INDICES OF THE PHYSICAL VOLUME OF MINING PRODUCTION

No: 2014/03

STATS BRIEF THIRD QUARTER 2014
STATISTICS BOTSWANA

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1.0   Preface

This statistical release presents quarterly Indices of Mineral Production (IMP) for the period 2003 to the third quarter of 2014. Also carried in the report is the annual IMP for the period 2003 to 2013 (derived as the average of 4 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 at the Ministry of Minerals, Energy and Water Resources as administrative data in spreadsheet format.

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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 services.

Anna N. Majelantle
Statistician General
February 2015

2.0   Summary of Findings

Table 1: Key figures in the Volume of Mining Production

	Second Quarter 2013	Third Quarter 2013	Fourth Quarter 2013	First Quarter 2014	Second Quarter 2014	Third Quarter 2014
Index of the physical volume of mining production	111.6	97.1	108.8	96.2	106.6	105.7
Year-on-year percentage change, seasonal unadjusted	25.2	38.4	19.1	16.7	**(4.5)**	8.9
Quarter-on- Quarter percentage change, seasonal unadjusted	35.3	**(12.9)**	12.0	**(11.5)**	10.8	**(0.8)**

1. () denote negative figures

The IMP in the third quarter of 2014 stood at 105.7 showing a year on year growth of 8.9 percent (Table 1, 3 and 5). The increase in IMP primarily reflected positive contributions from Diamond, Copper Concentrates, Soda Ash, Salt, Silver and Coal production. Even though Copper-Nickel-Cobalt Matte and Gold contributed negatively by 5.0 and 0.3 percentage points respectively (as shown in Tables 2 and 5), this could not offset the growth in the mining sector. The main contributors to the 8.9 percent increase in mining production were Diamonds contributing 11.4 percentage points followed by Copper concentrates contributing 2.4 percentage points.

2.1 Mineral Production

Discussions on mining production, which compare production during the third quarter of 2014 and the same quarter in 2013, are based on Table 2 and Table 4.

Between Quarter three of 2014 and the same quarter of 2013, production of Diamonds increased by 14.1 percent. This notable increase is attributed to mining of higher grade stones.

It can also be observed that Copper-Nickel-Cobalt Matte production declined by 52.1 percent between the above-said corresponding quarters. The decline was mainly due to smelter shutdown which subsequently led to zero production during the month of July 2014 to the first week of August 2014. Production subsequently resumed during the month of August 2014.

Copper concentrates production recorded the highest growth, at 46.0 percent during the third quarter of 2014, due to unexpectedly higher ore crushed which resulted in higher copper recoveries.

Gold production fell by 17.5 percent in the third quarter of 2014 as compared to the third quarter of 2013. This was attributable to low ore mined which resulted in low gold recoveries from the ore.

Comparison of Soda Ash production for the third quarter of 2014 and the same quarter in 2013 shows an increase of 3.9 percent despite the planned plant maintenance and interruptions.

Salt production fell 2.0 percent in the third quarter of 2014 compared to an increase of 103.7 percent registered in the corresponding quarter of the previous year.

During the third quarter of 2014, production of Silver increased by 25.4 percent when compared to the same quarter in the previous year. This was the first increase since 2013. This is largely attributable to higher quantities of ore having been crushed, resulting in increased silver recoveries.

Coal production increased by 14.7 percent between the third quarter of 2014 and the corresponding quarter of 2013. This is attributed to the need to produce for local consumption and export to neighboring countries.

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

	Weights(2013)	Third Quarter 2013	Third Quarter 2014	Year-on-Year Percentage Change	contribution (% points) to the percentage change in the total mining production
Diamonds	**82.5**	95.8	109.3	14.1	11.4
Copper-Nickel-Cobalt Matte	**8.6**	107.8	51.6	(52.1)	(5.0)
Copper Concentrates	**5.5**	93.2	136.0	46.0	2.4
Gold	**1.4**	102.4	84.5	(17.5)	(0.3)
Soda Ash	**0.9**	112.9	117.3	3.9	0.0
Salt	**0.5**	118.6	116.2	(2.0)	0.0
Silver	**0.4**	108.0	135.4	25.4	0.1
Coal	**0.3**	113.8	130.6	14.7	0.0
Total	**100.0**	**97.1**	**105.7**	**8.9**	**8.9**

Base:2013=100

NB: 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. () denote negative figures

Table 3: Total Index of the Physical Volume of Mining Production: 2003 - 2014

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**
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

	Diamonds	Copper-Nickel-Cobalt Matte	Copper Concentrates	Gold	Soda Ash	Salt	Silver	Coal	Total Index
Base 2013 = 100									
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.	217.0	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	...	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	118.0	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	116.2	135.4	130.6	**105.7**

NB: 1. 2014 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 Physical 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.	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)	n.a.	(12.0)	7.0	22.4	n.a.	(20.3)	0.2
2012	(10.0)	12.0	n.a.	(11.8)	(3.6)	(17.6)	n.a.	84.7	(7.7)
2013	12.2	24.2	…	(12.4)	(8.3)	41.8	…	2.8	17.3
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-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**
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	(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

Note: 1. 2014 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
4. () denote negative figures

Table 5: Contribution of Mineral Group and Mineral to the Growth in 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
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	(0.10	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)
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)

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 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
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

Note: 1. 2014 Figures are provisiona
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 measure
4. () denote negative figures

3.0   Technical Notes

3.1   Background Information

Mining activity in Botswana started in the 19th century with production of Gold by Europeans from the Tati Reefs which is now 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 80s, the mining industry has been the largest contributor to real gross domestic product (GDP), contributing between 30 and 50 percent and 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, the 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 vindicates that the sector still leads in terms of value added contribution to GDP. Despite the great contribution to Botswana's GDP, the mining industry is capital intensive and accounts for less than 5 percent of the private sector employment.

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 such a measure that provides a relative change over time in the 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 completion of the data collection Department of Mines through the data sharing agreement provides the data to Statistics Botswana for report preparation. The results of the survey are used to calculate the volume of mining production indices on quarterly basis and subsequently estimate GDP.

3.3   Scope of the survey

The survey covers all mining establishment 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

Index of the volume of mining productions 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 rates 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 diving 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 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 ith 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 ith item in the current quarter and P_{i0} is the production of the ith item in the base year.