

INDICES OF THE PHYSICAL VOLUME OF MINING PRODUCTION

No: 2015/2

STATS BRIEF FIRST QUARTER 2015
STATISTICS BOTSWANA

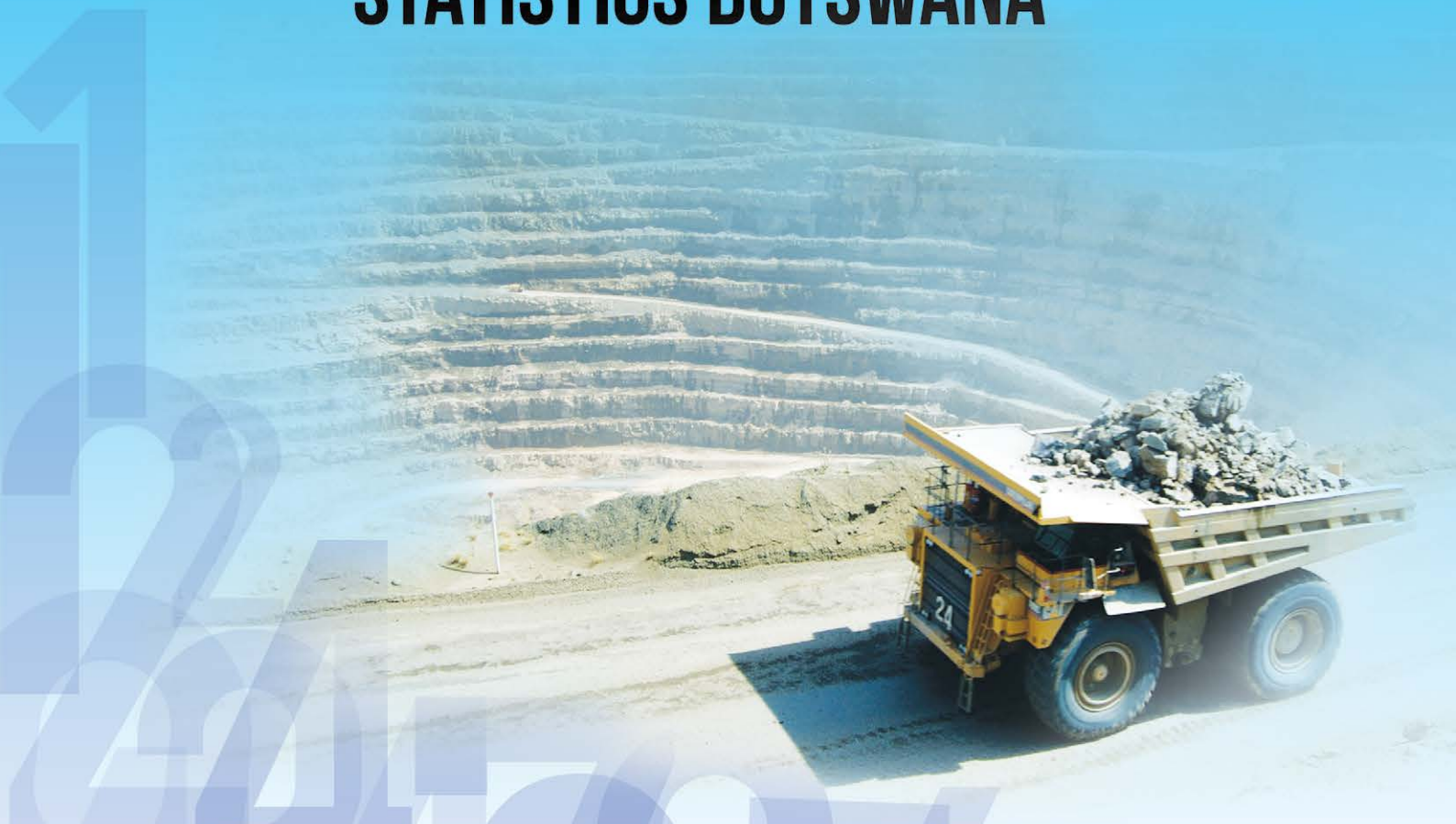


Table of Contents

1.0	Preface.....	1
2.0	Summary of Findings.....	2
2.1	Indices of Mining Production.....	2
2.2	Mineral Production.....	2
3.0	Technical Notes.....	10
3.1	Background.....	10
3.2	Data Collection.....	10
3.3	Scope of the Survey.....	10
3.4	Concepts, Definitions and Methods.....	10
3.5	Base Period.....	10
3.6	Index Weighting.....	10
3.7	Year-on-Year Percentage Change.....	11
3.8	Index Contribution (Percentage Points).....	11
3.9	Calculation of the Index of Mining Production.....	11

4.0 List of Tables

Table 1:	Key Figures in the Volume of Mining Production.....	2
Table 2:	Index of Mining Production for the latest Quarter (Q4 of 2014) by Mineral Groups and Minerals.....	3
Table 3:	Index of the Volume of Mining Production by Mineral Group and Mineral.....	4
Table 4:	Year-on-Year Percentage Change in the Volume of Mining Production by Mineral Group and Mineral (Base 2013 = 100).....	6
Table 5:	Contribution of each Mineral Group and Mineral to the Year-on-Year Percentage Change in the Volume of Mining Production (Base 2013 = 100).....	8

1.0 Preface

This statistical release presents quarterly Indices of Mining Production (IMP) for the period 2003 to the first quarter of 2015. Also carried in the report is the annual IMP for the period 2003 to 2014, derived as the average of the four quarters of the year. This report uses 2013 as a reference/base year. Data used in this publication is sourced from the Department of Mines; Ministry of Minerals, Energy and Water Resources.

For more information, contact the Directorate of Stakeholder Relations on 3671300. All Statistics Botswana outputs/publications are available on the website at www.cso.gov.bw and at the Statistics Botswana Library (Head-Office, Gaborone).

We 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.



A.N. Majelantle
Statistician General

July 2015

2.0 Summary of Findings

Data used in this Statistics Brief are not seasonally adjusted.

Table 1 presents key figures on the summary of findings for Indices of Mining Production (IMP). This table forms the basis of the discussion under sub-section 2.1. Reference however, will be made to this table and other tables throughout the report.

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	95.4	(0.9)	(8.7)

Note: () denotes negative numbers

2.1 Indices of Mining Production

The Index of Mining production stood at 95.4 during the first quarter of 2015, showing a negative year-on-year growth of 0.9 percent. This decline was largely influenced by the year-on-year percentage change of diamonds (2.5 percent) as the mineral constitutes 82.5 percent of the total weight of the index (Table 2).

The three largest year-on-year production decrease recorded was for Gold, Soda Ash and Silver falling by 46.3 percent, 32.6 percent and 32.3 percent respectively. However, these three combined do not contribute a lot in weight (2.7) to the total index weight and their large percentage changes will not have much influence on the overall index change.

Diamonds were the main contributor to the fall in the growth of mining production with a decline of 2.2 percentage points followed by Copper in Concentrates with a decline of 1.3 percentage points (Table 2). Copper-Nickel-Cobalt Matte and Coal were the only positive growth contributors having recorded 3.6 and 0.1 percentage points respectively, as indicated in Tables 2 and 5. As the weight of these two combined is minimal (8.9) as compared to that of diamonds (82.5), their positive contribution does not result in a notable change to the overall index percentage change.

As compared to the fourth quarter of 2014, IMP declined by 8.7 percent from 104.5 during 2014 fourth quarter to 95.4 during 2015 first quarter (Table 1).

2.2 Mineral Production

Discussions on mineral production compare production during the first quarter of 2015 to the same quarter of 2014 and are based on Table 2.

Diamond production declined by 2.5 percent in the first quarter of 2015 as compared to the first quarter of 2014. This decline is attributable to mining of lower grade ore from one of the key operating mines.

Copper-Nickel-Cobalt Matte production rose by 87.3 percent in the first quarter of 2015. Even though production increased substantially, the furnace did not work at full capacity this quarter as there were break downs and boiler tube leaks.

Copper in Concentrates production decreased by 23.3 percent in the first quarter of 2015. This was attributable to a lower than expected feed grade from mining which resulted in low copper recovery. Production was also affected by the shutdown of mining operations at the Boseto Mine which occurred at the end of February 2015.

Gold production exhibited the largest decline of 46.3 percent during the first quarter of 2015. This decline was as a result of poor recovery and lower than expected gold recoveries from the ore.

Soda Ash production decreased by 32.6 percent in the first quarter of 2015 as compared to the first quarter of 2014. This was primarily due to the planned shutdown in the third month of the quarter in preparation for the plant maintenance.

Salt production declined by 10.3 percent in the first quarter of 2015 as compared to the corresponding quarter of 2014. The decline in production was attributable to the planned shutdown in the third month of the quarter in preparation for the plant maintenance.

Silver production decreased by 32.3 percent in the first quarter of 2015. This was attributable to the shutdown of mining operations at the Boseto Mine which occurred at the end of February 2015.

Coal production grew by 33.7 percent in the first quarter of 2015 as compared to the corresponding quarter of 2014. It must be noted that coal is produced for both the local and external markets. Most of the coal produced during the first quarter of 2015 was sold to the international market since the Morupule Power Plant which uses coal to generate electricity was operating at less capacity owing to operational challenges to run the electricity generation units.

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

Base:2013=100					
	Weights (2013)	Jan-Mar, 2014	Jan-Mar, 2015	Year-on-Year Percentage Change	Contribution (% points) to the percentage change in the total mining production
Diamonds	82.5	101.5	98.9	(2.5)	(2.2)
Copper-Nickel-Cobalt Matte	8.6	46.8	87.6	87.3	3.6
Copper in Concentrates	5.5	96.9	74.3	(23.3)	(1.3)
Gold	1.4	96.4	51.7	(46.3)	(0.6)
Soda Ash	0.9	109.0	73.4	(32.6)	(0.3)
Salt	0.5	68.6	61.6	(10.3)	(0.0)
Silver	0.4	73.2	49.6	(32.3)	(0.1)
Coal	0.3	95.0	126.9	33.7	0.1
Total	100.0	96.2	95.4	(0.9)	(0.9)

Note: 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

Table 3: 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	
Weights	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2003	131.3	117.1	n.a.	n.a.	102.8	44.0	n.a.	55.0	119.6
2004	134.2	99.4	n.a.	n.a.	116.1	41.6	n.a.	60.9	120.6
2005	137.6	133.7	n.a.	268.1	123.7	37.7	n.a.	65.8	130.1
2006	148.2	126.6	n.a.	250.4	104.8	40.0	n.a.	64.3	137.9
2007	145.4	111.4	n.a.	220.0	122.7	50.4	n.a.	55.4	134.0
2008	140.9	118.1	n.a.	263.2	115.6	32.8	n.a.	60.8	131.3
2009	76.7	121.1	n.a.	134.7	93.0	45.5	n.a.	49.3	76.7
2010	95.2	110.7	12.5	147.0	105.7	70.0	n.a.	66.1	92.2
2011	99.0	71.9	22.1	129.4	113.1	85.7	n.a.	52.7	92.4
2012	89.1	80.5	31.1	114.1	109.1	70.5	n.a.	97.2	85.3
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
2003 Q1	102.3	67.7	n.a.	n.a.	98.4	40.3	n.a.	51.6	91.3
Q2	134.6	143.4	n.a.	n.a.	111.0	50.4	n.a.	61.6	124.7
Q3	149.6	137.2	n.a.	n.a.	103.7	50.3	n.a.	59.8	136.5
Q4	138.7	120.0	n.a.	n.a.	97.9	35.1	n.a.	47.0	125.8
2004 Q1	99.9	133.3	n.a.	n.a.	90.3	39.2	n.a.	55.2	95.0
Q2	108.5	78.6	n.a.	n.a.	102.7	49.4	n.a.	60.7	97.5
Q3	166.1	43.8	n.a.	n.a.	128.8	37.9	n.a.	61.7	142.3
Q4	162.1	142.0	n.a.	n.a.	142.8	39.9	n.a.	66.0	147.5
2005 Q1	123.0	142.5	n.a.	304.3	132.7	43.2	n.a.	64.6	119.5
Q2	141.2	133.1	n.a.	352.6	108.7	33.2	n.a.	60.8	134.0
Q3	141.0	135.5	n.a.	215.4	130.7	36.9	n.a.	66.1	132.4
Q4	145.3	123.8	n.a.	200.1	122.8	37.5	n.a.	71.9	134.7
2006 Q1	143.8	115.5	n.a.	230.7	74.9	29.7	n.a.	66.9	132.7
Q2	136.8	131.1	n.a.	261.9	113.7	41.9	n.a.	67.4	129.1
Q3	154.1	136.1	n.a.	260.2	138.6	56.4	n.a.	59.9	144.0
Q4	158.3	123.8	n.a.	248.6	92.2	31.9	n.a.	63.2	145.8

Table 3 continued ... Index of the Volume of Mining Production by Mineral Group and Mineral

Base 2013 = 100									
	Diamonds	Copper-Nickel-Cobalt Matte	Copper Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
Weights	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2007 Q1	141.9	123.6	n.a.	174.0	100.4	14.8	n.a.	59.4	131.2
Q2	141.8	128.2	n.a.	249.6	122.4	56.4	n.a.	56.0	133.0
Q3	157.8	44.9	n.a.	228.4	147.3	70.3	n.a.	57.5	139.0
Q4	140.1	149.1	n.a.	228.1	120.6	60.1	n.a.	48.7	133.0
2008 Q1	140.7	130.0	n.a.	217	113.8	31.3	n.a.	61.3	131.6
Q2	138.9	111.2	n.a.	257.6	100.7	21.1	n.a.	59.3	128.8
Q3	158.0	124.3	n.a.	266.4	123.5	44.3	n.a.	62.0	146.2
Q4	126.0	106.8	n.a.	311.7	124.5	34.5	n.a.	60.7	118.8
2009 Q1	n.a	92.5	n.a.	140.2	86.7	43.4	n.a.	58.7	11.0
Q2	67.7	131.0	n.a.	155.5	67.4	32.6	n.a.	50.2	70.1
Q3	101.3	136.9	n.a.	133.8	116.8	43.5	n.a.	45.6	98.5
Q4	137.7	123.9	n.a.	109.4	101.2	62.7	n.a.	42.8	127.0
2010 Q1	79.4	127.4	6.1	134.7	103.7	58.5	n.a.	63.4	80.0
Q2	98.1	81.8	10.5	135.0	91.2	56.7	n.a.	63.8	91.6
Q3	103.5	134.1	16.8	160.9	109.8	95.8	n.a.	71.9	101.7
Q4	99.7	99.7	18.6	157.6	118	68.9	n.a.	65.2	95.5
2011 Q1	93.3	95.2	15.7	111.1	98.7	71.8	n.a.	55.6	88.9
Q2	102.5	85.9	23.8	111.8	101.6	69.5	n.a.	72.4	96.2
Q3	119.8	7.2	25.8	134.3	130.9	106.5	n.a.	56.9	104.6
Q4	80.3	99.3	23.1	160.4	121.4	94.7	n.a.	25.8	79.9
2012 Q1	92.5	110.1	23.8	134.6	105.9	65.8	n.a.	62.6	90.3
Q2	92.4	99.6	22.9	119.8	99.2	78.3	n.a.	60.1	89.1
Q3	75.8	25.6	41.0	108.9	129.1	58.2	n.a.	118.8	70.2
Q4	95.7	86.9	36.6	93.1	102.1	79.9	n.a.	147.4	91.4
2013 Q1	80.5	88.0	94.0	76.6	122.9	97.0	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	108.0	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	109.0	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	136.0	84.5	117.3	119.5	135.4	130.6	105.8
Q4	105.5	96.5	108.5	62.3	129.5	109.7	97.5	108.3	104.5
2015 Q1	98.9	87.6	74.3	51.7	73.4	61.6	49.6	126.9	95.4

Note: 1. 2015 Figures are provisional

2. n.a signifies data not available/no production at the specified period,

3. ...data is not zero but the figure is not significant enough to be measured

Table 4: 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 Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
Weights	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2004	2.2	(15.1)	n.a.	n.a.	13.0	(5.5)	n.a.	10.7	0.8
2005	2.6	34.5	n.a.	...	6.5	(9.4)	n.a.	8.1	7.9
2006	7.7	(5.3)	n.a.	(6.6)	(15.3)	6.1	n.a.	(2.3)	6.0
2007	(1.9)	(12.0)	n.a.	(12.1)	17.0	26.1	n.a.	(14.0)	(2.8)
2008	(3.1)	6.0	n.a.	19.6	(5.7)	(34.9)	n.a.	9.8	(2.0)
2009	(45.6)	2.5	n.a.	(48.8)	(19.6)	38.8	n.a.	(18.9)	(41.6)
2010	24.2	(8.5)	n.a.	9.1	13.6	53.6	n.a.	33.9	20.3
2011	4.0	(35.1)	76.5	(12.0)	7.0	22.4	n.a.	(20.3)	0.2
2012	(10.0)	12.0	40.6	(11.8)	(3.6)	(17.6)	n.a.	84.7	(7.7)
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
2004 Q1	(2.3)	96.8	n.a.	...	(8.3)	(2.8)	n.a.	6.8	4.0
Q2	(19.4)	(45.2)	n.a.	...	(7.5)	(2.1)	n.a.	(1.4)	(21.8)
Q3	11.0	(68.1)	n.a.	...	24.2	(24.6)	n.a.	(3.2)	4.2
Q4	16.9	18.3	n.a.	...	45.8	13.8	n.a.	40.5	17.2
2005 Q1	23.1	7.0	n.a.	...	46.9	10.3	n.a.	17.1	25.8
Q2	30.1	69.3	n.a.	...	5.9	(32.8)	n.a.	0.2	37.4
Q3	(15.1)	209.2	n.a.	...	1.5	(2.7)	n.a.	7.1	(6.9)
Q4	(10.4)	(12.9)	n.a.	...	(14.0)	(6.1)	n.a.	8.9	(8.7)
2006 Q1	16.9	(19.0)	n.a.	(24.2)	(43.6)	(31.4)	n.a.	3.7	11.1
Q2	(3.1)	(1.5)	n.a.	(25.7)	4.6	26.4	n.a.	10.7	(3.7)
Q3	9.3	0.5	n.a.	20.8	6.0	53.0	n.a.	(9.3)	8.8
Q4	9.0	0.0	n.a.	24.2	(24.9)	(14.8)	n.a.	(12.1)	8.2
2007 Q1	(1.3)	7.0	n.a.	(24.6)	34.1	(50.2)	n.a.	(11.3)	(1.2)
Q2	3.7	(2.2)	n.a.	(4.7)	7.7	34.6	n.a.	(16.9)	3.0
Q3	2.4	(67.0)	n.a.	(12.2)	6.3	24.8	n.a.	(4.1)	(3.5)
Q4	(11.5)	20.4	n.a.	(8.3)	30.8	88.3	n.a.	(22.9)	(8.8)

Table 4 continued... Year-on-Year Percentage Change in the Volume of Mining Production by Mineral Group and Mineral (Base 2013 = 100)

	Diamonds	Copper-Nickel-Co- balt Matte	Copper Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
Weights	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2008 Q1	(0.8)	5.2	n.a.	24.7	13.4	111.8	n.a.	3.2	0.3
Q2	(2.1)	(13.2)	n.a.	3.2	(17.7)	(62.6)	n.a.	6.0	(3.1)
Q3	0.1	176.9	n.a.	16.6	(16.2)	(37.0)	n.a.	7.9	5.1
Q4	(10.0)	(28.3)	n.a.	36.7	3.2	(42.6)	n.a.	24.6	(10.6)
2009 Q1	(100.0)	(28.9)	n.a.	(35.4)	(23.8)	38.7	n.a.	(4.1)	(91.6)
Q2	(51.3)	17.7	n.a.	(39.6)	(33.1)	54.6	n.a.	(15.4)	(45.6)
Q3	(35.9)	10.2	n.a.	(49.8)	(5.5)	(1.8)	n.a.	(26.4)	(32.6)
Q4	9.3	16.0	n.a.	(64.9)	(18.7)	81.6	n.a.	(29.5)	6.9
2010 Q1	...	37.8	...	(3.9)	19.6	34.8	n.a.	7.9	626.4
Q2	44.9	(37.5)	...	(13.2)	35.4	73.9	n.a.	27.2	30.6
Q3	2.2	(2.1)	...	20.2	(5.9)	120.3	n.a.	57.6	3.2
Q4	(27.6)	(21.8)	...	44.0	16.6	9.9	n.a.	52.4	(24.8)
2011 Q1	17.5	(25.3)	158.6	(17.5)	(4.8)	22.8	n.a.	(12.3)	11.1
Q2	4.5	5.0	126.7	(17.2)	11.3	22.5	n.a.	13.4	5.0
Q3	15.8	(94.6)	53.2	(16.5)	19.1	11.3	n.a.	(20.9)	2.9
Q4	(19.4)	(0.4)	24.6	1.7	2.8	37.5	n.a.	(60.4)	(16.4)
2012 Q1	(0.8)	15.6	51.4	21.1	7.3	(8.4)	n.a.	12.7	1.6
Q2	(9.8)	15.9	(3.9)	7.2	(2.3)	12.6	n.a.	(17.0)	(7.3)
Q3	(36.7)	255.4	59.1	(18.9)	(1.3)	(45.4)	n.a.	109.0	(32.9)
Q4	19.2	(12.5)	58.4	(42.0)	(15.9)	(15.6)	n.a.	471.1	14.4
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	(2.5)	87.3	(23.3)	(46.3)	(32.6)	(10.3)	(32.3)	33.7	(0.9)

Note: 1. 2015 Figures are provisional

2. () denotes negative numbers

3. ...data is not zero but the figure is not significant enough to be measured

Table 5: 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 Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
Weights	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2004	2.0	(1.3)	n.a.	...	0.1	(0.0)	n.a.	0.0	0.8
2005	2.4	2.4	n.a.	...	0.1	(0.0)	n.a.	0.0	7.9
2006	6.7	(0.5)	n.a.	(0.2)	(0.1)	0.0	n.a.	(0.0)	6.0
2007	(1.7)	(0.9)	n.a.	(0.3)	0.1	0.0	n.a.	(0.0)	(2.8)
2008	(2.8)	0.4	n.a.	0.4	(0.0)	(0.1)	n.a.	0.0	(2.0)
2009	(40.3)	0.2	n.a.	(1.4)	(0.2)	0.0	n.a.	(0.0)	(41.6)
2010	19.9	(1.2)	n.a.	0.2	0.1	0.2	n.a.	0.1	20.3
2011	3.4	(3.6)	n.a.	(0.3)	0.1	0.1	n.a.	(0.0)	0.2
2012	(8.8)	0.8	n.a.	(0.2)	(0.0)	(0.1)	n.a.	0.1	(7.7)
2013	10.5	2.0	...	(0.2)	(0.1)	0.2	...	0.0	17.3
2014	5.4	(2.8)	0.8	(0.3)	0.2	(0.0)	...	0.0	3.3
2004 Q1	(2.1)	6.1	n.a.	...	(0.1)	(0.0)	n.a.	0.0	4.0
Q2	(17.3)	(4.5)	n.a.	...	(0.1)	(0.0)	n.a.	(0.0)	(21.8)
Q3	10.0	(5.9)	n.a.	...	0.2	(0.0)	n.a.	0.0	4.2
Q4	15.3	1.5	n.a.	...	0.3	0.0	n.a.	0.0	17.2
2005 Q1	20.0	0.8	n.a.	...	0.4	0.0	n.a.	0.0	25.8
Q2	27.6	4.8	n.a.	...	0.1	(0.1)	n.a.	0.0	37.4
Q3	(14.6)	5.5	n.a.	...	0.0	(0.0)	n.a.	0.0	(6.9)
Q4	(9.4)	(1.1)	n.a.	...	(0.1)	(0.0)	n.a.	0.0	(8.7)
2006 Q1	14.4	(1.9)	n.a.	(0.9)	(0.4)	(0.1)	n.a.	0.0	11.1
Q2	(2.7)	(0.1)	n.a.	(0.9)	0.0	0.0	n.a.	0.0	(3.7)
Q3	8.2	0.0	n.a.	0.5	0.1	0.1	n.a.	(0.0)	8.8
Q4	8.0	0.0	n.a.	0.5	(0.2)	(0.0)	n.a.	(0.0)	8.2
2007 Q1	(1.2)	0.5	n.a.	(0.6)	0.2	(0.1)	n.a.	(0.0)	(1.2)
Q2	3.2	(0.2)	n.a.	(0.1)	0.1	0.1	n.a.	(0.0)	3.0
Q3	2.2	(5.4)	n.a.	(0.3)	0.1	0.0	n.a.	(0.0)	(3.5)
Q4	(10.3)	1.5	n.a.	(0.2)	0.2	0.1	n.a.	(0.0)	(8.8)

Table 5 continued... 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	Gold	Soda Ash	Salt	Silver	Coal	Total Index
Weights	82.5	8.6	5.5	1.4	0.9	0.5	0.4	0.3	100.0
2008 Q1	(0.7)	0.4	n.a	0.5	0.1	0.1	n.a	0.0	0.3
Q2	(1.8)	(1.1)	n.a	0.1	(0.1)	(0.1)	n.a	0.0	(3.1)
Q3	0.1	4.9	n.a	0.4	(0.2)	(0.1)	n.a	0.0	5.1
Q4	(8.7)	(2.7)	n.a	0.9	0.0	(0.1)	n.a	0.0	(10.6)
2009 Q1	(88.2)	(2.4)	n.a.	(0.8)	(0.2)	0.0	n.a.	(0.0)	(91.6)
Q2	(45.6)	1.3	n.a.	(1.1)	(0.2)	0.0	n.a.	(0.0)	(45.6)
Q3	(32.0)	0.7	n.a.	(1.3)	(0.0)	(0.0)	n.a.	(0.0)	(32.6)
Q4	8.1	1.2	n.a.	(2.4)	(0.2)	0.1	n.a.	(0.0)	6.9
2010 Q1	594.7	27.2	...	(0.7)	1.4	0.7	n.a.	0.1	626.4
Q2	35.7	(6.0)	...	(0.4)	0.3	0.2	n.a.	0.0	30.6
Q3	1.9	(0.2)	...	0.4	(0.1)	0.3	n.a.	0.1	3.2
Q4	(24.7)	(1.6)	...	0.5	0.1	0.0	n.a.	0.0	(24.8)
2011 Q1	14.3	(3.4)	0.7	(0.4)	(0.1)	0.1	n.a.	(0.0)	11.1
Q2	4.0	0.4	0.8	(0.4)	0.1	0.1	n.a.	0.0	5.0
Q3	13.2	(10.7)	0.5	(0.4)	0.2	0.1	n.a.	(0.0)	2.9
Q4	(16.7)	(0.0)	0.3	0.0	0.0	0.1	n.a.	(0.1)	(16.4)
2012 Q1	(0.7)	1.4	0.5	0.4	0.1	(0.0)	n.a.	0.0	1.6
Q2	(8.6)	1.2	(0.1)	0.1	(0.0)	0.0	n.a.	(0.0)	(7.3)
Q3	(34.7)	1.5	0.8	(0.3)	(0.0)	(0.2)	n.a.	0.1	(32.9)
Q4	15.9	(1.3)	0.9	(1.2)	(0.2)	(0.1)	n.a.	0.4	14.4
2013 Q1	(11.0)	(2.1)	4.3	(0.9)	0.2	0.2	...	0.1	(8.7)
Q2	17.9	1.2	5.7	(0.3)	(0.1)	0.2	...	0.0	25.2
Q3	23.5	10.0	4.1	(0.1)	(0.2)	0.4	...	(0.0)	38.4
Q4	14.6	0.5	3.6	0.5	(0.3)	(0.1)	...	(0.1)	19.1
2014 Q1	21.0	(4.3)	0.2	0.3	(0.2)	(0.2)	(0.2)	(0.0)	16.7
Q2	(1.3)	(3.0)	(0.0)	(0.3)	0.2	(0.1)	(0.1)	0.1	(4.5)
Q3	11.4	(5.0)	2.4	(0.3)	0.0	(0.0)	0.1	0.0	8.9
Q4	(4.8)	0.4	0.6	(0.8)	0.4	0.2	0.1	0.0	(4.0)
2015 Q1	(2.2)	3.6	(1.3)	(0.6)	(0.3)	(0.0)	(0.1)	0.1	(0.9)

Note: 1. 2015 Figures are provisional
 2. () denotes negative numbers
 3. ...data is not zero but the figure is not significant enough to be measured

3.0 Technical Notes

3.1 Background Information

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 Selibe- Phikwe. Since the early 1980s, the mining industry has been the largest contributor to real gross domestic product (GDP), contributing between 30 and 50 percent. Its value has been increasing at an annual rate of nearly 20 percent.

These mineral contributions enabled the Government to undertake investments in both human and physical infrastructure development over time. In 2013, mining accounted for 22.4 percent of Botswana's GDP, and more than 50 percent of Government revenues. 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. 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 or the national economy, the need for a measure of change in the production of minerals in Botswana cannot be over emphasized. The index of physical volume of mining production is a measure that provides a relative change over time in mining production. IMP can also be used as a deflator to calculate the gross domestic product (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 through its data sharing agreement with Statistics Botswana 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 occurring naturally as solids such as diamonds, copper-nickel-cobalt matte, gold, copper in concentrates, soda ash, salt 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 central product classification (CPC) Version 2.

3.4 Concepts, definitions and methods

The index of the volume of mining production is a ratio that indicates the increase or decrease of a magnitude (ALLEN, 1975). The index form is used not only for intertemporal comparisons but for comparisons between countries (Bal, 2008).

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.

3.5 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 (UNSD, 2010). The base period, also referred to as reference period used in this brief is 2013 and it is set at 100.

3.6 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.

3.7 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 (OECD, 2007).

3.8 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.

3.9 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.

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

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:

$$(R_i) = \frac{P_{ic}}{P_{io}} * 100$$

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