0	(0.1)	<b>(12.9)</b>
<b>Q3</b>	8.6	5.3	(1.2)	(0.3)	0.2	(0.2)	0.0	(0.0)	<b>12.3</b>
<b>Q4</b>	12.8	(7.3)	0.0	0.0	0.2	0.1	0.0	0.0	<b>5.8</b>
<b>2017 Q1</b>	(2.4)	(11.3)	0.0	(0.2)	(0.5)	(0.1)	0.0	0.0	<b>(14.4)</b>
<b>Q2</b>	11.1	(9.3)	0.6	(0.2)	(0.2)	(0.1)	0.0	0.2	<b>2.1</b>
<b>Q3</b>	29.3	(7.0)	0.4	0.6	(0.2)	0.2	0.0	0.0	<b>23.4</b>
<b>Q4</b>	0.2	0.0	0.2	0.3	(0.2)	(0.1)	0.0	0.0	<b>0.5</b>
<b>2018 Q1</b>	11.2	0.0	0.1	0.6	0.5	0.1	0.0	0.1	<b>12.6</b>
<b>Q2</b>	6.2	0.0	(0.1)	0.6	0.3	0.0	0.0	0.1	<b>7.0</b>
<b>Q3</b>	(4.6)	0.0	0.2	(0.2)	0.4	(0.2)	0.0	0.1	<b>(4.2)</b>
<b>Q4</b>	14.8	0.0	(0.1)	0.1	0.1	0.2	0.0	(0.0)	<b>15.1</b>
<b>2019 Q1</b>	3.2	0.0	(0.1)	(0.2)	0.2	0.1	0.0	(0.0)	<b>3.1</b>
<b>Q2</b>	(8.1)	0.0	(0.5)	(0.2)	0.0	0.1	0.0	(0.0)	<b>(8.6)</b>
<b>Q3</b>	(0.7)	0.0	(0.6)	(0.0)	(0.4)	(0.1)	0.0	(0.1)	<b>(1.5)</b>
<b>Q4</b>	(6.8)	0.0	(0.1)	(0.4)	(0.4)	(0.2)	0.0	(0.1)	<b>(7.9)</b>

Note: 1. ( ) Denote negative numbers.

## **3.0 Technical Notes**

### **3.1 Background**

Mining activity in Botswana started in the 19th century with the production of Gold by Europeans from the Tati Reefs, which is now the modern Francistown area. However, much of this activity could not be accounted for, despite its significant contribution to the economy at that time. Modern mining in Botswana started with the mining of Diamonds at Orapa in 1971 followed by Copper-Nickel production in 1973 at Selebi Phikwe. Since the early 1980s, the mining industry has been the largest contributor to real Gross Domestic Product (GDP), contributing between 20 and 50 percent.

These mineral contributions enabled the Government to undertake investments in both human and physical infrastructure development over time. Even though the mining sector's contribution to GDP has been below 25 percent since the 2009 recession, available data indicates that the sector still leads in terms of value added contribution to GDP, according to the quarterly GDP reports produced by Statistics Botswana. Despite its great contribution to Botswana's GDP, the mining industry is capital intensive and accounts for less than 5 percent of employment in the private sector.

With such a significant contribution to the GDP, and the national economy, the need for a measure of the change in the production of minerals in Botswana cannot be over emphasised. The index of the physical volume of mining production is such a measure that provides a relative change over time in mining production. The IMP can also be used as a deflator to calculate the GDP at constant prices.

### **3.2 Data collection**

A mining production survey is carried out by the Department of Mines at the Ministry of Minerals, Energy and Water Resources, covering all mining establishments operating in the country. After the completion of data collection, the Department of Mines provides the data to Statistics Botswana. Following international standards and guidelines, Statistics Botswana cleans the data, produces statistical tables and produces reports which are then packaged and disseminated to users. The results of the survey are used to calculate the volume of mining production indices on a quarterly basis and subsequently to estimate GDP, also on a quarterly basis.

### **3.3 Scope of the survey**

The survey covers all mining establishments conducting activities relating to the extraction of minerals such as Diamonds, Copper-Nickel-Cobalt Matte, Copper in Concentrates, Gold, Soda Ash, Salt, Silver, Coal, Semi-precious stones and the quarrying of building materials. The activities are classified according to the International Standard of Industrial Classification of all Economic Activities, ISIC Rev 4, and the Central Product Classification (CPC) Version 2.

## 4.0 Concepts, definitions and methods

### 4.1 Index of the volume of mining productions

The index of the volume of mining production is a ratio that indicates the increase or decrease of a magnitude. The index form is used not only for intertemporal comparisons, but for comparisons between countries.

The IMP is an important macro-economic indicator which monitors progress and fluctuation of the mineral sector production in the economy. The Index is also known to be an effective tool that measures current production, which indicates relative changes over time in the physical volume of mining production.

### 4.2 Base Period

The base period, usually a year, is the period against which other periods are compared and whose values provide the weights for an index. The base period used in this brief, is 2013 and it is set at 100.

### 4.3 Index weighting

The weight of the mineral group is the ratio of the estimated value of production of a mineral group to the total estimated value of production of the mining industry. The weight of a mineral group reflects the importance of the mineral group in the total mining industry. The relative importance of various mineral groups is different and these differentials need to be reflected while measuring the performance of the entire mining sector.

### 4.4 Seasonal Adjustment

Seasonal adjustment is a means of removing the estimated effects of normal seasonal fluctuations and typical calendar effects from the series so that the effects of other influences on the series can be more clearly recognised. Seasonal adjustment does not aim to remove irregular or non-seasonal influences which may be present in any particular period.

The data produced are not seasonally adjusted. However, there is a further scope of producing and disseminating an additional seasonally adjusted series only when there is a clear statistical evidence and economic interpretation of the seasonal/calendar effects.

### 4.5 Year-on-Year Percentage Change

Year-on-Year percentage change in a variable for any given period is the rate of change expressed over the same period.

### 4.6 Quarter-on-Quarter percentage change

Quarter-on-Quarter percentage change in a variable for any given period is the rate of change expressed over the previous quarter.

### 4.7 Index Contribution (percentage points)

The contribution (percentage points) of a mineral group or mineral to the percentage change in the total mining production for a given period is calculated by multiplying the difference in the index for each mineral group or mineral by the weight of the mineral group or mineral and then dividing by the previous period's total index. It indicates the extent to which each mineral group affects the overall growth of mining production.

## 4.8 Calculation of the Index of Mining Production

To calculate the evolution of physical volume of mining production on a quarterly basis, a Laspeyres indicator, base year 2013=100, was used. The index is calculated as the weighted arithmetic mean of the production relatives in respect of selected items. The weighted average is done to measure the importance of various mineral groups in the mining sector when calculating the comprehensive growth rate of the sector.

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

Where; I is the index,  $R_i$  is the production relative of item  $i$  and  $W_i$  is the weight allocated to item  $i$

The production relative ( $R_i$ ) of the  $i^{th}$  item for the quarter has been calculated by using the formula:

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

Where  $P_{ic}$  is the production of the  $i^{th}$  item in the current quarter and  $P_{i0}$  is the production of the  $i^{th}$  item in the base year.





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