



# INDEX OF THE PHYSICAL VOLUME OF MINING PRODUCTION FOURTH QUARTER 2023

STATS BRIEF

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**STATISTICS BOTSWANA**

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## 1.0 Preface

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

This statistical release presents quarterly Indices of Mining Production (**IMP**) for the period 2013 to the fourth quarter of 2023. Also included in the report are the annual **IMP** for the period 2013 to 2023, derived as the average of the four quarters of the year. The base year is 2013. Data used in this publication are sourced from the Department of Mines under the Ministry of Minerals and Energy.

The Index of Mining Production stood at **101.8** in the fourth quarter of 2023 compared to **97.3** registered in the corresponding quarter of 2022, showing a year-on-year increase of **4.6** percent. On a quarter-on-quarter comparison, the index increased by **3.6** percent from **98.3** recorded during the third quarter of 2023.

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 provides the trend in the local mining sector.

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 2024**

## 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 2013 to the fourth quarter of 2023. This table forms the basis for the discussions under Sub-Section 2.1. Reference, however, is made to this table and other tables throughout the report.

### 2.1 Index of Mining Production

The Index of Mining Production stood at **101.8** during the fourth quarter of 2023 compared to **97.3** registered in the same quarter of the previous year, showing a year-on-year growth of **4.6** percent. The main contributor to the increase in mining production were Diamonds at **5.3** percentage points, as shown in **Table 2**. Copper in Concentrates and Coal were the main negative contributors to mining production, at negative **0.8** and negative **0.2** of a percentage point respectively.

The quarter-on-quarter analysis shows an increase of **3.6** percent from the index of **98.3** in the third quarter of 2023 to **101.8** observed during the period under review.

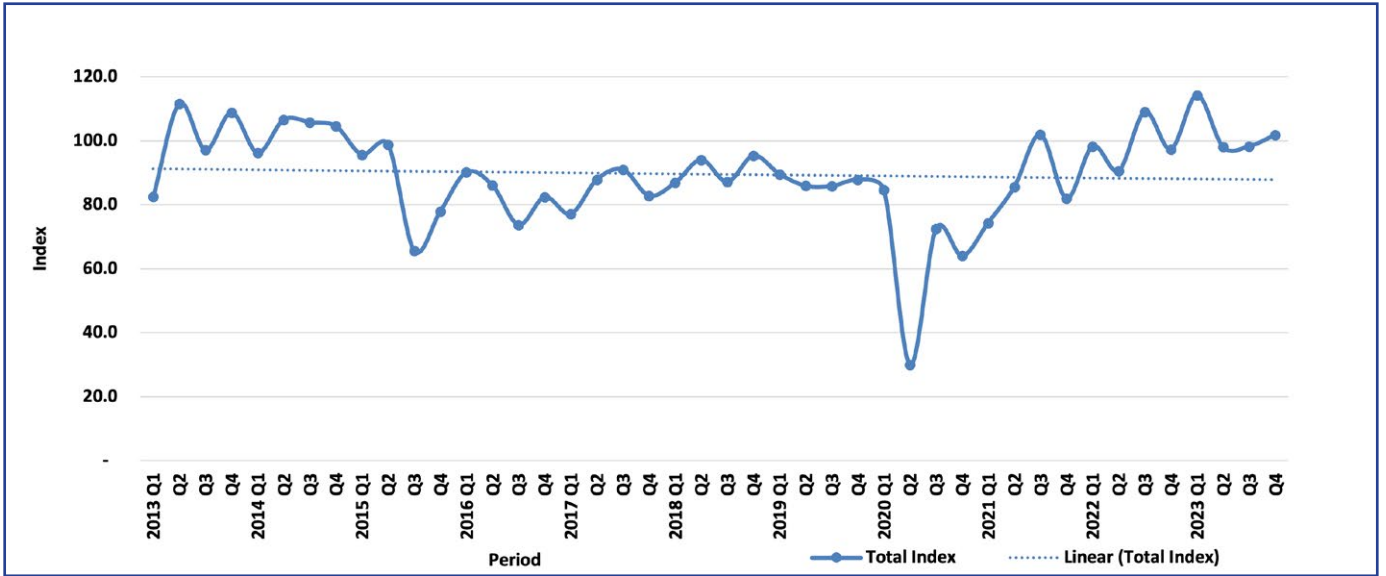
On annual basis, the total index of mining production stood at **103.1**, showing an increase of **4.3** percent in 2023 when compared with **98.8** registered in 2022. The increase in annual mining production followed an increase of **14.9** percent in 2022. The increase in the total mining production was mainly due to the growth realised in Diamonds and Copper in Concentrates which contributed **2.2** and **2.1** percentage points to the total mining production growth (**Table 7**).

Table 1: Key Figures in the Volume of Mining Production: 2013 Q1 – 2023 Q4

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	(8.7)	(4.1)
Q3_2019	85.8	(1.5)	(0.1)
Q4_2019	87.8	(7.9)	2.3
Q1_2020	84.6	(5.5)	(3.6)
Q2_2020	30.0	(65.1)	(64.6)
Q3_2020	72.5	(15.5)	141.9
Q4_2020	64.0	(27.1)	(11.7)
Q1_2021	74.4	(12.1)	16.2
Q2_2021	85.6	185.6	15.0
Q3_2021	101.9	40.6	19.1
Q4_2021	82.0	28.1	(19.6)
Q1_2022	98.3	32.1	19.9
Q2_2022	90.6	5.9	(7.8)
Q3_2022	109.0	6.9	20.3
Q4_2022	97.3	18.7	(10.7)
Q1_2023	114.3	16.2	17.4
Q2_2023	98.1	8.2	(14.2)
Q3_2023	98.3	(9.8)	0.2
Q4_2023	101.8	4.6	3.6

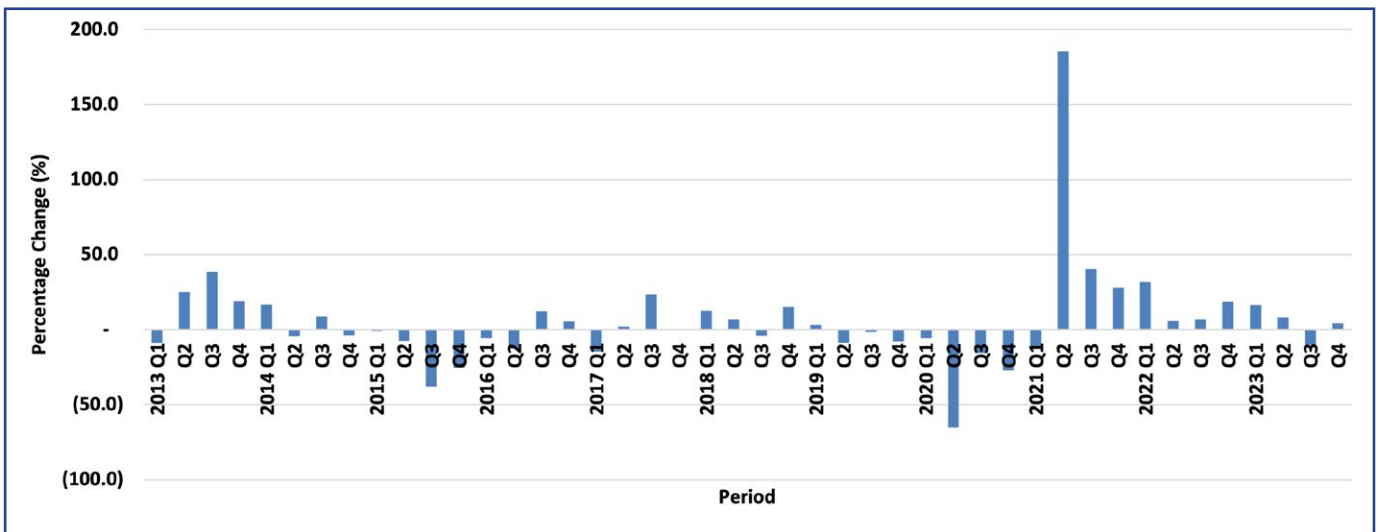
Note: ( ) denotes negative numbers

**Figure 1 :** Total Index of Mining Production: 2013 Q1 - 2023 Q4



**Figure 1** shows the graphical presentation of the Total Index of Mining Production from the first quarter of 2013 to the fourth quarter of 2023. The linear graph shows that, on average, mining production has been decreasing gradually, between the years 2013 and 2023.

**Figure 2:** Year-on-Year Percentage Change in Mining Production: 2013 Q1 – 2023 Q4



## 2.2 Mineral Production

The discussions on mineral production compare production during the fourth quarter of 2023 to the same quarter of 2022, and are based on Table 2, Table 3 and Table 6. Table 5 provides analysis of the mineral production for the quarter under review, in comparison to the preceding quarter.

**Diamond production** increased by 6.2 percent (363 thousand carats) from 5,878 thousand carats during the fourth quarter of 2022 to **6,241 thousand carats** during the period under review. Similarly, quarter-on-quarter analysis shows that production increased by 5.0 percent (297 thousand carats) during the fourth quarter of 2023 from 5,944 thousand carats recorded during the third quarter of 2023.

**Copper in Concentrates** decreased by 6.9 percent (948 tonnes) from 13,707 tonnes registered during the fourth quarter of 2022 to **12, 759 tonnes** during the period under review. Similarly, quarter-on-quarter analysis shows that production declined by 2.5 percent (322 tonnes) during the fourth quarter of 2023 from 13, 081 tonnes produced during the third quarter of 2023.

**Gold production** increased by 1.3 percent (1.0 kilograms), from 71 kilograms extracted during the fourth quarter of 2022 to **72 kilograms** during the period under review. On the other hand, the quarter-on-quarter analysis reflects a decrease of 13.5 percent (11 kilogram) from 83 kilograms during the third quarter of 2023 to 72 kilograms registered during the quarter under review.

**Soda Ash production** increased by 20.7 percent (13,677 tonnes) from 66, 103 tonnes during the fourth quarter of 2022 to **79,780 tonnes** produced during the period under review. Similarly, quarter-on-quarter analysis shows that production increased by 2.6 percent (2,050 tonnes) during the fourth quarter of 2023, from 77, 730 tonnes registered during the third quarter of 2023.

**Salt production** decreased by 7.4 percent (5, 448 tonnes), from **73, 634 tonnes** during the fourth quarter of 2022 to **68, 186 tonnes** during the quarter under review. Similarly, quarter-on-quarter analysis shows that salt production decreased by 56.3 percent (87, 696 tonnes) from 155, 882 tonnes registered in the third quarter of 2023.

**Silver production** decreased by 4.3 percent (431 kilograms) from 9, 947 kilograms in the fourth quarter of 2022 to **9, 517 kilograms** in the period under review. The quarter-on-quarter analysis also shows that production decreased by 6.0 percent (602 kilograms) during the fourth quarter of 2023 from 10, 119 kilograms produced during the third quarter of 2023.

**Coal production** decreased by 34.4 percent (223, 925 tonnes), from 651, 211 tonnes registered during the fourth quarter of 2022, to **427, 286 tonnes** in the current quarter. Similarly, quarter-on-quarter comparison shows that coal production decreased by 18.1 percent (94, 249 tonnes) from 521, 535 tonnes recorded during the third quarter of 2023.

**Copper-Nickel-Cobalt Matte**, recorded zero production during the period under review. The affected mines are still undergoing provisional liquidation.

**Table 2: Index of Mining Production for the Fourth Quarter of 2023 by Mineral Groups and Minerals**

Base:2013=100						
Mineral	Weights (2013)	Oct-Dec 2022	Oct-Dec 2023	Year-on-Year Percentage Change	Contribution (% points) to the Percentage Change in the total Mining Production	
Diamonds	82.5	101.6	107.9	6.2	5.3	
Copper-Nickel-Cobalt Matte	8.6	n.a.	n.a.	n.a.	n.a.	
Copper in Concentrates	5.5	194.8	181.3	(6.9)	(0.8)	
Gold	1.4	23.6	23.9	1.3	0.0	
Soda Ash	0.9	116.0	140.0	20.7	0.2	
Salt	0.5	56.5	52.3	(7.4)	(0.0)	
Silver	0.4	176.1	168.5	(4.3)	(0.0)	
Coal	0.3	174.2	114.3	(34.4)	(0.2)	
<b>Total</b>	<b>100</b>	<b>97.3</b>	<b>101.8</b>	<b>(4.6)</b>	<b>(4.6)</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.

- ( ) denotes negative numbers
- n.a. signifies data not available/no production during the specified period.



Table 3: Physical Volume of Mineral Production: 2013 Q1 - 2023 Q4

Mineral	Diamonds	Copper-Nickel-Cobalt Matte				Copper in Concentrates	Gold	Soda Ash	Salt	Sliver	Coal	
		Matte	Copper	Nickel	Cobalt							
Unit of measure	('000 carats)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	(tonnes)	Kg	(tonnes)	(tonnes)	Kg	(tonnes)	
<b>Year</b>												
<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.	1,239	921	226,667	369,613	n.a.	2,215,782
<b>2018</b>		24,496	n.a.	n.a.	n.a.	n.a.	1,462	1,105	297,237	392,244	n.a.	2,482,313
<b>2019</b>		23,686	n.a.	n.a.	n.a.	n.a.	n.a.	943	264,119	383,779	n.a.	2,110,891
<b>2020</b>		16,868	n.a.	n.a.	n.a.	n.a.	n.a.	851	238,476	418,379	n.a.	1,923,992
<b>2021</b>		22,696	n.a.	n.a.	n.a.	n.a.	11,742	649	261,838	484,628	10,383	2,021,218
<b>2022</b>		24,479	n.a.	n.a.	n.a.	n.a.	44,269	427	285,215	323,303	31,174	2,460,868
<b>2023</b>		25,095	n.a.	n.a.	n.a.	n.a.	54,808	331	262,052	387,956	42,955	2,064,373
<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>	5,804	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
<b>2020</b>	<b>Q1</b>	5,737	n.a.	n.a.	n.a.	n.a.	n.a.	212	64,460	114,245	n.a.	581,910
	<b>Q2</b>	1,925	n.a.	n.a.	n.a.	n.a.	n.a.	177	67,974	100,507	n.a.	368,907
	<b>Q3</b>	4,916	n.a.	n.a.	n.a.	n.a.	n.a.	241	35,883	91,261	n.a.	543,792
	<b>Q4</b>	4,290	n.a.	n.a.	n.a.	n.a.	n.a.	222	70,159	112,366	n.a.	429,382
<b>2021</b>	<b>Q1</b>	5,040	n.a.	n.a.	n.a.	n.a.	n.a.	174	71,638	69,275	n.a.	516,868
	<b>Q2</b>	5,827	n.a.	n.a.	n.a.	n.a.	n.a.	186	57,962	101,776	n.a.	485,642
	<b>Q3</b>	6,500	n.a.	n.a.	n.a.	n.a.	7,517	176	65,195	169,826	6,757	549,227
	<b>Q4</b>	5,329	n.a.	n.a.	n.a.	n.a.	4,225	113	67,043	143,751	3,626	469,481
<b>2022</b>	<b>Q1</b>	6,299	n.a.	n.a.	n.a.	n.a.	7,363	122	75,241	59,714	5,178	547,921
	<b>Q2</b>	5,576	n.a.	n.a.	n.a.	n.a.	10,619	150	61,647	54,124	7,542	599,474
	<b>Q3</b>	6,726	n.a.	n.a.	n.a.	n.a.	12,580	83	82,224	135,831	8,507	662,262
	<b>Q4</b>	5,878	n.a.	n.a.	n.a.	n.a.	13,707	71	66,103	73,634	9,947	651,211
<b>2023</b>	<b>Q1</b>	6,989	n.a.	n.a.	n.a.	n.a.	14,872	70	59,040	92,107	12,582	644,674
	<b>Q2</b>	5,922	n.a.	n.a.	n.a.	n.a.	14,096	105	45,502	71,781	10,737	470,878
	<b>Q3</b>	5,944	n.a.	n.a.	n.a.	n.a.	13,081	83	77,730	155,882	10,119	521,535
	<b>Q4</b>	6,241	n.a.	n.a.	n.a.	n.a.	12,759	72	79,780	68,186	9,517	427,286

Note: 1. Source: Department of Mines

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

**Table 4: Index of the Volume of Mining Production by Mineral Group and Mineral:  
2013 Q1 - 2023 Q4**

Base 2013 = 100									
Year/ Weights	Diamonds	Copper-Nickel- Cobalt Matte	Copper in concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2013	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2014	106.6	67.1	114.0	79.4	117.8	98.9	98.6	114.4	103.3
2015	90.0	69.8	29.8	62.4	106.8	71.7	12.4	138.1	84.5
2016	90.3	68.2	n.a.	69.0	123.1	76.7	n.a.	125.1	83.1
2017	99.2	n.a.	4.4	76.3	99.5	70.9	n.a.	148.1	84.7
2018	105.9	n.a.	5.2	91.6	130.4	75.2	n.a.	166.0	90.8
2019	102.4	n.a.	n.a.	78.1	115.9	73.6	n.a.	141.1	87.3
2020	72.9	n.a.	n.a.	70.5	104.6	80.3	n.a.	128.6	62.8
2021	98.1	n.a.	41.7	53.8	114.9	93.0	45.9	135.1	86.0
2022	105.8	n.a.	157.3	35.3	125.1	62.0	138.0	164.5	98.8
2023	108.5	n.a.	194.7	27.4	115.0	74.4	190.1	138.0	103.1
2013 Q1	80.5	88.0	94.0	76.6	122.9	97	102.3	107.5	82.5
Q2	111.7	112.4	115.5	98.5	89.0	116.8	118.1	74.6	111.6
Q3	95.8	107.8	93.2	102.4	112.9	118.6	108	113.8	97.1
Q4	111.9	91.9	97.4	122.5	75.2	67.6	71.7	104.1	108.8
2014 Q1	101.5	46.8	96.9	96.4	109	68.6	73.2	95.0	96.2
Q2	110.0	73.4	114.7	74.3	115.6	100.8	88.5	123.9	106.6
Q3	109.3	51.6	136	84.5	117.3	116.2	135.4	130.6	105.7
Q4	105.5	96.5	108.5	62.3	129.5	109.7	97.5	108.3	104.5
2015 Q1	99.1	87.6	74.3	51.7	73.4	61.6	49.6	126.9	95.6
Q2	104.1	105.2	30.3	49.7	96.9	61.1	n.a.	135.1	98.7
Q3	72.7	19.9	14.7	77.9	125.6	106.6	n.a.	154.8	65.6
Q4	84.0	66.6	n.a.	70.3	131.2	80.9	n.a.	135.6	77.9
2016 Q1	93.9	119	n.a.	60	117.9	67.3	n.a.	114.4	90.1
Q2	91.7	93.4	n.a.	80.9	84	56.5	n.a.	93.9	86.0
Q3	79.6	60.4	n.a.	64.3	139.3	86.9	n.a.	146.9	73.7
Q4	96.1	n.a.	n.a.	70.6	150.9	96.0	n.a.	145.1	82.4
2017 Q1	91.3	n.a.	n.a.	46.7	71.9	46.0	n.a.	131.2	77.1
Q2	103.3	n.a.	9.8	69.2	62.8	40.6	n.a.	153.8	87.9
Q3	105.8	n.a.	4.8	98.5	126.1	117.6	n.a.	156.1	91.0
Q4	96.3	n.a.	3.0	90.8	137	79.5	n.a.	151.4	82.8
2018 Q1	101.8	n.a.	1.9	78.9	113.2	66.0	n.a.	159.7	86.9
Q2	110.0	n.a.	7.8	104.1	89.8	45.2	n.a.	177.7	94.0
Q3	100.7	n.a.	8.9	87.8	168.7	80.2	n.a.	178.6	87.1
Q4	111.1	n.a.	2.2	95.5	149.9	109.6	n.a.	147.8	95.3
2019 Q1	105.1	n.a.	n.a.	65.6	129.8	85.5	n.a.	148.3	89.6
Q2	100.8	n.a.	n.a.	89.5	89.9	66.5	n.a.	166.5	85.9
Q3	100.4	n.a.	n.a.	87.0	134.1	66.4	n.a.	127.4	85.8
Q4	103.3	n.a.	n.a.	70.5	109.7	76.0	n.a.	122.3	87.8
2020 Q1	99.2	n.a.	n.a.	70.3	113.1	87.7	n.a.	155.6	84.6
Q2	33.3	n.a.	n.a.	58.7	119.3	77.1	n.a.	98.7	30.0
Q3	85.0	n.a.	n.a.	79.8	63.0	70.0	n.a.	145.4	72.5
Q4	74.2	n.a.	n.a.	73.4	123.1	86.2	n.a.	114.8	64.0
2021Q1	87.1	n.a.	n.a.	57.7	125.7	57.8	n.a.	138.2	74.4
Q2	100.8	n.a.	n.a.	61.8	101.7	78.1	n.a.	129.9	85.6
Q3	112.4	n.a.	106.8	58.3	114.4	130.3	119.6	146.9	101.9
Q4	92.1	n.a.	60.0	37.4	117.7	110.3	64.2	125.6	82.0
2022 Q1	108.9	n.a.	104.4	40.4	132.1	45.8	91.7	146.5	98.3
Q2	96.4	n.a.	150.9	49.9	108.2	41.5	133.5	160.3	90.6
Q3	116.3	n.a.	178.8	27.5	144.3	104.2	150.6	177.1	109.0
Q4	101.6	n.a.	194.8	23.6	116.0	56.5	176.1	174.2	97.3
2023 Q1	120.8	n.a.	211.4	23.1	103.6	70.7	222.7	172.4	114.3
Q2	102.4	n.a.	200.3	35.0	79.9	55.1	190.1	125.9	98.1
Q3	102.8	n.a.	185.9	27.6	136.4	119.6	179.1	139.5	98.3
Q4	107.9	n.a.	181.3	23.9	140.0	52.3	168.5	114.3	101.8

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: 2013 Q1 - 2023 Q4**

BASE 2013 = 100										
Year/ Weights	Diamonds	Copper-Nickel- Cobalt Matte	Copper in Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total	
	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0	
2013 Q1	(15.9)	1.3	156.6	(17.7)	20.5	21.4	...	(27.1)	(9.7)	
Q2	38.7	27.7	22.9	28.6	(27.6)	20.4	15.5	(30.6)	35.3	
Q3	(14.3)	(4.1)	(19.3)	4.0	26.8	1.5	(8.6)	52.6	(12.9)	
Q4	16.8	(14.7)	4.5	19.6	(33.4)	(43.0)	(33.6)	(8.6)	12.0	
2014 Q1	(9.3)	(49.1)	(0.5)	(21.4)	44.9	1.5	2.1	(8.7)	(11.5)	
Q2	8.4	56.9	18.3	(22.9)	6.0	47.0	20.8	30.5	10.8	
Q3	(0.7)	(29.7)	18.6	13.8	1.5	15.3	53.0	5.4	(0.8)	
Q4	(3.4)	86.8	(20.3)	(26.3)	10.4	(5.6)	(28.0)	(17.1)	(1.2)	
2015 Q1	(6.0)	(9.2)	(31.5)	(17.0)	(43.3)	(43.9)	(49.1)	17.2	(8.6)	
Q2	5.0	20.1	(59.2)	(3.8)	31.9	(0.7)	(100.0)	6.4	3.3	
Q3	(30.1)	(81.1)	(51.7)	56.7	29.6	74.4	n.a.	14.6	(33.5)	
Q4	15.5	235.3	(100.0)	(9.7)	4.5	(24.1)	n.a.	(12.4)	18.7	
2016 Q1	11.7	78.7	n.a.	(14.7)	(10.1)	(16.9)	n.a.	(15.6)	15.7	
Q2	(2.3)	(21.5)	n.a.	34.8	(28.8)	(16.0)	n.a.	(18.0)	(4.5)	
Q3	(13.3)	(35.4)	n.a.	(20.5)	65.9	53.7	n.a.	56.5	(14.3)	
Q4	20.8	(100.0)	n.a.	9.8	8.3	10.4	n.a.	(1.2)	11.8	
2017 Q1	(5.0)	n.a.	n.a.	(33.8)	(52.4)	(52.1)	n.a.	(9.6)	(6.4)	
Q2	13.2	n.a.	n.a.	48.2	(12.7)	(11.8)	n.a.	17.2	13.9	
Q3	2.4	n.a.	(50.7)	41.9	100.9	190.0	n.a.	1.5	3.5	
Q4	(9.0)	n.a.	(38.2)	(7.6)	8.6	(32.4)	n.a.	(3.0)	(9.0)	
2018 Q1	5.7	n.a.	(35.7)	(13.2)	(17.3)	(17.0)	n.a.	5.5	4.9	
Q2	8.1	n.a.	305.2	32.0	(20.6)	(31.4)	n.a.	11.2	8.3	
Q3	(8.4)	n.a.	14.3	(15.6)	87.8	77.2	n.a.	0.5	(7.4)	
Q4	10.3	n.a.	(75.2)	8.7	(11.2)	36.6	n.a.	(17.2)	9.4	
2019 Q1	(5.4)	n.a.	(100.0)	(31.3)	(13.4)	(21.9)	n.a.	0.3	(6.0)	
Q2	(4.2)	n.a.	n.a.	36.6	(30.7)	(22.2)	n.a.	12.3	(4.1)	
Q3	(0.4)	n.a.	n.a.	(2.9)	49.2	(0.2)	n.a.	(23.5)	(0.1)	
Q4	2.9	n.a.	n.a.	(18.9)	(18.2)	14.5	n.a.	(4.1)	2.3	
2020 Q1	(4.0)	n.a.	n.a.	(0.3)	3.1	15.3	n.a.	27.3	(3.6)	
Q2	(66.4)	n.a.	n.a.	(16.5)	5.5	(12.0)	n.a.	(36.6)	(64.6)	
Q3	155.4	n.a.	n.a.	36.0	(47.2)	(9.2)	n.a.	47.4	141.9	
Q4	(12.7)	n.a.	n.a.	(8.0)	95.5	23.1	n.a.	(21.0)	(11.7)	
2021 Q1	17.5	n.a.	n.a.	(21.4)	2.1	(38.3)	n.a.	20.4	16.2	
Q2	15.6	n.a.	n.a.	7.0	(19.1)	46.9	n.a.	(6.0)	15.0	
Q3	11.6	n.a.	...	(5.5)	12.5	66.9	...	13.1	19.1	
Q4	(18.0)	n.a.	(43.8)	(35.9)	2.8	(15.4)	(46.3)	(14.5)	(19.6)	
2022 Q1	18.2	n.a.	74.3	8.1	12.2	(58.5)	42.8	16.7	19.9	
Q2	(11.5)	n.a.	44.2	23.4	(18.1)	(9.4)	45.6	9.4	(7.8)	
Q3	20.6	n.a.	18.5	(44.9)	33.4	151.0	12.8	10.5	20.3	
Q4	(12.6)	n.a.	9.0	(14.1)	(19.6)	(45.8)	16.9	(1.7)	(10.7)	
2023 Q1	18.9	n.a.	8.5	(2.0)	(10.7)	25.1	26.5	(1.0)	17.4	
Q2	(15.3)	n.a.	(5.2)	51.2	(22.9)	(22.1)	(14.7)	(27.0)	(14.2)	
Q3	0.4	n.a.	(7.2)	(20.9)	70.8	117.2	(5.8)	10.8	0.2	
Q4	5.0	n.a.	(2.5)	(13.5)	2.6	(56.3)	(6.0)	(18.1)	3.6	

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: 2013 Q1 - 2023 Q4**

Base 2013 = 100										
Year/ Weights	Diamonds	Copper Nickel- Cobalt Matte	Copper in Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total	
	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0	
2013	12.2	24.2	221.9	(12.4)	(8.3)	41.8	...	2.8	17.3	
2014	6.6	(32.9)	14.0	(20.6)	17.8	(1.1)	(1.4)	14.4	3.3	
2015	(15.6)	4.1	(71.5)	(21.4)	(9.4)	(21.5)	(87.4)	20.7	(18.2)	
2016	0.3	(2.3)	(100.0)	10.5	15.2	(1.1)	(100.0)	(9.4)	(1.6)	
2017	9.8	(100.0)	...	10.7	(19.2)	(7.6)	n.a.	18.4	2.0	
2018	6.8	n.a.	18.0	20.0	31.1	6.1	n.a.	12.0	7.3	
2019	(3.3)	n.a.	(100.0)	(14.7)	(11.1)	(2.2)	n.a.	(15.0)	(3.9)	
2020	(28.8)	n.a.	n.a.	(9.7)	(9.7)	9.0	n.a.	(8.9)	(28.1)	
2021	34.6	n.a.	...	(23.7)	9.8	15.8	...	5.1	37.0	
2022	7.9	n.a.	191.3	(34.3)	8.9	(33.3)	200.3	21.8	12.7	
2023	2.5	n.a.	23.8	(22.4)	(8.1)	20.0	37.8	(16.1)	4.3	
2013 Q1	(13.0)	(20.1)	294.5	(43.1)	16.1	47.4	...	71.6	(8.7)	
Q2	20.9	12.8	405.1	(17.8)	(10.3)	49.3	...	24.1	25.2	
Q3	26.4	320.7	127.4	(5.9)	(12.6)	103.7	...	(4.2)	38.4	
Q4	16.9	5.7	165.9	31.6	(26.3)	(15.4)	...	(29.4)	19.1	
2014 Q1	26.0	(46.8)	3.1	25.8	(11.4)	(29.3)	(28.4)	(11.7)	16.7	
Q2	(1.5)	(34.7)	(0.7)	(24.6)	29.8	(13.7)	(25.1)	66.1	(4.5)	
Q3	14.1	(52.1)	46.0	(17.5)	3.9	(2.0)	25.4	14.7	8.9	
Q4	(5.7)	5.0	11.4	(49.1)	72.2	62.3	35.9	4.0	(4.0)	
2015 Q1	(2.3)	87.3	(23.3)	(46.3)	(32.6)	(10.3)	(32.3)	33.7	(0.7)	
Q2	(5.4)	43.3	(73.5)	(33.0)	(16.2)	(39.4)	(100.0)	9.0	(7.4)	
Q3	(33.4)	(61.5)	(89.2)	(7.8)	7.1	(8.3)	(100.0)	18.6	(37.9)	
Q4	(20.4)	(31.0)	(100.0)	12.9	1.4	(26.2)	(100.0)	25.3	(25.5)	
2016 Q1	(5.3)	35.8	(100.0)	16.0	60.6	9.3	(100.0)	(9.8)	(5.7)	
Q2	(11.9)	(11.2)	(100.0)	62.7	(13.3)	(7.5)	n.a.	(30.5)	(12.9)	
Q3	9.4	204.0	(100.0)	(17.4)	10.9	(18.4)	n.a.	(5.1)	12.3	
Q4	14.3	(100.0)	n.a.	0.4	15.0	18.6	n.a.	7.0	5.8	
2017 Q1	(2.7)	(100.0)	n.a.	(22.1)	(39.0)	(31.7)	n.a.	14.7	(14.4)	
Q2	12.6	(100.0)	n.a.	(14.3)	(25.2)	(28.3)	n.a.	63.9	2.1	
Q3	32.9	(100.0)	n.a.	52.9	(9.5)	35.3	n.a.	6.3	23.4	
Q4	0.2	n.a.	...	28.7	(9.3)	(17.3)	n.a.	4.3	0.5	
2018 Q1	11.5	n.a.	...	68.7	57.4	43.5	n.a.	21.7	12.6	
Q2	6.4	n.a.	(20.6)	50.2	43.1	11.6	n.a.	15.5	7.0	
Q3	(4.8)	n.a.	83.8	(10.6)	33.8	(31.8)	n.a.	14.4	(4.2)	
Q4	15.4	n.a.	(26.2)	5.1	9.4	37.9	n.a.	(2.4)	15.1	
2019 Q1	3.3	n.a.	(100.0)	(16.9)	14.6	29.6	n.a.	(7.1)	3.1	
Q2	(8.4)	n.a.	(100.0)	(14.0)	0.1	47.0	n.a.	(6.3)	(8.7)	
Q3	(0.4)	n.a.	(100.0)	(1.0)	(20.5)	(17.2)	n.a.	(28.6)	(1.5)	
Q4	(7.1)	n.a.	(100.0)	(26.1)	(26.8)	(30.6)	n.a.	(17.3)	(7.9)	
2020 Q1	(5.7)	n.a.	n.a.	7.2	(12.8)	2.5	n.a.	4.9	(5.5)	
Q2	(67.0)	n.a.	n.a.	(34.5)	32.7	15.9	n.a.	(40.7)	(65.1)	
Q3	(15.3)	n.a.	n.a.	(8.3)	(53.1)	5.5	n.a.	14.1	(15.5)	
Q4	(28.2)	n.a.	n.a.	4.1	12.2	13.4	n.a.	(6.1)	(27.1)	
2021 Q1	(12.1)	n.a.	n.a.	(17.9)	11.1	(39.4)	n.a.	(11.2)	(12.1)	
Q2	202.7	n.a.	n.a.	5.2	(14.7)	1.3	n.a.	31.6	185.6	
Q3	32.2	n.a.	...	(26.9)	81.7	86.1	...	1.0	40.6	
Q4	24.2	n.a.	...	(49.1)	(4.4)	27.9	...	9.3	28.1	
2022 Q1	25.0	n.a.	...	(30.0)	5.0	(13.8)	...	6.0	32.1	
Q2	(4.3)	n.a.	...	(19.2)	6.4	(46.8)	...	23.4	5.9	
Q3	3.5	n.a.	67.4	(52.9)	26.1	(20.0)	25.9	20.6	6.9	
Q4	10.3	n.a.	224.4	(36.8)	(1.4)	(48.8)	174.3	38.7	18.7	
2023 Q1	10.9	n.a.	102.0	(42.8)	(21.5)	54.2	143.0	17.7	16.2	
Q2	6.2	n.a.	32.7	(29.9)	(26.2)	32.6	42.4	(21.5)	8.2	
Q3	(11.6)	n.a.	4.0	0.6	(5.5)	14.8	19.0	(21.2)	(9.8)	
Q4	6.2	n.a.	(6.9)	1.3	20.7	(7.4)	(4.3)	(34.4)	4.6	

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									
Year/ Weights	Diamonds	Copper-Nickel- Cobalt Matte	Copper in Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total
	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
<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>2020</b>	(27.8)	0.0	0.0	(0.1)	(0.1)	0.0	0.0	(0.0)	<b>(28.1)</b>
<b>2021</b>	33.1	0.0	3.6	(0.4)	0.1	0.1	0.3	0.0	<b>37.0</b>
<b>2022</b>	7.4	0.0	7.4	(0.3)	0.1	(0.2)	0.5	0.1	<b>14.9</b>
<b>2023</b>	2.2	0.0	2.1	(0.1)	(0.1)	0.1	0.2	(0.1)	<b>4.3</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>(8.7)</b>
<b>Q3</b>	(0.3)	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>
<b>2020 Q1</b>	(5.5)	0.0	0.0	0.1	(0.2)	0.0	0.0	0.0	<b>(5.5)</b>
<b>Q2</b>	(64.8)	0.0	0.0	(0.5)	0.3	0.1	0.0	(0.2)	<b>(65.1)</b>
<b>Q3</b>	(14.8)	0.0	0.0	(0.1)	(0.7)	0.0	0.0	0.1	<b>(15.5)</b>
<b>Q4</b>	(27.3)	0.0	0.0	0.0	0.1	0.1	0.0	(0.0)	<b>(27.1)</b>
<b>2021 Q1</b>	(11.7)	0.0	0.0	(0.2)	0.1	(0.2)	0.0	(0.1)	<b>(12.0)</b>
<b>Q2</b>	185.7	0.0	0.0	0.1	(0.5)	0.0	0.0	0.3	<b>185.6</b>
<b>Q3</b>	31.2	0.0	8.1	(0.4)	0.6	0.4	0.7	0.0	<b>40.6</b>
<b>Q4</b>	23.1	0.0	5.1	(0.8)	(0.1)	0.2	0.4	0.0	<b>28.1</b>
<b>2022 Q1</b>	24.1	0.0	7.7	(0.3)	0.1	(0.0)	0.6	0.0	<b>32.1</b>
<b>Q2</b>	(4.2)	0.0	9.7	(0.2)	0.1	(0.2)	0.7	0.1	<b>5.9</b>
<b>Q3</b>	3.2	0.0	3.9	(0.4)	0.3	(0.1)	0.1	0.1	<b>6.9</b>
<b>Q4</b>	9.5	0.0	9.0	(0.2)	(0.0)	(0.3)	0.6	0.1	<b>18.7</b>
<b>2023 Q1</b>	10.0	0.0	5.9	(0.2)	(0.3)	0.1	0.6	0.1	<b>16.2</b>
<b>Q2</b>	5.4	0.0	3.0	(0.2)	(0.3)	0.1	0.3	(0.1)	<b>8.2</b>
<b>Q3</b>	(10.2)	0.0	0.4	0.0	(0.1)	0.1	0.1	(0.1)	<b>(9.8)</b>
<b>Q4</b>	5.3	0.0	(0.8)	0.0	0.2	(0.0)	(0.0)	(0.2)	<b>4.6</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. With the discovery and successful exploitation of a sizable diamond kimberlite deposit at Orapa in 1971 and the production of copper and nickel at Selebi Phikwe in 1973, the economy transformed into a mineral dependent one. The Orapa mine was, by global standards, an exceptional deposit. In 1982, a second and much larger and richer diamond mine was opened at Jwaneng. Since the early 1980s, the mining industry has been the largest contributor to real Gross Domestic Product (GDP), contributing between 20 and 50 percent.

This mining sector, particularly the diamond industry, has played a pivotal role in shaping Botswana's economic landscape and development over the years. The high quality diamonds have been a resource instrumental in fueling economic growth, foreign exchange earnings, and job creation. Revenues generated from the sale of diamonds are reinvested into critical areas such as Education, Healthcare, and infrastructure development.

With such a significant contribution to the economic growth, 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

Data from mining establishments in the country are included in the mining production statistics published by the Department of Mines under the Ministry of Minerals and Energy. Statistics Botswana receives the data from the Department of Mines once data collection is complete. The mineral production data is used to compute the volume of mining production indices. After cleaning the data, producing statistical tables and reports in accordance with international standards and guidelines, Statistics Botswana packages and disseminate the information to consumers through the website.

### 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, which can also be referred to as the production index is a statistical measure of the change in the volume of production. The production index of a mineral group is the ratio between the volume of production of a mineral group in a given period and the volume of production of the same mineral group in the base period. The index form is used not only for intertemporal comparisons, but also for comparisons between countries.

It is worth noting that 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, which is typically one year, serves as the benchmark for comparing other periods and provides the weights for an index based on its values. 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 Rounding-off of figures

The figures in the tables have, where necessary, been rounded off to the nearest number shown. There may, be slight discrepancies between the sums of the constituent items and the totals shown.

### 4.9 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.

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

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





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