



INDICES OF THE PHYSICAL VOLUME OF MINING PRODUCTION

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1.0 Introduction

This statistical release presents quarterly Indices of Mineral Production (IMP) for the period 2003 to the second 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. This brief is produced by the Industry Statistics Unit.

2.0 Summary of Findings

Table 1: Key growth in the Volume of Mining Production

	Second Quarter (Q2) 2013	Third Quarter (Q3) 2013	Fourth Quarter (Q4) 2013	First Quarter (Q1) 2014	Second Quarter (Q2) 2014
Index of the physical volume of mining production	111.6	97.1	108.8	96.2	106.6
Year-on-year percentage change, seasonal unadjusted	25.2	38.4	19.1	16.7	(4.5)
Quarter-on-Quarter percentage change, seasonal unadjusted	35.3	(12.9)	12.0	(11.5)	10.8

2.1 Indices of Physical Volume of Mining Production

The IMP in the second quarter of 2014 stood at 106.6 showing a negative year on year growth of 4.5 percent (Table 1). **Tables 2** and **5** show that the main contributors to the decline in growth of mining production came from Copper-Nickel-Cobalt matte, which declined by 3.0 percentage points followed by Diamonds, which declined by 1.3 percentage points and Gold, with a decline of 0.3 percentage points. Soda Ash and Coal brought some resilience to the overall mining production fall, increasing by 0.2 and 0.1 percentage points respectively during the second quarter of 2014.

Amidst this negative growth, it can be observed that the index of the physical volume of mining production grew by 10.8 percent (unadjusted) from 96.2 in the first quarter of 2014 to 106.6 in the second quarter of the same year as presented in Table 1.

Table 3 presents indices of the physical volume of mining production by mineral group and mineral. It can be realized that all the minerals, **except** Gold, posted positive increase in indices when comparing the first two quarters of 2014.

2.2 Physical Volume of Mineral Production

Despite the major plant maintenance carried out together with the impact of the clean-up of the Jwaneng Mine slope in 2013, Diamond production declined by 1.5 percent between the second quarter of 2014 and the same quarter in the previous year, 2013.

Copper-Nickel-Cobalt matte production declined by 34.7 percent between the second quarter of 2014 and the same quarter of the previous year. The disruptions in production was mainly due the inefficiency of the smelter waste boiler tube (see **Table 2** and **4**).

Copper in concentrates production (this is the metal content from copper concentrates and is exported as copper concentrates) declined for the second time since its inception in 2010, decreasing 0.7 percent between the second quarter of 2014 and the same quarter of 2013, after increasing by more than four-fold between the second quarter of 2013 and the same quarter in 2012. The decrease in 2014 is attributed to ineffectiveness of the crushers which subsequently broke down, and the lower than expected copper recoveries from the ore.

Gold production fell by 24.6 between the second quarter of 2014 and the same quarter of the previous year. This follows a decline of 17.8 percent between the same quarters of 2013 and 2012. The changes recorded between second quarter of 2014 and that of 2013, was attributable to ore shortages and lower than expected Gold recoveries from the ore.

Soda Ash production recorded an increase of 29.8 percent during the same period. This follows four consecutive declines as shown in **Table 4**. The substantial increase in production is mainly attributed to the effectiveness of the plant following its maintenance.

Salt production decreased by 13.7 percent between the second quarter of 2014 and that of the previous year, as compared to an increase of 49.3 percent registered between the second quarter of 2013 and the similar quarter of 2012. The decrease in production is mainly due to the planned plant maintenance conducted at the mine which resulted in production stoppages during the course of the second quarter.

Silver production recorded yet another decline since its inception in 2013, falling 25.1 percent between the second quarter of 2014 and that of the previous year. The decline was largely due to crusher breakdown.

Coal production recorded a growth of 66.1 percent between second quarters of 2014 and 2013. This follows three consecutive declines as seen on Table 4. The growth is attributed to the increased demand for coal following optimal usage of the Morupule B Power generators during the second quarter of 2014.

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



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October 2014

Table 2: Index of Mining Production for the latest Quarter by Mineral Group and Mineral contribution of the mineral groups and minerals to total quarterly growth in mining production

Base: 2013=100

Mineral Group / Mineral	Weights (2013)	First Quarter 2013	First Quarter 2014	Year-on-Year % change	Contribution (% points) to Year-on-Year percentage change
Diamonds	82.5	111.7	110.0	(1.5)	(1.3)
Copper-Nickel-Cobalt Matte	8.6	112.4	73.4	(34.7)	(3.0)
Copper in Concentrates	5.5	115.5	114.7	(0.7)	(0.0)
Gold	1.4	98.5	74.3	(24.6)	(0.3)
Soda Ash	0.9	89.0	115.6	29.8	0.2
Salt	0.5	116.8	100.8	(13.7)	(0.1)
Silver	0.4	118.1	88.5	(25.1)	(0.1)
Coal	0.3	74.6	123.9	66.1	0.1
Total	100.0	111.6	106.6	(4.5)	(4.5)

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.

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
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 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
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

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 large 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 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
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)
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)

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

	Diamonds	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
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)	(9.3)	(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)

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 large enough to be measured; 4. () denotes negative numbers

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 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
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	(0.1)	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)
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 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
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)

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 large enough to be measured; 4. () denotes negative numbers

3.0 ANNEX

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 the 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). During the second of 2006/07, the mining sector contributed 43.2% to the GDP (National Accounts Stats Brief, 2007). In 2009, the mining sector's share in the GDP was 39.2% (National Accounts Statistics Report, 2009).

These mineral contributions enabled the government to undertake investments, in both human and physical infrastructure development over time. In 2012, the mining sector accounted for 19.6 percent of Botswana's GDP, and more than 50 percent of Government revenues (National Accounts Report, 2012). Even though the mining sector's contribution to GDP has been below 25 percent since the 2009 economic recession, available data shows 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 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 GDP at constant prices.

3.2 Data collection

A mining production survey is carried out by the Department of Mines, covering all mining establishments operating in the country. After completion of data collection Department of Mines through the data sharing agreement provides the data to Statistics Botswana. The results of the survey are used to calculate the volume of mining production indices on 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 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.

4.0 Concepts, definitions and methods

4.1 Index of the volume of mining production:

Index 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 Index of Mining Production (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 (UNSD, 2010). The base period, also referred to as reference 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 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)

4.5 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.

4.6 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 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.