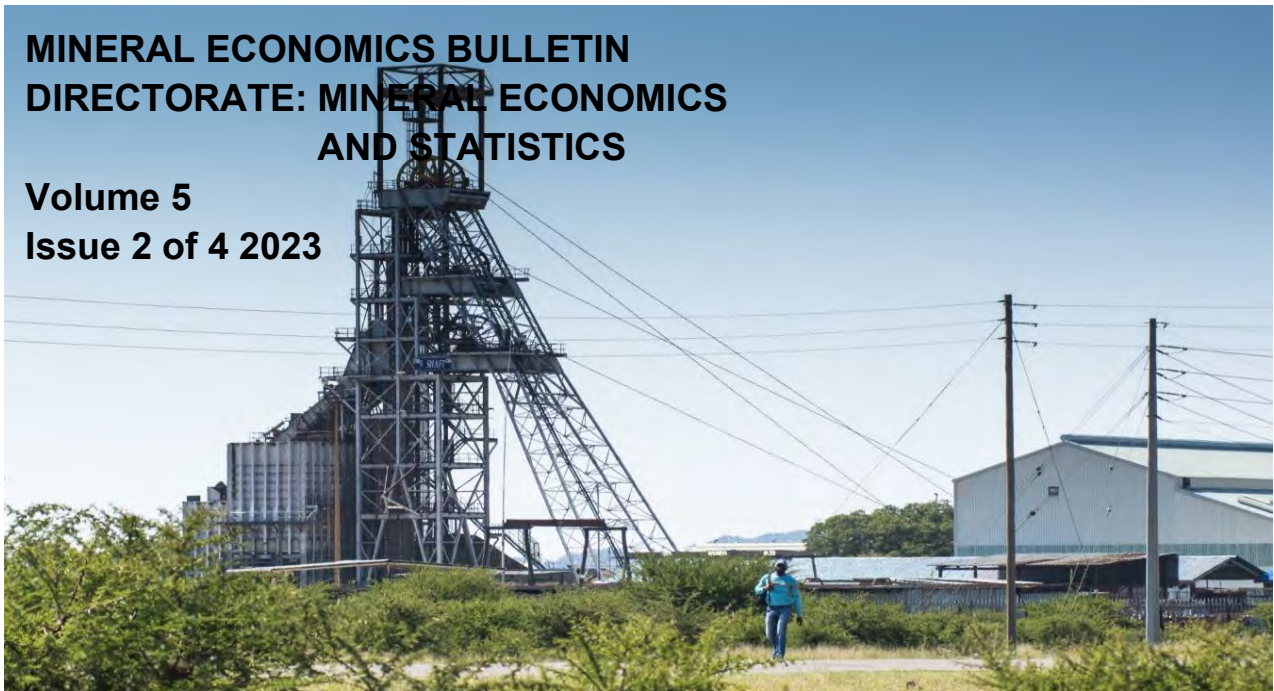


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ABBREVIATIONS AND SYMBOLS

A\$	Australian dollar
B-billion	thousand
CIF	cost, insurance, freight
DMRE	Department of Mineral Resources and Energy
e	estimate
ETL	Exchange Traded Fund
FOB	free on board
FOR	free on rail
g/t	gram per ton
kg	kilogram
KPCS	Kimberley Process Certification Scheme
kt	thousand tons
lb	pounds avoirdupois
LME	London Metal Exchange
m	metre
Mt	million tons
Mt/a	million tons per annum
n/a	not available
ozt	troy ounce
PICC	Presidential Infrastructure Co-ordination Committee
PGM	Platinum Group Metals
q-o-q	quarter on quarter
SARB	South African Reserve Bank
SACCI	South African Chamber of Commerce and Industry
t	metric ton
t/a	tons per annum
t/m	tons per month
y-o-y	year on year
μ	micro-
\$	US dollar, unless stated otherwise
¥	yen
€	Euro

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1. ECONOMIC CONTRIBUTION OF SOUTH AFRICA'S MINING SECTOR IN Q1 AND Q2 2023.

Mining industry is one of the country's key economic sectors that has proven its potential for substantial contribution to economic growth, job creation, transformation, and infrastructure development. Following an increase of 0.4 percent in the first quarter of 2023 (Q1 2023), South Africa's economy grew by 0.6 percent Q2 2023, with mining being amongst the sectors that showed growth, in addition to manufacturing, agriculture, and finance. The real value added by mining and quarrying industry increased by 1,3 percent from R201 039 million in Q1 2023 to R 203 598 mil in Q2 2023. The Increase in mining and quarrying was as a result of higher production in Platinum Group Metals (PGMs), gold and coal which increased by 28 percent, 11.5 percent and 7 percent, in that order. Other sectors that contributed to the increase in mining were the ferrous and non-ferrous contributing 13 percent and 27 percent, respectively.

South Africa's employment also improved by 0.3 percent from approximately 40 606 million people in Q1 2023 to 40 746 million people in Q2 2023. Agriculture, mining, construction, as well as community and social services contributed positively to the increase in the country's employment. Employment in South Africa's mining sector increased by 1 899 people or 0.4 percent from 475 912 people in Q1 2023 to 477 574 people in Q2 2023. The main contributor to the employment increase in the mining sector were ferrous metals at an increase of 0.8 percent, followed by PGM's and Industrial minerals by 0.3 and 0 12 percent, respectively.

The mining sector benefitted from the continued improvement in commodity prices as well as the weakening of the rand in Q2 2023. The total revenue from the mining sector increased significantly by 6.8 percent from R64.1 billion in Q1 2023 to R68.5 billion in Q2 2023. The main contributor to the increased revenue were gold at an increase of 44 percent, followed by both PGM's and non-ferrous metal at an increase of 8 percent and industrial minerals increased by 3 percent. Furthermore, mineral export sales increased by 5 percent to R50.5 billion in the second quarter of 2023 from R47.9 billion in Q1 2023. While local sales increased by 11 percent to R17.9 billion in the second quarter of 2023 from R16.1 billion in Q1 2023. South Africa's mining sector is projected to remain stagnant in the next quarter, with expected rainfall as well as loadshedding adding to the challenges mining companies face.

Sources:

1. *DMR, Directorate Mineral Economics and statistics*
2. www.statssa.gov.za

Vhutshilo Mutavhatsindi

2. ENVIRONMENTAL IMPACT AND SUSTAINABILITY EFFORTS IN THE MINING INDUSTRY.

South Africa has an abundance of mineral resources and has been a global leader in the mining sector for many decades. The rich history of the country's mining industry has always been clouded by the environmental impact of the business, in contrast to its economic significance. Mining in South Africa has led to various environmental challenges including, inter alia, water usage and contamination, acid mine drainage, soil erosion, deforestation, carbon footprint and dust from dumps. These challenges have detrimental impact on the ecosystem, human health, and communities.

The government of South African has developed strict regulations and policies such as the Mineral and Petroleum Resources Development Act (MPRDA), Mining and Biodiversity Guideline as well as National Environmental Management Act, to promote sustainable mining and circumvent environmental degradation beyond the lifespan of a mining project. However, the implementation of these policies as prescribed in the National Environmental Management Act, cannot be quantified because of poor levels of monitoring. Be that as it may, several responsible mining companies are integrating environmental,

sustainability and governance (ESGs) principles into their daily operations for long-term sustainability of their mining businesses.

In the implementation of ESG principles, companies are adopting measures to reduce their environmental footprint, such as implementing energy-efficient technologies and reclamation efforts to restore mined areas. Some mining operations are also exploring renewable energy sources to reduce their reliance on fossil fuels. These efforts (sustainable mining approach) are aimed at achieving a balance between mining activities and the preservation of natural resources for future generations. Energy efficiency and resource optimization are being prioritized by companies in order to ensure sustainable mining. These interventions will help reduce the industry's carbon footprint and improve its overall sustainability.

International cooperation and knowledge exchange have a vital role to play in promoting sustainability in mining. South Africa can benefit from sharing experiences, best practices, and lessons learned with other mining jurisdictions facing similar challenges. Collaborative efforts on a global scale can accelerate the adoption of sustainable mining practices and contribute to a more environmentally and socially responsible industry.

In conclusion, sustainable mining practices are crucial for South Africa's mining industry to balance economic growth with environmental and social responsibility. With the implementation of regulations, technological advancements, and community engagement, the industry can move towards a more sustainable and responsible future.

Sources:

1. Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA)
2. National Environmental Management Act 107 of 1998
3. Mining and Biodiversity Guideline, 2013

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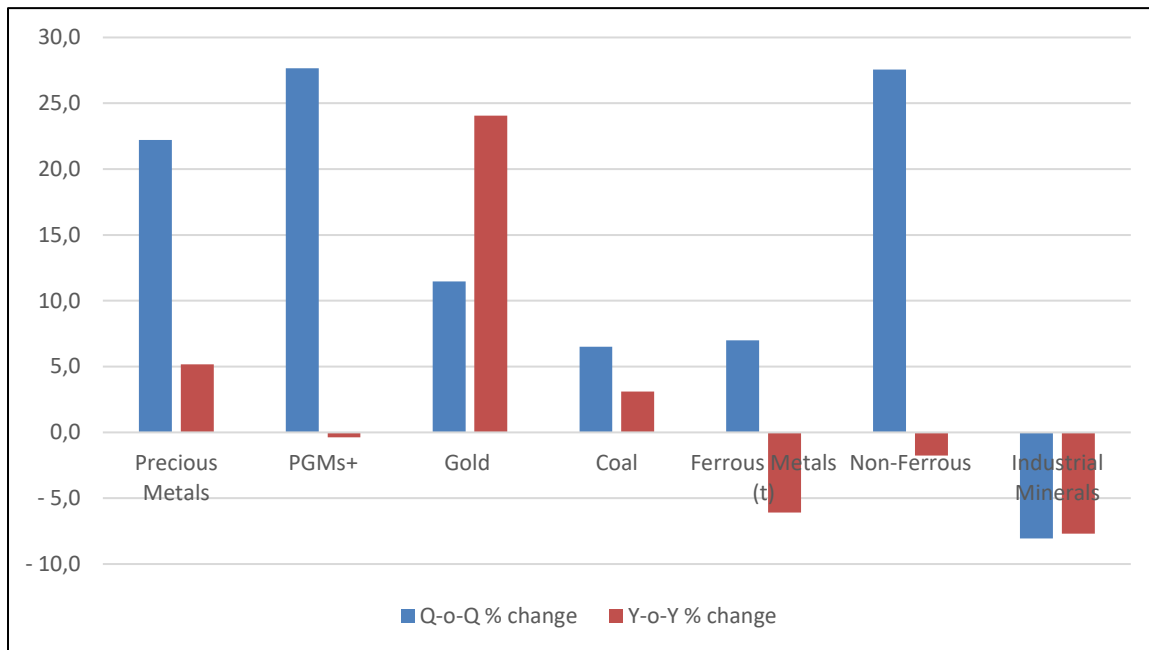
3. SOUTH AFRICA'S MINING SECTOR PERFORMANCE DURING THE SECOND QUARTER OF 2023.

Production

Preliminary Mineral Economics and Statistics shows that there was an increased across all the commodities in production on q-o-q, except for industrial minerals sector. Y-o-y production recorded an increase for precious metals and coal and, a decline for ferrous metals, non-ferrous metals as well as industrial minerals sectors.

Precious metals production surged by 22.2% q-o-q, supported by PGMs stocktaking, and a significant upswing in rough gold output along the West Wits line. On y-o-y, production increased by 5.2% on the back of higher gold throughput managing to offset the marginal decline in PGMs production that recorded 0.4% decrease.

FIGURE 1: PERCENTAGE CHANGE IN PRODUCTION.



Source: (DMRE) Directorate Mineral Economics and Statistics

Total ferrous production increased by 7% q-o-q to 25.8 Mt, with iron, manganese, and chrome ores increasing by 7.3 percent, 7.1% and 5.9%, correspondingly. On y-o-y, total ferrous production declined by 6.1%, largely due to a drop in iron ore and chrome ore production, by 9.6% and 5.9% respectively.

Total coal production increased by 6.5 percent q-o-q and 3.1 percent y-o-y to 57.9 Mt, attributed to the improved performance from most coal producers.

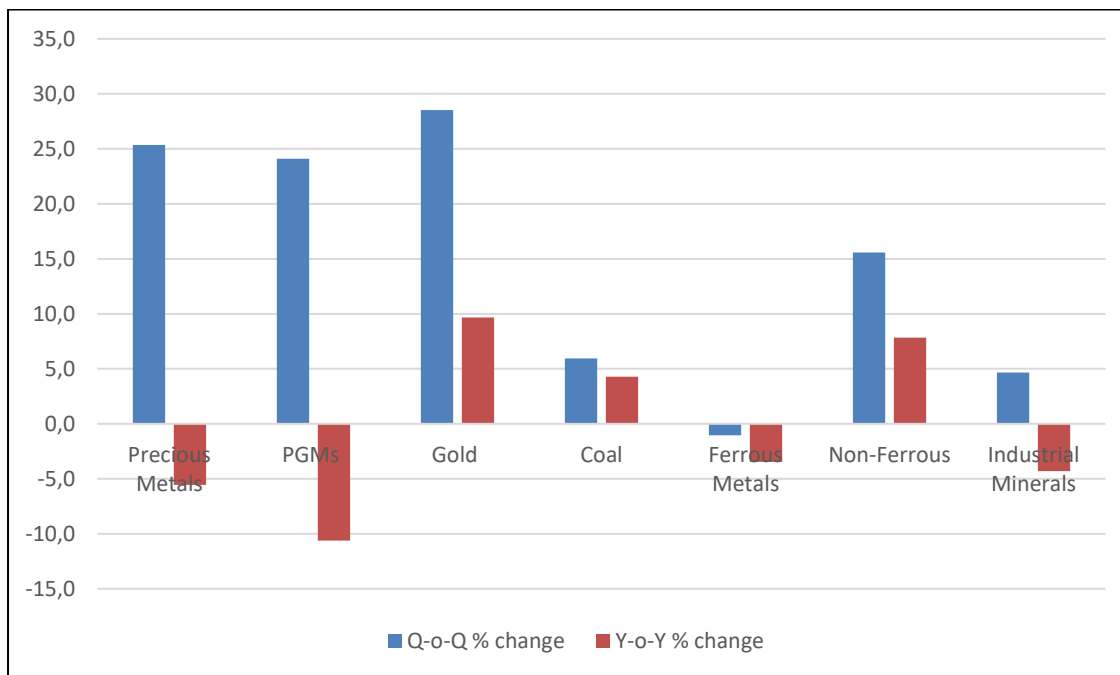
Non-ferrous metals production rose by 27.6% q-o-q to 754 205 t, because of increased output from all non-ferrous metals, while a 1.7% decline was recorded on y-o-y, due to the drop in production from the heavy minerals and copper.

Production of industrial minerals in the second quarter of 2023 declined by 8.1% q-o-q to 20.1 Mt, owing to sluggish upswing in most operations, on the back of low demand for some of the commodities such as phosphate rock and special clay. On y-o-y basis, it also declined by 7.7%, on the back of poor demand.

Sales and sales revenue

Preliminary data shows that, total mining sales quantities recorded an increase across all commodity groups except for ferrous metals on q-o-q. On y-o-y, precious metals, ferrous metals, and industrial minerals recorded a decline for sales quantities. In line with sales quantities, the corresponding total sales value increased by 6.8% q-o-q to about R205.5 billion supported by a weaker ZAR/US\$ exchange rate, with the only decline in sales value registered by other minerals. On y-o-y, total sales value declined by 16.8%, with increases recorded by gold and industrial minerals only.

FIGURE 2: PERCENTAGE CHANGE IN SALES QUANTITIES.



Source: (DMRE) Directorate Mineral Economics and Statistics

Precious metals' sales quantity increased by 25.3% q-o-q to 82 790Kg, attributed to the escalation of physical gold exports through Rand Refinery, on the back of higher demand and, declined by 5.6% y-o-y, due to a notable decline in PGMs and silver sales. The corresponding sales value increased by 18.3% q-o-q to about R84.7 billion, driven by a substantial 24.1% rise in total PGMs sales mass. Y-o-y sales value declined by 16.5%, attributed to PGMs sales having decreased by 31.3%, y-o-y.

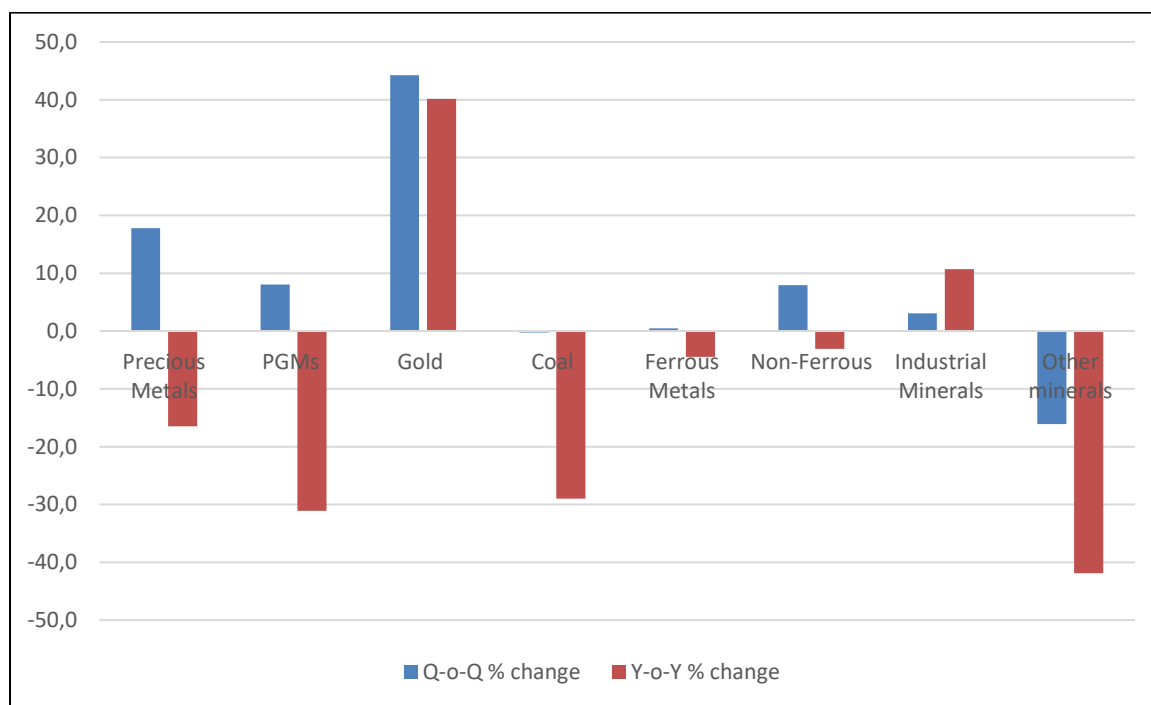
Total coal sales increased by 5.9% q-o-q and 4.3% y-o-y to 59.34 Mt in Q2 2023, attributed mainly to increased local sales that offset sluggish international demand. Total revenue decreased by 0.3% q-o-q and by 29% y-o-y to R48.57 billion mainly due to lower export prices that fell by 13.5 percent m-o-m and 51.8 percent y-o-y to R1 776/t in Q2:2023, while the higher domestic prices were unable to offset the impact of declining export prices, as a smaller component of sales total.

Ferrous metals' sales quantity declined by 1% and 3.5% q-o-q and y-o-y respectively to 25.7Mt, largely attributed to the decline in manganese ore and iron ore sales, with chrome ore sales mass also declining by 0.9% q-o-q, while y-o-y decline is largely attributed to a 9.4% drop in iron ore sales mass. The corresponding revenue averaged about R51.2 billion in Q2 2023 an increase of a marginal 0.5% q-o-q. Y-o-y, it declined by 4.5%.

Non-ferrous metals' sales quantity increased by 15.6% and 7.8% respectively to 691 369 t, due to increased demand from major consuming markets. The corresponding sales value increased by 7.9% q-o-q to about 10.7 billion, in line with the increase in sales and, declined by 3.1% y-o-y, mainly because of lower demand and dwindling commodity prices.

Industrial minerals' sales quantity increased by 4.7% q-o-q to 20.5Mt, due to recovering fluorspar demand as well as improved sales for commodities such as limestone and sulphur and, declined by 4.3% y-o-y, because of most dimension stones not being exported as well as declined exports for phosphate rock and vermiculite. The corresponding sales value increased by 3% q-o-q and by 10.7% y-o-y to R6.3 billion, owing to restored economic activity in the second quarter and an increase in demand for fluorspar, refractory material, andalusite, dimension stone, phosphate rock, fluorspar as well as aggregate and sand, as compared to the previous year. Other minerals sales value registered about R4 billion.

FIGURE 3: PERCENTAGE CHANGE IN SALES REVENUE.

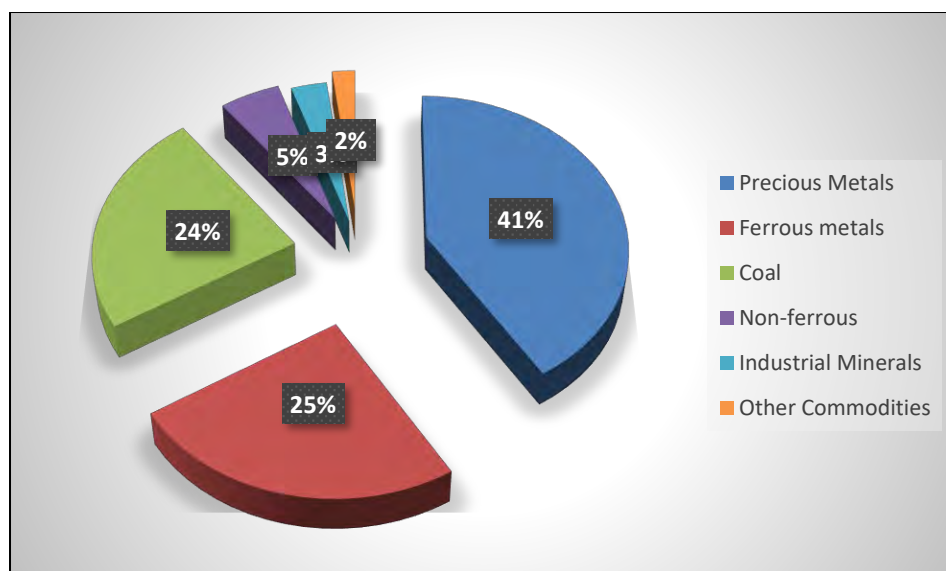


Source: (DMRE) Directorate Mineral Economics and Statistics

Commodity contributions to revenue

In term of revenue contribution, precious metals' sales value continued to lead the industry at 41% estimated at R84.7 billion, largely attributed to PGMs comprising 65.4% at about R55.5 billion. Ferrous metals sales contributed 25% at about R51.2 billion. Coal contributed 24% about R48.6 billion. Non-ferrous metals contributed 5% at about 10.7 billion. Industrial minerals contributed 3% at about R6.3 billion, while other minerals contributed 2% about R4 billion.

FIGURE 4: PERCENTAGE CONTRIBUTIONS BY COMMODITIES GROUPS.



Source: (DMRE) Directorate Mineral Economics and Statistics

Outlook

Poor rail infrastructure and Transnet's logistical challenges including locomotive availability, cable theft, rail vandalism and port delays continue to weigh negatively on the mining sector, especially for bulk commodities such as coal and ferrous metals, that are destined for export. While Transnet has developed partnership with private sector to address cable theft and vandalism on the freight rail network through advanced technologies and additional security personnel, it will take long before the interventions begin to bear significant fruits for the sector. Furthermore, electricity loadshedding remains a binding constraint on economic recovery, with power supply interruptions expected to continue through fourth quarter of 2023.

It is thus envisaged that the third quarter will register no significant change from quarter two, in terms of production and sales quantities. Sales value from export markets may increase, on the back of improved prices supported by the weakening ZAR/ US\$ exchange.

Mineral Economics and Statistics

4. SOUTH AFRICA'S PRECIOUS METALS AND MINERALS SECTOR'S PERFORMANCE DURING THE FIRST QUARTER OF 2023.

South Africa's precious metals production averaged 102.3 ton (t) in the second quarter of 2023 (Q2 2023), up by 22.2 percent and 5.2 percent (Table 1 and Figure 5), q-o-q and y-o-y, respectively. The upswing was driven by the release of unrefined PGMs inventory (Table 2 and Figure 5)) "in-pipeline" produced in March 2023, which was reflective of the 27.7 percent uptick in PGMs production, as well as higher production of silver, respectively. PGMs sector contributed 65.0 percent to total precious production, while gold and silver contributed 25.0 percent and 10 percent, respectively during this quarter.

TABLE 1: SOUTH AFRICA'S PRECIOUS METALS PRODUCTION, SALES, AND REVENUE Q2 2023

Period	Production	Local Sales		Export Sales		Total Sales	
	Quantity	Quantity	Value (R' mil)	Quantity	Value (R' mil)	Quantity	Value (R' mil)
Q2 2023	102.3	6	6,073.00	87	78,730.05	92.9	84,803.06
Q1 2023	83.7	3.7	4,131.76	86	67,745.35	89.6	71,877.12
Q2 2022	97.3	5.4	7,105.23	95.1	94,392.94	100.4	101,498.17
Q-O-Q	22.2	62.3	47.0	1.2	16.2	3.7	18.0
Y-O-Y	5.2	11.1	-14.5	-8.5	-16.6	-7.5	-16.4

Source, DMRE Mineral Economics and Statistics 2022, Q2 2023

Revenue generated from the precious sector averaged at R84.8 billion in Q2 2023, contributing an average of 41.3 percent to total mining revenue (Table 1 and Figure 5). Revenue increased by 18 percent, q-o-q, in line with a 3.7 percent increment in sales volumes. A weaker local currency coupled with an improvement in PGMs, and gold prices also supported the increase in revenue. Total sales value of precious metals went down by 16.4 percent, y-o-y, driven by a 7.5 percent and 39.3 percent drop in 5 PGE prices. Over the same timeframe, the markedly weaker rand cushioned the decreases.

PGMs production surged by 27.7 percent, q-o-q, driven by a rise in inventory stocks of (Pt & Pd) at Anglo Platinum's South African operations. Northam, Impala, and Western Platinum also saw increased Pt throughput, while Implats released inventory from the pipeline. Production dipped by 0.4 percent, y-o-y as Anglo Platinum recorded a 13 percent drop in refined PGMs due to South Africa's load shedding crisis.

PGMs sales revenue saw an 8.1 percent increase q-o-q, driven by a substantial 24.1 percent rise in total PGMs sales mass.

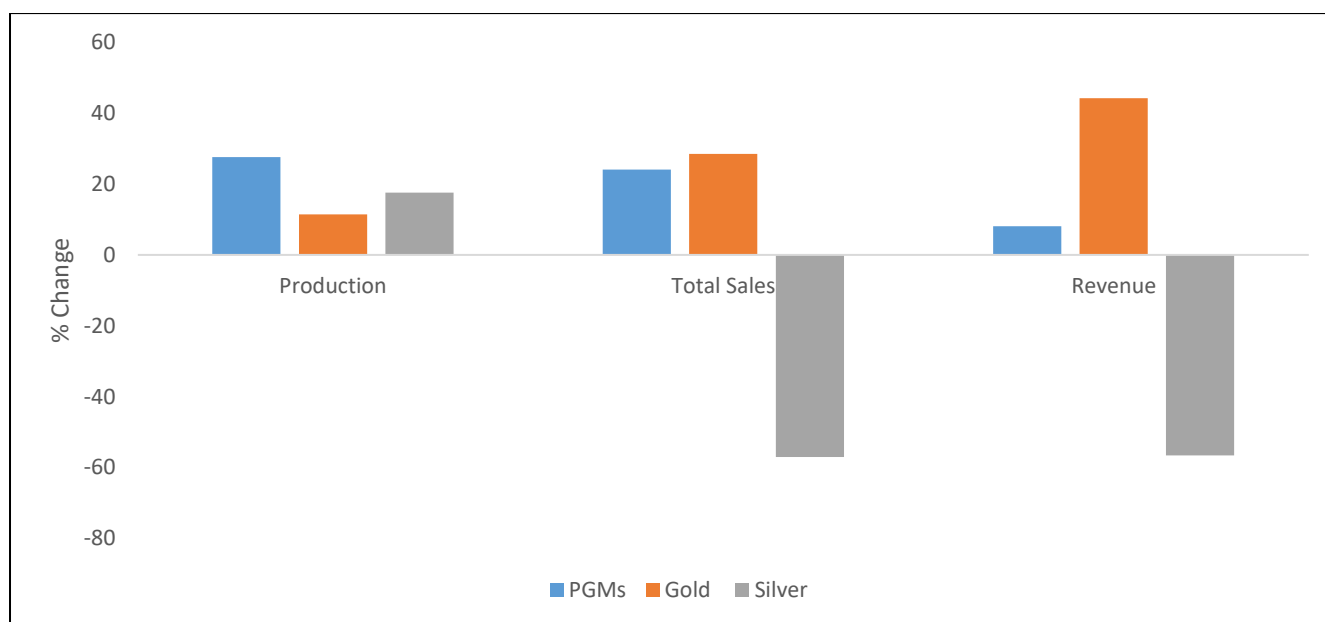
TABLE 2: PRECIOUS METALS PRICES (\$/oz), Q2 2023.

Period	Gold	Silver	Pt	Pd	Rh	Iridium	Ruthenium	R/\$
Q2 2023	1,978.10	24.2	1,042.60	1,470.80	7,037.00	4,600.00	465	18.6609
Q1 2023	1,888.20	22.6	1,006.70	1,592.10	11,002.10	4,617.50	465.8	17.6216
Q1 2022	1,872.70	22.6	968.5	2,128.50	16,294.70	4,994.40	622.8	155,535
Q-o-Q	4.8	7.2	3.6	(7.6)	(36)	(0.4)	(0.2)	5.9
Y-o-Y	5.6	6.8	7.6	(30.9)	(56.8)	(7.9)	(25.3)	20

Source, DMRE Mineral Economics and Statistics 2023, Q2

The local rand exchange weakened by 5.9 percent to USD during the same period, countering the 21.8 percent decrease in the 5 PGE basket price. In contrast, the value of PGMS sales decreased by 31.8 percent y-o-y, in line with a drop in sales and prices, despite a 20.0 percent weaker rand-to-dollar exchange rate during this timeframe.

FIGURE 5: PRECIOUS METALS PRODUCTION AND SALES QUARTERLY % CHANGES.



Source, DMRE Mineral Economics and Statistics 2022, Q2 2023

Gold production increased by 11.5 percent and 24.1 percent q-o-q and y-o-y, respectively due to an increase in production at major operations such as Sibanye-Stillwater, Harmony, AngloAshanti and Freegold operations. Revenue generated from gold increased by 44.3 percent and 40.2 percent q-o-q and y-o-y, respectively, in line with an increase in total sales mass for the period. A weaker local currency coupled with 4.8 percent improvement in gold price also supported the increase in gold revenue for the period. Silver production increased by 17.6 percent and 3.9 percent, q-o-q and y-o-y, respectively which aligned with an increase in lead and gold production. A drop in the silver revenue of 56.5 percent and 6.8 percent, q-o-q and y-o-y, corresponded to the decline sales figures in both periods.

TABLE 3: PRECIOUS EMPLOYMENT AND REMUNERATION, Q2 2023.

PERIOD	EMPLOYEES	REMUNERATION	REMUNERATION/EMPLOYEE
		Rands' 000 000	Rands
Q2 2023	275 437	27 466	99.7
Q1 2023	275 352	27 406	99.5
Q2 2022	268 624	24 080	89.6
QQ % change	0.03	0.22	0.19
YY% change	2.5	14.1	11.2

Source: DMRE Mineral Economics and Statistics, Q2 2023

Total precious employment was estimated at 275 437 in Q2 2023, contributing 58.1 percent to total mining employment, (Table 3). Employment remained stagnant q-o-q, rising slightly by only 0.03 percent. Y-o-y, average precious employment rose by 2.5 percent, supported by a 5.3 percent increase from the PGMs sector, which countered the 2.4 percent decline in gold employment.

Outlook

South Africa's precious production (ROM-throughput) is expected to increase, in-line with the possible release of additional PGMs inventories coupled with an uptick in rough gold production. PGMs and gold-producing mines have implemented various methods to curtail loadshedding, such as reducing PGMS smelters' base load during peak phases, installing generators and curtailing crushing and tertiary mining processes.

Sources:

1. DMRE: Mineral Economics and Statistics, Q2 2023
2. Johnson Matthey.com.
3. World Platinum Investment Council.
4. <https://www.angloamericanplatinum.com/>.
5. World Gold Council Counsel.
6. reuters.com.
7. Direct communication with PGMs and Gold producing mines.

P.J Perold and Vhutshilo Mutavhatsindi

5. SOUTH AFRICA'S ENERGY COMMODITIES SECTOR'S PERFORMANCE DURING THE FOURTH QUARTER OF 2022.

Production

The Directorate Mineral Economics and Statistics of the Department of Mineral Resources and Energy (DMRE) reported that for the quarter ending in June 2023 (Q2:2023) (Table 4 and Figure 6), coal production grew by 6.5 percent q-o-q and 3.1 percent y-o-y to 57.87 million tons (Mt). Despite the bearish trend displayed by the coal market, producers improved their performance, especially in May 2023 and June 2023.

Natural gas production grew by 6.1 percent q-o-q and 72.0 percent y-o-y to 1,194 t, fuelled by improved output from Tetra4. Production from Tetra4 improved, as efficient operation of the gas plant was restored, following breakdowns that were experienced in the previous quarter (Q1:2023) Natural gas condensate production improved by 33.6 percent q-o-q and declined by 73.4 percent y-o-y to 167t. Output from

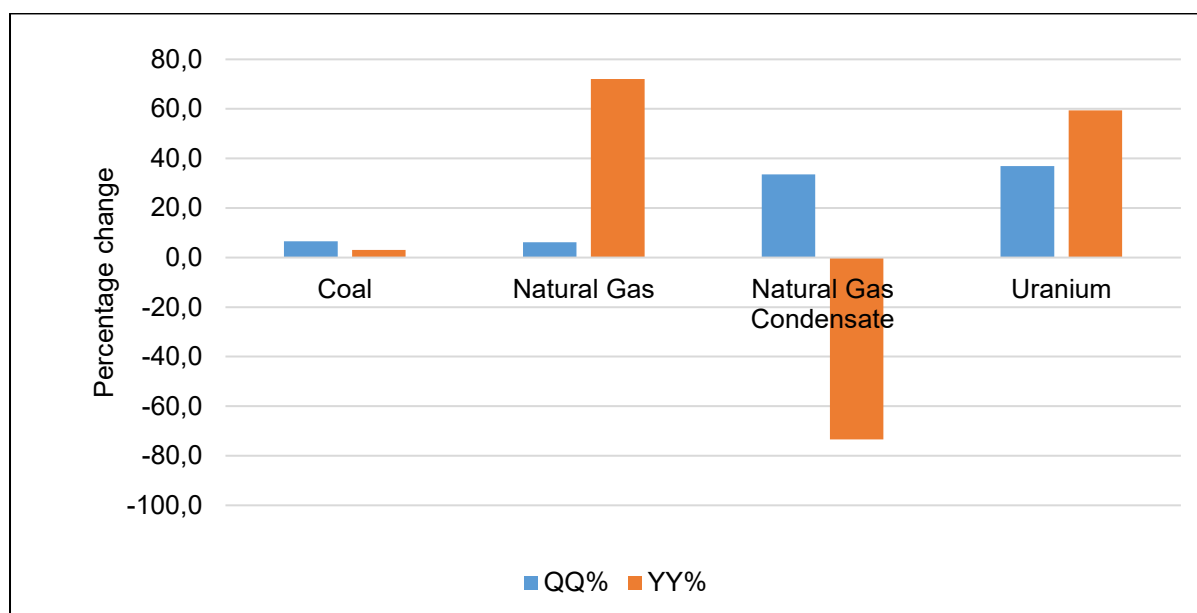
Petroleum and Oil Corporation of South Africa (PetroSA) in the quarter ending June 2023, however, the levels were too low to surpass annual output.

TABLE 4: PRODUCTION OF ENERGY MINERALS, Q2 2023.

Commodity (t)	Q2 2023	Q1 2023	Q2 2022	Q-o-Q%	Y-o-Y%
Coal	57,870,347	54,329,680	56,135,019	6.5	3.1
Natural Gas	1,194	1,125	694	6.1	72.0
Natural Gas Condensate	167	125	628	33.6	-73.4
Uranium	78,298	57,210	49,110	36.9	59.4

Source: DMR, Mineral Economics and Statistics.

FIGURE 6: PRODUCTION OF ENERGY MINERALS, Q2:2023.



Source: DMRE Mineral Economics and Statistics

Uranium production surged by 36.9 percent q-o-q and 59.4 percent y-o-y to 78.3 t driven by high gold output from Moab Operations, as the commodity is being produced as a by-product (Figure 1).

Total Sales

In line with production growth, total coal sales increased by 5.9 percent q-o-q and 4.3 percent y-o-y to 59.34 Mt in Q2 2023 (Table 5 and Figure 7) underpinned mainly by increased local sales that offset sluggish international demand.

Natural gas' total sales volume declined by 6.4 percent q-o-q to 1,041t, attributed to low sales from PetroSA. On a y-o-y basis, natural gas sales quantity registered a 46.2 percent increase. Natural gas condensate total sales volume went up by 33.6 percent q-o-q and fell 73.4 percent y-o-y, to 167t. The improvement of sales quantity can be attributed to production realised during the period under review. All the produced natural gas and natural gas condensate is sold domestically, as the country does not have enough local production to cover domestic demand.

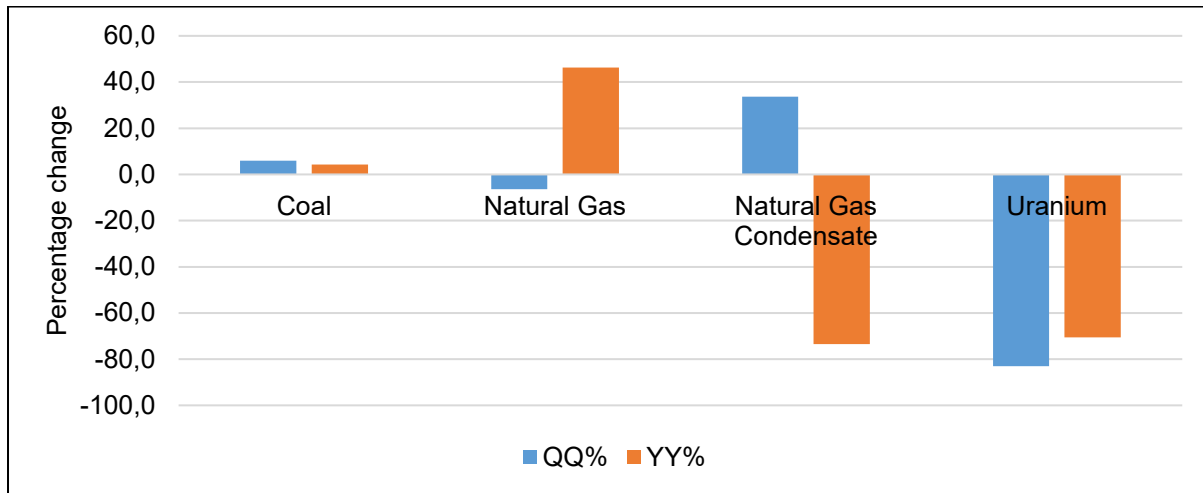
Uranium sales quantity decreased by 83.1 percent q-o-q and 70.6 percent y-o-y to 22.7t, due to low sales order received during the period under review.

TABLE 5: TOTAL SALES QUANTITY OF ENERGY MINERALS, Q2 2023.

Commodity (t)	Q2 2023	Q1 2023	Q2 2022	Q-o-Q%	Y-o-Y%
Coal	59,376,999	56,049,950	56,940,752	5.9	4.3
Natural Gas	1,041	1,112	712	-6.4	46.2
Natural Gas Condensate	167	125	628	33.6	-73.4
Uranium	22,680	133,812	77,112	-83.1	-70.6

Source: DMR, Mineral Economics and Statistics.

FIGURE 7: TOTAL SALES QUANTITY OF ENERGY MINERALS, Q2 2023.



Source: DMRE Mineral Economics and Statistics.

Total Revenue

Total revenue (Table 6 and Figure 8) generated from coal sales decreased by 0.3 percent q-o-q and 29 percent y-o-y to R48.57 billion owing mainly to lower export prices that fell by 13.5 percent m-o-m and 51.8 percent y-o-y to R1 776/t in Q2:2023. The higher domestic prices were unable to offset the impact of declining export prices.

Natural gas revenue increased by 23.5 percent q-o-q and 245.3 percent y-o-y to R11,017,247, driven by higher unit prices. Natural gas condensate total sales revenue grew by 37.5 percent q-o-q to R2,773,821, fuelled by high unit prices and sales volume. However, natural gas condensate revenue recorded a 77.6 percent decline on a y-o-y basis.

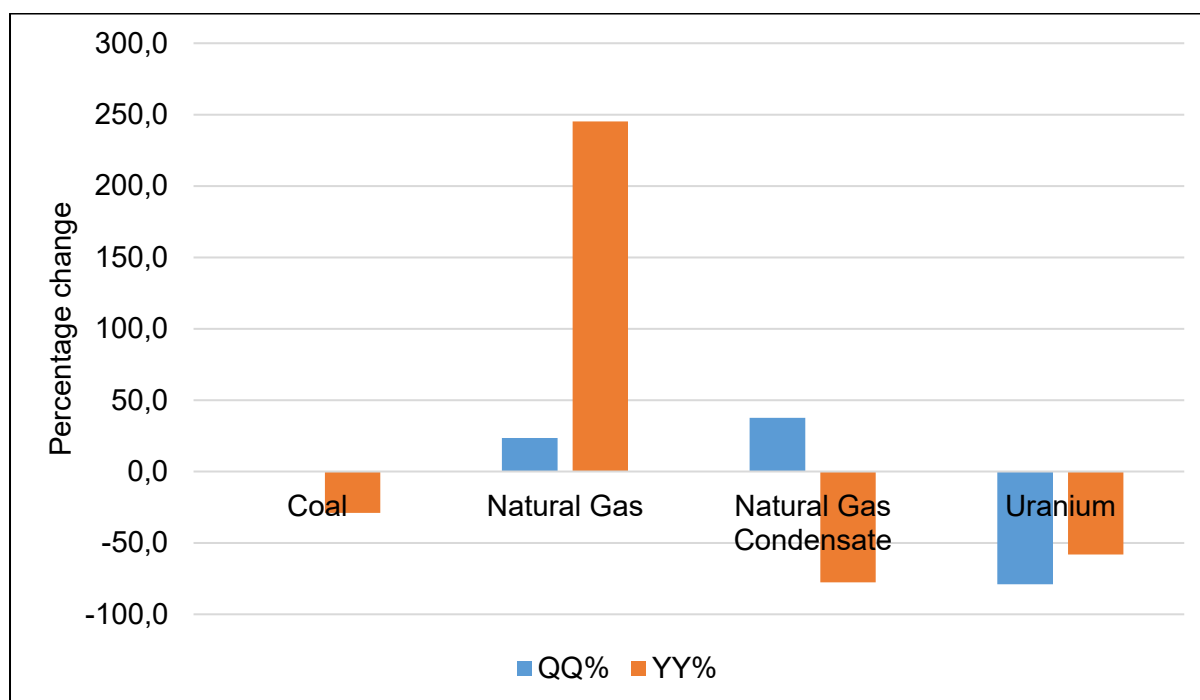
Revenue generated from the sale of uranium deteriorated by 79.1 percent q-o-q and 58.2 percent y-o-y to R52,478,311, attributed to low sales made during the period under review.

TABLE 6: TOTAL REVENUE OF ENERGY MINERALS, Q2 2023.

Commodity (R')	Q2 2023	Q1 2023	Q2 2022	Q-o-Q%	Y-o-Y%
Coal	48,573,816,175	48,711,938,398	68,420,560,824	-0.3	-29.0
Natural Gas	11,017,247	8,923,909	3,190,715	23.5	245.3
Natural Gas Condensate	2,773,821	2,016,764	12,395,814	37.5	-77.6
Uranium	52,478,311	250,746,797	125,516,103	-79.1	-58.2

Source: DMRE Mineral Economics and Statistics.

FIGURE 8: TOTAL REVENUE OF ENERGY MINERALS, Q2 2023.



Source: DMRE Mineral Economics and Statistics.

Prices

In Q2 2023 (Table 7 and Figure 9), domestic coal prices grew by 3.2 percent q-o-q and 1.2 percent y-o-y to R622/t owing mainly to inflation. On the other hand, lack of demand from the European and Indian markets resulted in a drop in export prices, recording a 13.5 percent q-o-q and 51.8 percent y-o-y decline to R1 776/t.

The unit price for natural gas went up by 31.9 percent q-o-q and 136.2 percent y-o-y to R10,583/t. Natural gas condensate unit price increased slightly by 2.9 percent q-o-q and registered a 15.9 percent decline y-o-y to R16,610/t. The decrease and increase in the unit prices for both natural gas and natural gas condensate can be attributed to demand, the different mechanisms used to calculate the charged price and the crude oil price.

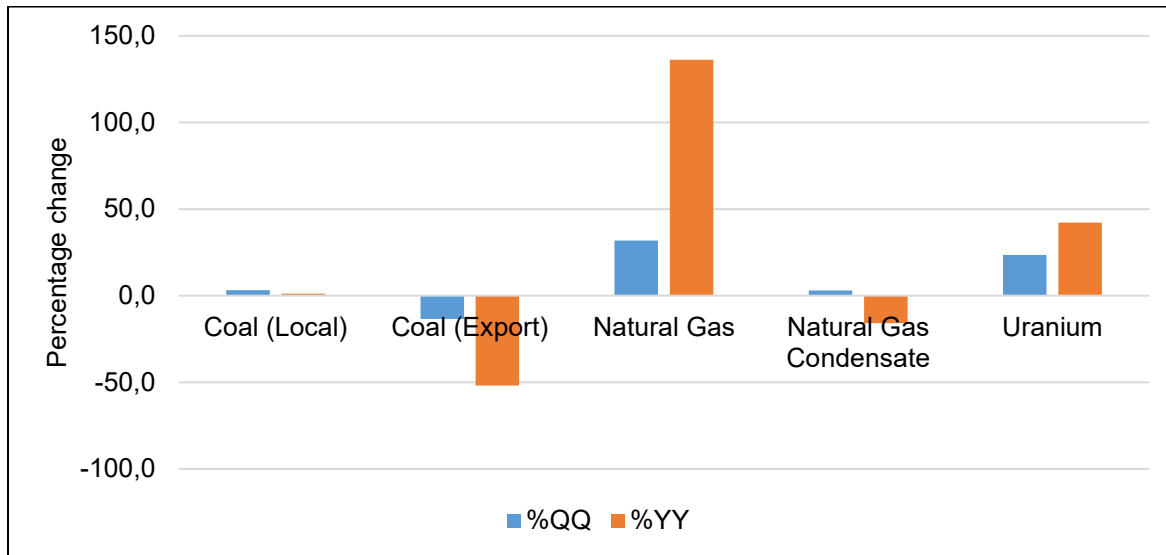
TABLE 7: PRICES OF ENERGY MINERALS, Q2 2023.

Commodity (R')	Q2 2023	Q1 2023	Q2 2022	%Q-o-Q	%Y-o-Y
Coal (Local)	622	603	614	3.2	1.2
Coal (Export)	1,776	2,054	3,688	-13.5	-51.8
Natural Gas	10,583	8,025	4,481	31.9	136.2
Natural Gas Condensate	16,610	16,134	19,739	2.9	-15.9
Uranium	2,314	1,874	1,628	23.5	42.2

Source: DMRE, Mineral Economics and Statistics.

Uranium unit price grew by 23.5 percent q-o-q and 42.2 percent y-o-y to R2,314/t, in line with the international spot price. International uranium spot price increased by 8.7 percent q-o-q and 7.6 percent y-o-y to average \$54.5 per pound. The recent improvement of uranium prices is due to the rising demand fuelled by global shift in support of nuclear energy.

FIGURE 9: AVERAGE PRICES OF ENERGY MINERALS, Q2 2023.

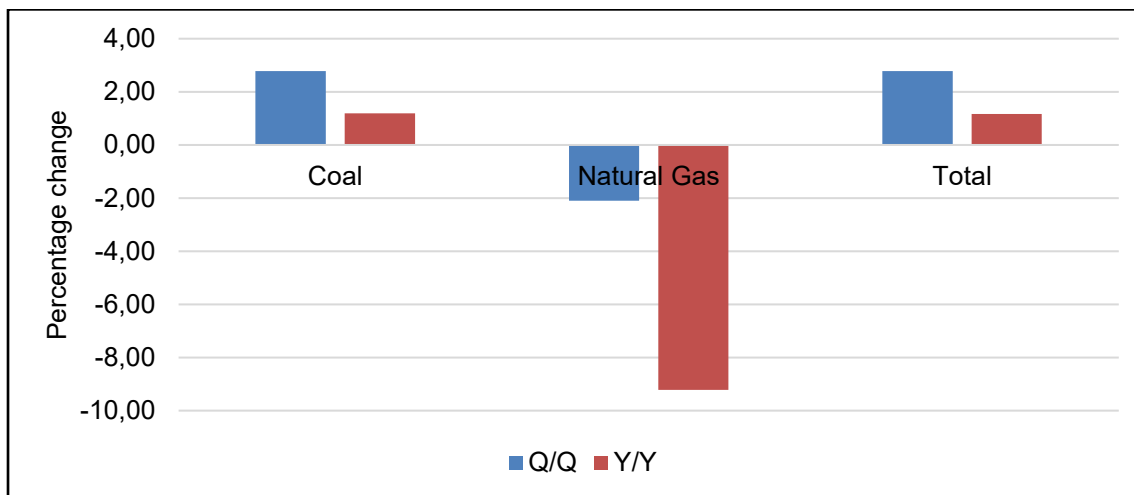


Source: DMRE Mineral Economics and Statistics.

Employment

In Q2:2023, employment in the energy sector increased by 2.78 percent q-o-q and 1.17 percent y-o-y to 94 118 employees, driven by increases in contract work in the coal industry (Figure 10). The increase in the coal industry was able to offset the 2.09 percent q-o-q and 9.22 percent y-o-y decrease in the gas industry. The increased number of contract workers in coal industry signifies new projects under development in the coal industry.

FIGURE 10: PERCENTAGE INCREASES IN THE ENERGY SECTOR, Q2 2023.



Source: DMRE Mineral Economics and Statistics.

There is a continued decrease in employment in the country's natural gas industry due to Tetra 4's expansion ramped up.

Earnings in the energy sector increased by 11.57 percent q-o-q and 5.54 percent y-o-y to R8.38 billion underpinned mainly by bonuses paid out in several coal mines and the increased number of employees. Consequently, the per capita earnings in the sector increased by 8.56 percent q-o-q and 4.32 percent y-o-y to R89 0667. It is important to note that the increases in the energy sector were driven by the coal industry.

Outlook

The strain from power and logistical challenges remain the most significant binding constraints hindering growth in the coal mining industry of South Africa. Junior coal miners are already buckling under the strain, with some curbing production by up to 40 percent. Some mines are forced to curtail production as stocks reach capacity and export growth impacted by rail issues. Some producers are battling with poor quality coal, challenging geological conditions and productivity issues. Consequently, coal production is expected to remain at current levels in Q3 of 2023. Export sales are also expected to remain at current levels or even drop as rail issues persist. The expected two weeks maintenance closure of the coal railway line in July 2023 might drop export figures even further. The renewed demand from India and Pakistan, especially towards the end of Q2 2023 might boost the export coal prices. Domestic coal prices will continue to edge higher due to South Africa's high inflation.

South Africa's natural gas production is expected to improve in the third quarter of 2023, driven by output from Tetra4. The company is still in the process of optimising the plant, which will see output improve in the projected quarter. Natural gas condensate production is anticipated to decline in the next quarter or remain at current levels, due to declining reserves from PetroSA. Uranium production will be guided by gold production from Moab Operations and the demand for it.

Sources:

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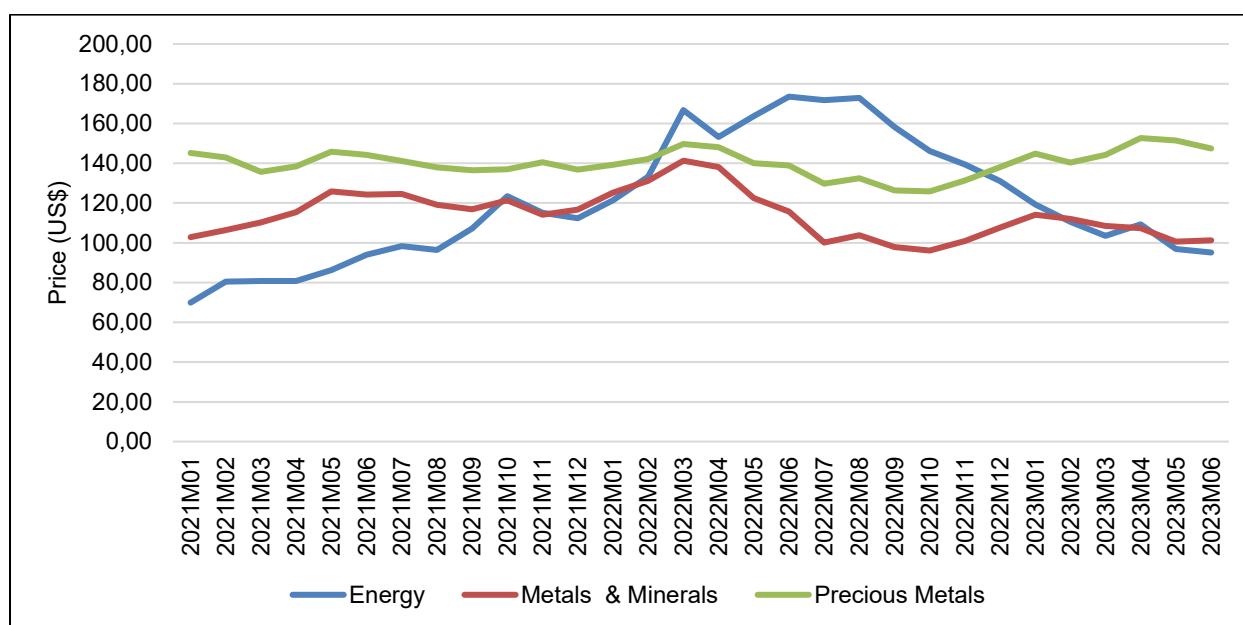
KL Revombo & KJ Tshetlhanyane

6. GLOBAL ENERGY COMMODITIES PRICE INDICES CONTINUED TO DECLINE IN QUARTER 2 2023.

Global energy commodities price indices continued to trend downward in the second quarter (Q2) of 2023, recording a 9.6 percent decline to average \$100.5, as compared with \$111.1 in the first quarter (Q1) of 2023 (Figure 11). The poor performance can be attributed to a combination of slowing global economic activities, warm weather conditions, and the reallocation of global commodity trade flows. The slowing global economic activities have kept demand for energy commodities low, during the period under review. According to the International Monetary Fund, the global economy is expected to grow by 2.8 percent in 2023, down from 3.4 percent in 2022.

South Africa's energy commodities, especially coal and uranium, were no exception as they registered a negative revenue growth in Q2:2023. Only natural gas performed better, driven by domestic demand. The decline in commodity prices as whole will have a detrimental effect on the nations' fiscus because of eroded tax base when companies are not generating enough revenues. National Treasury has already projected a decline in mineral royalties for this year, because of the expected weak economic growth.

FIGURE 11: COMMODITY PRICE INDICES, JANUARY 2021-JUNE 2023.



Source: International Monetary Fund

Global energy price indices are expected to increase in the third quarter of 2023, driven by oil and gas prices. Oil prices are expected to improve due to production cuts by major exporters while gas price movements will be fuelled by the anticipated labour strikes at Chevron's Gorgon and Wheatstone liquid natural gas sites in Australia liquid Natural gas, which contributes approximately 10 percent to global exports.

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Kabelo Tshetlhanyane

7. SOUTH AFRICA'S FERROUS METALS PERFORMANCE DURING THE SECOND QUARTER OF 2023.

Production

South Africa's total ferrous production averaged at 25 810 kilo tons(kt) in the second quarter of 2023 (Q2 2023), an increase of 7 percent compared with Q1 2023 (Table 8 and Figure 12). Iron ore sector contributed 62.2 percent to total ferrous production, while manganese and chrome ore sectors contributed 19.6 percent and 18 percent, respectively during this quarter. The rise in production was notable across

all sectors with iron, manganese and chrome ore sectors increasing by 7.3 percent, 7.1 percent, and 5.9 percent, in that order.

Sales and Revenue

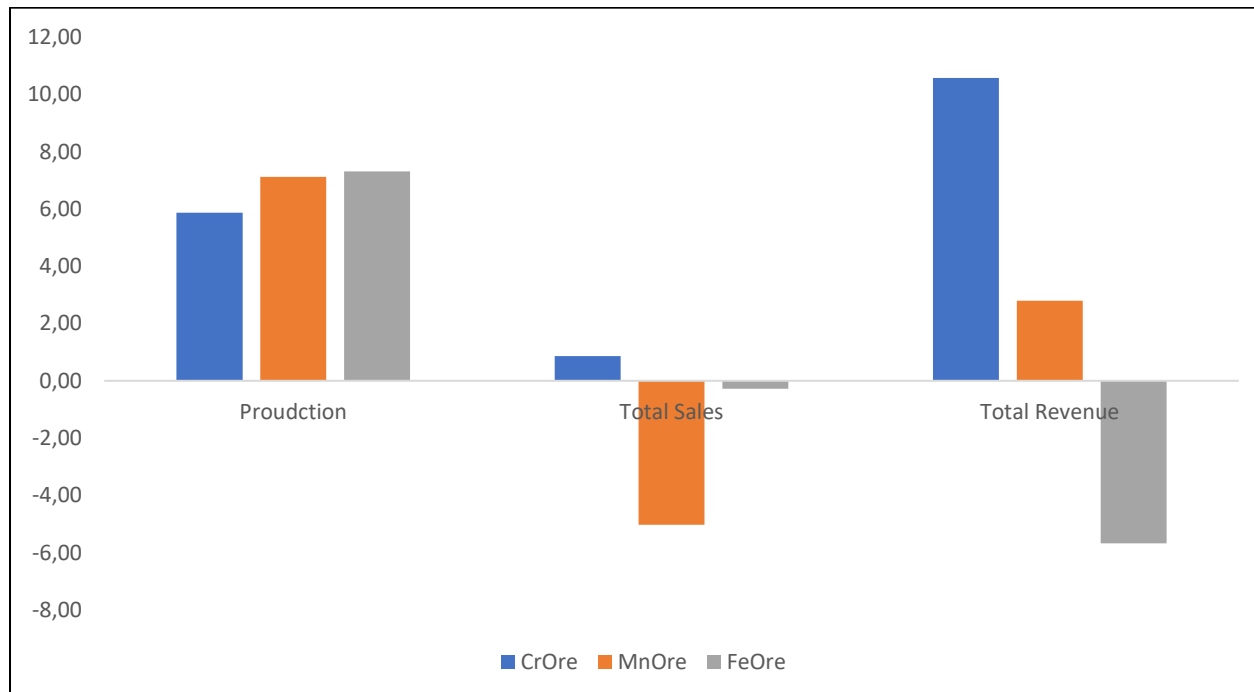
Revenue generated from the ferrous sector averaged at R51.2 billion in Q2 2023 (Table 8 and Figure 12), contributing on average 24.9 percent to total mining revenue. Contrary with a drop in total sales mass, ferrous sector's revenue rose by a marginal 0.46 percent from an estimated R51.0 billion in Q1 2023 to R51.2 billion in Q2 2023. Y-o-y, total ferrous revenue declined by 4.5 percent, due to lower sales volumes and prices. A weaker rand experienced both q-o-q and y-o-y, failed to boost prices as well as export revenue in these periods. Despite most ferrous ore producers opting for trucking of ore, rail and port challenges continue to negatively impact turnaround times and export volumes, which dropped by 2.6 percent and 7.8 percent, q-o-q and y-o-y, respectively.

TABLE 8: FERROUS MINERALS PRODUCTION AND SALES, Q2 2023.

PERIOD	PRODUCTION	LOCAL SALES		EXPORT SALES		TOTAL SALES	
	Quantity (kt)	Quantity (kt)	Value (R1000l)	Quantity (kt)	Value (1000)	Quantity (kt)	Value (1000)
Q22022	27 483	4 964	6 797 930	21 484	46 368 660	26 607	53 618 849
Q12022	24 121	5 634	8 365 419	20 318	42 636 712	25 953	51 002 132
Q22023	25 810	5 887	9 421 358	19 798	41 813 232	25 685	51 234 590
Q-O-Q	7.00	4.49	12.62	-2.56	-1.93	-1.03	0.46
Y-O-Y	-6.09	18.59	38.59	-7.85	-9.82	-3.47	-4.45

Source: DMRE, Mineral Economics and Statistics, Q22022, Q22023 and Q32023

FIGURE 12: FERROUS MINERALS PRODUCTION AND SALES QUARTERLY % CHANGES.



Source: DMRE, Mineral Economics and Statistics,

An increase in iron ore production was largely due production ramp ups from most producers, coupled with improved working conditions, which is reflected in a double digit increase from some producers, with production at Beeshoek and Bushveld showing an 80.5 percent and 71.5 percent increase, respectively. Y-o-y, total iron ore production dropped by almost 10 percent as most producers, experienced technical

challenges, coupled with maintenance work. Iron ore revenue averaged at R24.4 billion, declining by 5.7 percent and 20.4 percent, both q-o-q and y-o-y, due to lower sales mass coupled with lower unit prices in both periods. An increase in domestic sales mass and unit prices, coupled with a weaker R/USD\$ exchange rate failed to cushion revenue.

Manganese ore production rose by 7.1 percent and 6.9 percent, q-o-q and y-o-y, supported by a rise in production across most producers. Production at Mamatwan and UMK grew by 99 percent and 84.93 percent, while that at Kalagadi and Mokala mines grew by 66.36 percent and 44.1 percent, respectively. Growth in production was supported by mines using trucks to transport ore to the port, coupled with improved technical performance at the mines. Manganese ore revenue averaged at R12.6 billion in Q2 2023, a 2.8 percent increase, despite lower sales volumes. An increase in revenue is attributable to higher unit prices, coupled with a weaker local currency. Y-o-y, manganese total sales revenue dropped by 5.5 percent, due to lower unit prices, despite increased sales volumes as well as a weaker rand to dollar exchange rate.

Chrome production rose by 6 percent q-o-q, supported mainly by an increase in by-product output, in line with the 28 percent increment in PGMs production. Primary chrome production remained constrained due to power supply shortages, affecting more intensely smaller producers, as well as logistical challenges. This comes as demand for port-side chrome is on the rise, amid a tight market on the supply side - which has helped to boost prices and profit margins for major producers. Y-o-y, (Eskom's) winter tariff had a deeper impact on production, which contracted by 5.9 percent. Chrome revenue rocketed to R14.2 billion in Q 2 2023, a 10.6 percent and 47.7 percent, q-o-q and y-o-y, increment. The rise in total revenue from chrome sales could have been even higher had the rand not depreciated on average by 5.5 percent q-o-q.

Employment

TABLE 9: FERROUS EMPLOYMENT AND REMUNERATION, Q2 2023

PERIOD	EMPLOYEES	REMUNERATION Rands	REMUNERATION/EMPLOYEE Rands
Q2 2023	55 891	5 471 802 141	97 901
Q1 2023	55 417	5 203 259 265	93 829
Q2 2022	54 927	5 138 937 072	93 558
QQ % change	0.90	5.16	-0.04
YY% change	1.80	6.48	0.00

Source: DMRE, Directorate Mineral Economics and Statistics

Total ferrous employment was estimated at 55 891 in Q2 2023, contributing 11.8 percent to total mining employment. (Table 9). Employment rose by 0.9 percent and 1.8 percent q-o-q and y-o-y, respectively. Iron ore at 41.7 percent, is the biggest contributor to total ferrous employment, followed by the chrome and manganese sectors at 37.0 percent and 21.1 percent, each. Y-o-y, average ferrous employment rose by 1.8 percent, supported by a 9.6 percent and 1.02 percent growth from the chrome and iron ore sectors, despite an 8.4 percent dip from the manganese sectors employment.

Outlook

The World Steel Association expects Chinese steel demand to rebound by 2 percent in 2023, driving a projected 2.4 percent growth in global demand. High inflation and interest rates in most countries will limit the recovery of steel demand in 2023, despite positive factors, in particular, the lifting of restrictions in China, the resilience of Europe in the face of the energy crisis and the resolution of logistics issues. Despite

the continuing power outages coupled with operational and rail and port in-efficiencies, ferrous production is expected to increase in Q3 2023. This will be supported by improved operational conditions coupled with the relaxation of winter tariffs, especially from the chrome sector. In addition, increased demand of manganese ore, mainly from the electric vehicle sector coupled with increased demand for higher grade ore, are expected to boost production, while iron ore supply will be affected by China's request to steel production, by implementing measures to limit consumption to 2022 levels. The consumption of local sales quantities will depend largely on how resilient the ferroalloy sector is during the higher stages of load shedding, while improved rail and port performance, coupled with the use of road transportation will boost export sales volumes.

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8. SOUTH AFRICA'S NON-FERROUS METALS AND MINERALS SECTOR'S PERFORMANCE DURING THE SECOND QUARTER OF 2022

Production

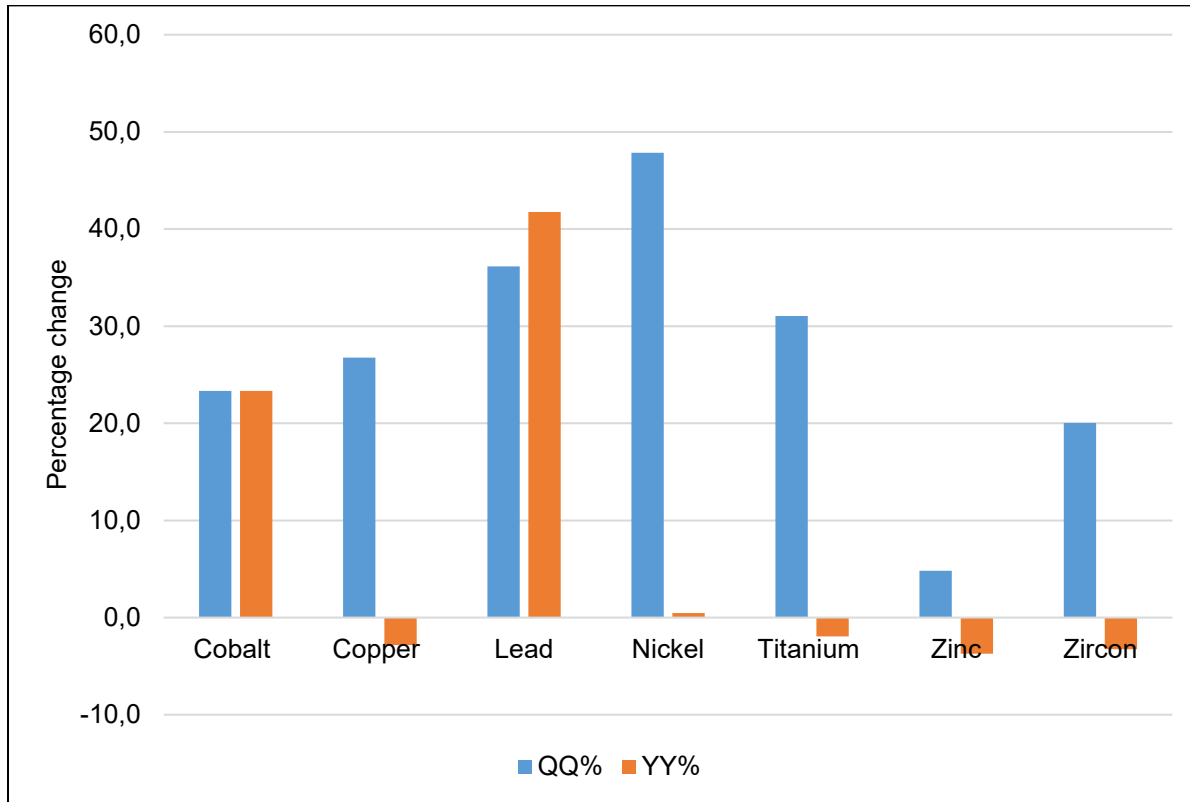
The production of South Africa's non-ferrous metals rose by 27.6 percent in the second quarter (q-o-q) of 2023 to 754.2 kt, as a result of increased output from all non-ferrous minerals. At 47.8 percent, nickel was the best performing metal in this quarter, followed by lead and titanium at 36.1 percent and 31 percent, respectively. However, y-o-y production declined by 1.7 percent from 767.6 kt in the year ending June 2023. This was mainly due to the drop in production from the heavy mineral sands and copper sectors, as they both struggled with lower ore grades (Table 10 and Figure 13). The 41.7 percent and 23.3 percent escalation in lead and cobalt output respectively, was not sufficient to offset the decreases in copper (2.8%), titanium (1.9%) and zinc (3.7%) and zircon (3.3%).

TABLE 10: PRODUCTION OF NON-FERROUS METALS AND MINERALS, Q2 2023

Commodity (t)	Q2 2023	Q1 2022	Q2 2022	% QQ	% YY
Cobalt	74	60	60	23,3	23,3
Copper	12 198	9 622	12 553	26,8	-2,8
Lead	11 500	8 447	8 113	36,1	41,7
Nickel	8 059	5 451	8 022	47,8	0,5
Titanium	586 400	447 522	598 054	31,0	-1,9
Zinc	56 682	54 086	58 873	4,8	-3,7
Zircon	79 292	66 050	81 956	20,0	-3,3
Total	754 205	591 238	767 631	27,6	-1,7

Source: DMRE, Directorate Mineral Economics and Statistics

FIGURE 13: PRODUCTION OF NON-FERROUS METALS AND MINERALS, Q2 2023.



Source: DMRE, Directorate Mineral Economics and Statistics

Total Sales

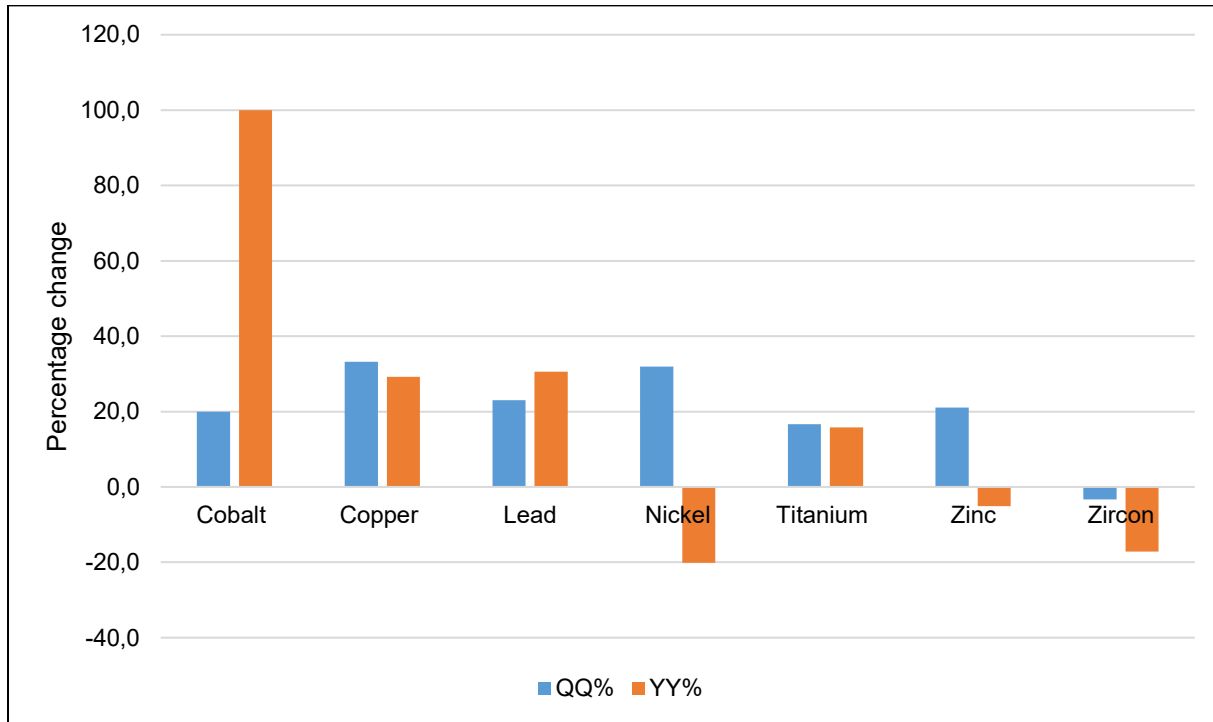
In Q2:2023, total sales volume for non-ferrous metals increased by 15.6 percent q-o-q from 691.3 kt, due to higher sales in most minerals except for zircon, which recorded a decline of 3.3 percent due to reduced demand from major consuming countries. At 33.2 percent, copper recorded the highest sales, followed by nickel at 32 percent and lead at 23 percent (Table 11 and Figure 14).

TABLE 11: TOTAL SALES OF NON-FERROUS METALS AND MINERALS, Q2 2023.

Commodity (t)	Q2 2023	Q1 2023	Q2 2022	QQ%	YY%
Cobalt	36	30	18	20,0	100,0
Copper	11 693	8 776	9 049	33,2	29,2
Lead	10 741	8 734	8 224	23,0	30,6
Nickel	7 132	5 405	8 927	32,0	-20,1
Titanium	484 339	415 164	418 137	16,7	15,8
Zinc	112 660	93 066	118 676	21,1	-5,1
Zircon	64 768	66 979	78 156	-3,3	-17,1
Total	691 369	598 154	641 187	15,6	7,8

Source: DMRE, Directorate Mineral Economics and Statistics

FIGURE 14: TOTAL SALES OF NON-FERROUS METALS AND MINERALS, Q2 2023.



Source: DMRE, Directorate Mineral Economics and Statistics

On a y-o-y, non-ferrous minerals sales volume also rose by 7.8 percent due to increased demand from major consuming markets. Losses in nickel, zinc and zircon were offset by the growth in cobalt, copper, lead, and titanium sales. At 100 percent, cobalt displayed the most growth, followed by lead at 30.6 percent and copper at 29 percent.

Total Revenue

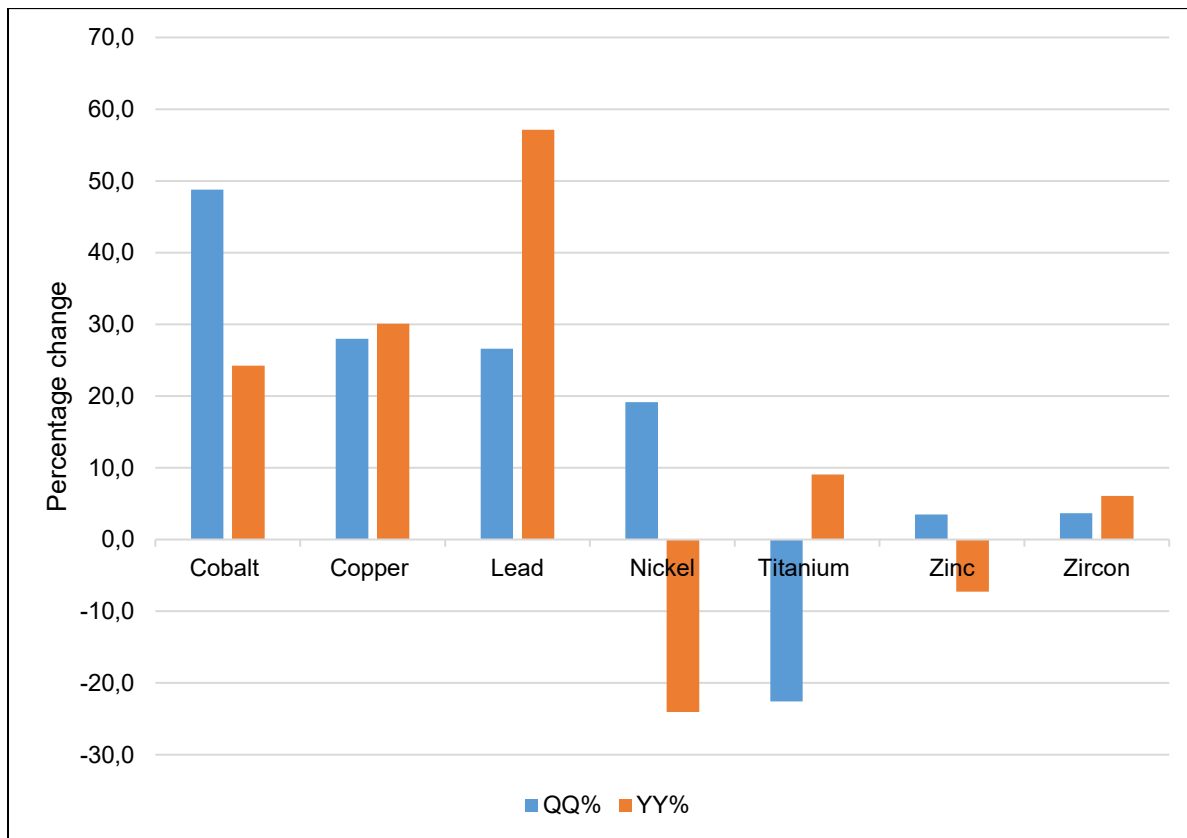
In the second quarter of 2023, non-ferrous revenue increased by 7.9 percent q-o-q from R9.9 billion to R10.7 billion (Table 12 and Figure 15), in line with the increase in sales tonnages. Cobalt, at 49 percent recorded the most growth, followed by copper's 28 percent and lead's 27 percent. However, y-o-y, revenue for non-ferrous minerals declined by 3 percent, on the back of sluggish demand and falling commodity prices.

TABLE 12: TOTAL REVENUE OF NON-FERROUS METALS AND MINERALS, Q2 2023.

Commodity (RM)	Q2 2023	Q1 2023	Q2 2022	QQ%	YY%
Cobalt	22 922 152	15 407 583	18 447 777	48,8	24,3
Copper	1 606 378 592	1 255 092 239	1 234 824 545	28,0	30,1
Lead	393 817 121	311 050 537	250 665 545	26,6	57,1
Nickel	2 889 888 794	2 425 465 747	3 804 309 374	19,1	-24,0
Titanium	982 754 271	1 268 920 837	901 138 912	-22,6	9,1
Zinc	2 218 776 269	2 144 136 502	2 392 187 795	3,5	-7,2
Zircon	2 580 728 930	2 489 285 844	2 432 795 306	3,7	6,1
Total	10 695 266 129	9 909 359 289	11 034 369 254	7,9	-3,1

Source: DMRE, Directorate Mineral Economics and Statistics

FIGURE 15: TOTAL REVENUE OF NON-FERROUS METALS AND MINERALS, Q2 2023.
YEAR PERCENTAGE CHANGE OF PRODUCTION AND SALES.



Source: DMRE, Directorate Mineral Economics and Statistics

Prices

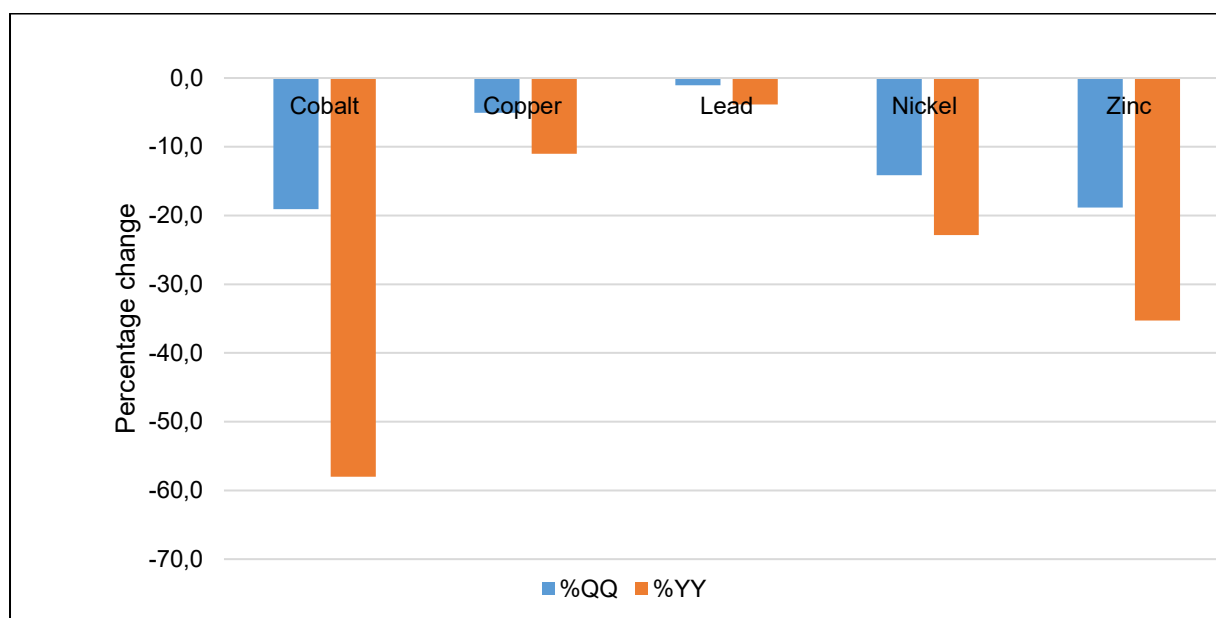
London Metal Exchange (LME) settlement prices for major non-ferrous metal continued to diminish across the board in the second quarter of 2023 (Table 13 and Figure 16) with cobalt prices experiencing the largest decline at 19.1 percent followed by zinc (18.9 percent), Figure 4. Nickel prices also fell by 14.1 percent as well as copper (5 %) and lead (1%). The decline in metal prices was driven by slowdown in growth over the concerns of impending recession.

TABLE 13: AVERAGE COMMODITY PRICES, Q2 2023.

Commodity (\$/t)	Q2 2023	Q1 2023	Q2 2022	%QQ	%YY
Cobalt	32 383	40 026	77 148	-19,1	-58,0
Copper	8 478	8 930	9 526	-5,1	-11,0
Lead	2 118	2 141	2 203	-1,0	-3,8
Nickel	22 393	26 079	29 029	-14,1	-22,9
Zinc	2 540	3 130	3 925	-18,9	-35,3

Source: www.lme.com

FIGURE 16: CHANGES IN NON-FERROUS METALS AND MINERALS PRICES, Q2 2023.



Source: London Metal Exchange, October 2022

Most non-ferrous metals prices followed a similar trend on an annual basis, recording huge falls with cobalt prices recording the highest decline at 58 percent. Zinc prices also fell by 35 percent followed by nickel (22%) and cobalt (4%). This is indicative of deteriorating global economic activity.

Employment

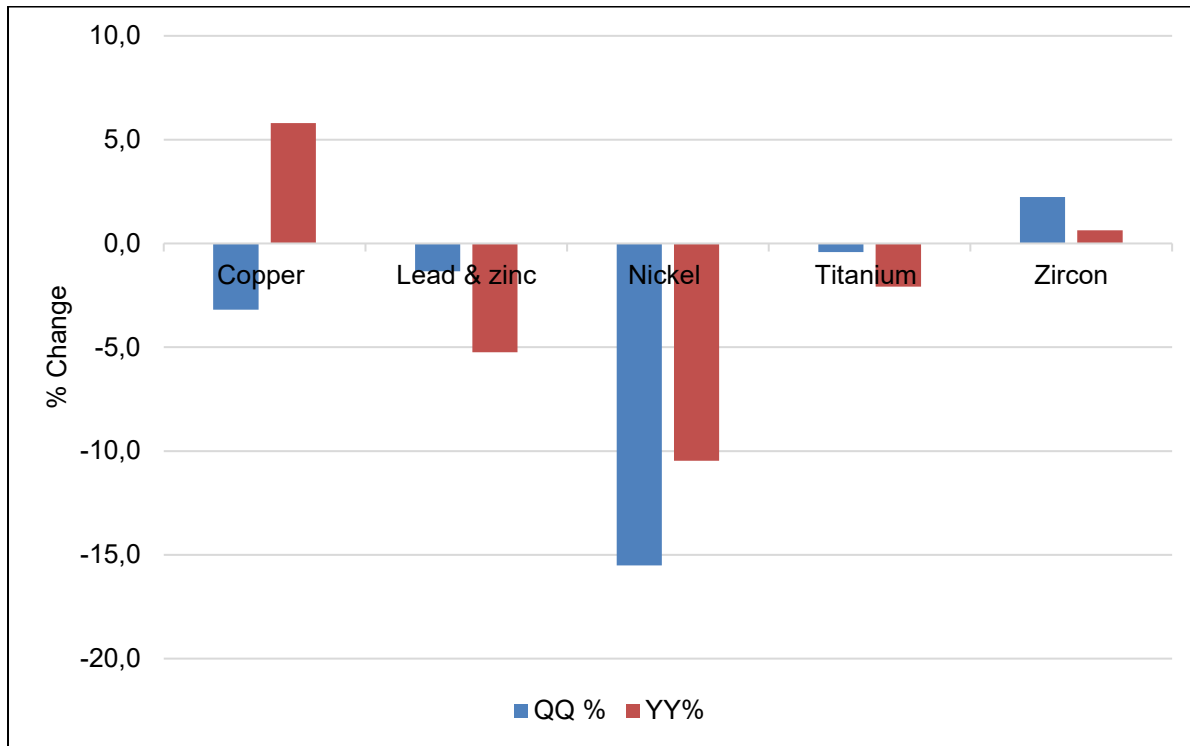
In Q2:2023, non-ferrous employment fell by 2 percent from 16 597 employees in the first quarter of 2023 (Table 14 and Figure 17) due to the reduction in contractor employment. At 15.5 percent, nickel recorded the largest decline followed by copper at 3.2 percent. Lead and zinc also declined by 1.3 percent while employment in the zirconium mines increased by 2.2 percent.

TABLE 14: EMPLOYMENT OF NON-FERROUS, Q2 2023.

Commodity	Q2 2023	Q1 2023	Q2 2022	QQ %	YY%
Copper	7,466	7,712	7,056	-3.2	5.8
Lead & zinc	3,076	3,118	3,246	-1.3	-5.2
Nickel	145	172	162	-15.5	-10.5
Titanium	5,259	5,281	5,370	-0.4	-2.1
Zircon	320	313	318	2.2	0.6
Total	16,267	16,597	16,154	-2.0	0.7

Source: DMRE, Mineral Economics and Statistics

FIGURE 17: EMPLOYMENT IN THE NON-FERROUS, Q2 2023.



Source: DMRE, Directorate Mineral Economics and Statistics

On an annual basis, nonferrous employment improved by a marginal 0.7 percent compared to the same period in 2022. This was due to a 5.5 percent increase in employment from copper as well as 0.6 percent from zircon. These increases were more than enough to offset declines from nickel, lead and zinc at 10.5 percent and 5.2 percent, correspondingly (Figure 5).

Earnings

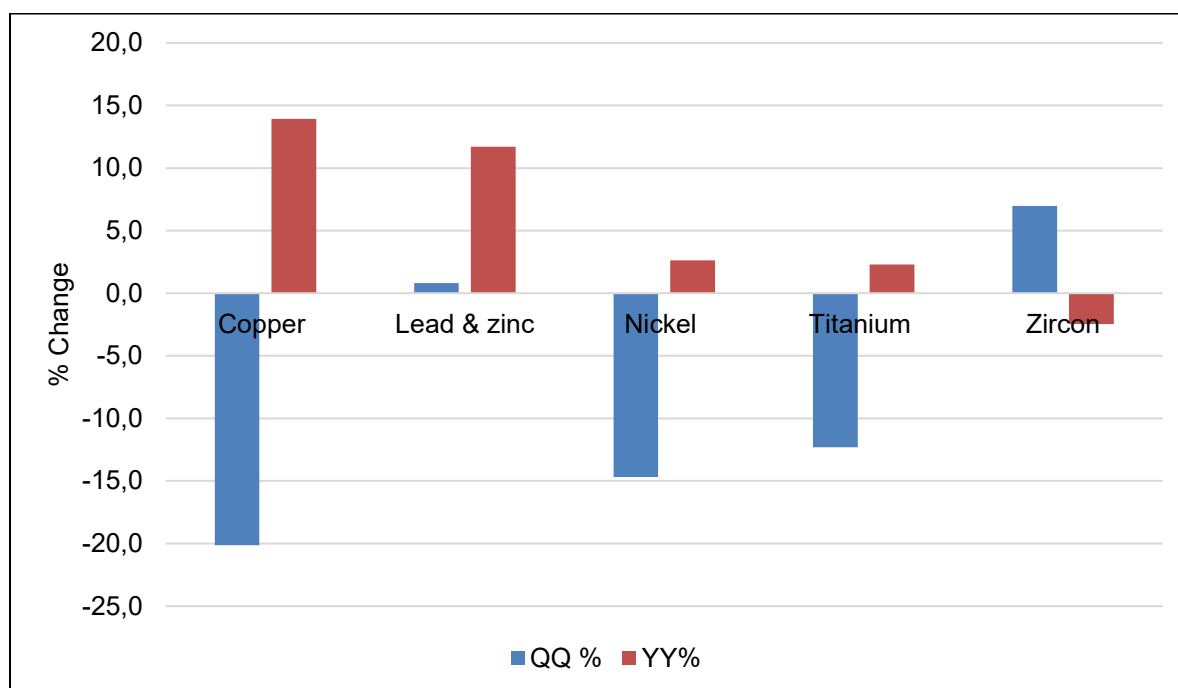
Total earnings for non-ferrous sector decreased by 15.6 percent from R2.4 billion in the Q1: 2023 to R2 billion in the Q2:2023 (Table 15 and Figure 18) as a result a decline in contract employment. Copper recorded the largest decline in earnings, decreasing by 20.1 percent followed by nickel (14.7%) and titanium sector (12.3%). This was enough to offset higher earnings from zircon as well as lead and zinc.

TABLE 15: EARNINGS OF NON-FERROUS, Q2 2023.

Commodity	Q2 2023	Q1 2023	Q2 2022	QQ %	YY%
Copper	1,241,382,570	1,554,312,166	1,089,689,979	-20.1	13.9
Lead & zinc	283,265,931	281,015,679	253,614,167	0.8	11.7
Nickel	12,241,052	14,346,807	11,927,085	-14.7	2.6
Titanium	463,419,050	528,407,579	452,982,956	-12.3	2.3
Zircon	31,717,280	29,653,347	32,515,345	7.0	-2.5
Total	2,032,025,883	2,407,735,578	1,840,729,532	-15.6	10.4

Source: DMRE, Mineral Economics and Statistics

FIGURE 18: TOTAL EARNINGS OF NON-FERROUS, Q2 2023.



Source: DMRE, Directorate Mineral Economics and Statistics

Non-ferrous total earnings rose by 10.4 percent in the quarter ending June 2023 (Figure 6) due to a slight improvement on the number of employees as well as on salary increases in the non-ferrous sector, y-o-y.

Outlook

The global demand for battery minerals and the transition to green energy is expected to continue to drive demand for base metals. However, the prices of non-ferrous metals are expected to decline in the short term, driven by negative macro-economic sentiment as major central banks continue to raise interest rates to curb inflationary pressures. The soaring global energy crisis that is driven by the war in Ukraine, as well as the recession sentiments are likely to slow down global economic growth.

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SL Ramane & SP Mnyameni

9. RECENT DEVELOPMENTS IN RARE EARTH ELEMENTS

Chinese border control resulting in a price surge.

Demand for Rare Earth Elements (REEs) has been on an upward trajectory, underpinned by an uptake in their applications, mainly the green technology and electronics sectors. REEs are essential components

in the manufacturing of magnets that are required for electric vehicles (EVs) and wind turbines. They are also extensively used in defence applications, high-tech products such as smart phones as well as in metal alloys, ceramics, glass, lasers, and fibre optics.

Global production of REEs was estimated at 300 kt in 2022, and China was responsible for about 70 percent of that output, followed by the United States (14.3%) and Brazil (6%). Myanmar (Burma) dropped from being the second largest producer in 2021, due to the closure of major operations as a result of environmental issues. Border closures between Myanmar and China due to covid, remained at the beginning of the year, causing significant supply constraints and soaring prices. As a result of residents protesting environmental pollution, Chinese mining companies are reportedly preparing for suspension of mining activities in Myanmar in 2023. China has been consolidating its efforts to maintain its position as a global leader in REE supply chain. Three state-owned entities merged in December 2021, creating the China Rare Earth Group, which accounts for over 60 percent of the country's heavy REE supply. The rapidly growing demand for REE has encouraged exploration and exploitation of these minerals. As such, several mining and processing projects are under development globally, including in the United States, Canada and Australia. Despite South Africa having significant reserves of REE, estimate at 790 kt, there is still no indication of when production will commence at the Steenkampskraal mine.

Global REE demand is forecast to reach 466 kt of rare earth oxides by 2035, from 170 kilotons in 2022, an 8 percent compound annual growth rate, as technological developments continue to play a key role particularly in EVs and wind turbines. It is expected that when the new projects come on stream and key operations in Myanmar resume production, global output will show significant growth as well. Prices are also anticipated to stabilize, as trade with China has gone back to normal.

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Lerato Ramane

10. SOUTH AFRICA'S INDUSTRIAL MINERALS SECTOR'S PERFORMANCE DURING THE SECOND QUARTER OF 2023.

Production of industrial minerals in the second quarter of 2023 declined by 8.1 percent (q-o-q) to 20.6 Mt (Table 16 and Figure 19), owing to sluggish performance in most operations. Furthermore, demand dwindled for minerals such as phosphate rock owing to decreased demand for high priced fertilizers and decreased production for special clays attributed to fireclay stockpiles. Similarly, the year-on-year production decreased by 7.7 percent (Table 16 and Figure 20) on the back of depreciating demand.

Total sales volume of industrial mineral increased by 4.7 percent (q-o-q) and decreased by 4.3 percent (y-o-y) to 20.5 Mt (Table 16, Figures 19 and 20). The q-o-q increment was due to recovering fluorspar demand for Nokeng metspar by Buffalo mine in April and June 2023, recovery from limestone sales and an increase in average sulphur local unit value. The y-o-y decrease was because of most dimension stones not exporting, as well as decreased exports demand globally for phosphate rock and vermiculite.

Total sales value (Table 16) increased by 3 percent (q-o-q) to R6.3 billion owing to restored economic activity in the second quarter. Similarly, the year-on-year revenue rose by 10.7 percent owing to an increase in appetite for the fluorspar and Nokeng's bulk shipments, increased appetite for refractory

material in international markets as well as the upswing in markets of andalusite, dimension stone, phosphate rock, fluorspar as well as aggregate and sand.

TABLE 16: SOUTH AFRICA'S PRODUCTION AND SALES OF INDUSTRIAL MINERALS DURING QUARTER 2, 2023

PERIOD	PRODUCTION	LOCAL SALES (FOR)		EXPORT SALES (FOB)		TOTAL SALES	
	Mass (kt)	Mass (kt)	R'000	Mass (kt)	R'000	Mass (kt)	R'000
Q2 (2023)	20 644	20 120	4 356 155	1,003	1,958,483	20,484	6,314,638
Q1 (2023)	22 455	19 168	3 803 638	1,257	2,324,293	19,572	6,127,931
Q2 (2022)	22 362	20 871	3 837 767	1,166	1,866,972	21,404	5,704,739
Q-O-Q (%)	-8.1%	5.0%	14.5%	20.2%	-15.7%	4.7%	3.0%
Y-O-Y (%)	-7.7%	-3.6%	13.5%	14.0%	4.9%	-4.3%	10.7%

Source: DMRE, Directorate Mineral Economics and Statistics

Total sales volume of aggregates and sand slightly increased by 0.3 percent (q-o-q) and decreased by 5.5 percent (y-o-y) to 12.7 Mt, due to elevated sales, as the construction activities rebound. Consequently, total sales revenue of aggregates and sand increased by 4.8 percent (q-o-q) and 4.1 percent (y-o-y) to R1.72 billion because of improved activity in the construction sector.

Andalusite production increased by 44.5 percent (q-o-q) and by 7.9 percent (y-o-y) to 43 kt. Production is largely determined by demand; it is for this reason that production went up (Figure 1). Export sales mass and value for andalusite increased by 58.1 percent to 31 kt and 55.2 percent to R231.1 million (q-o-q). Similarly, export sales mass increased by 11.6 percent (y-o-y) and export sales value by 50.1 percent (y-o-y), due to increased appetite for refractory materials in international markets.

Fluorspar production increased by 23.5 percent (q-o-q) and 20.1 percent (y-o-y), respectively. Local sales mass went up by 20.4 percent (q-o-q), while local sales value by 15.7 percent induced by Nokeng mine recovering demand after selling metspar to Buffalo mine in April and June 2023. In contrast, local sales mass declined significantly by 79.4 percent (y-o-y), and local sales value also plummeted by 46.3 percent (y-o-y) owing to heightened metspar demand in 2022, which then declined in 2023 from 2022 levels. Export sales mass and value increased by 15.8 percent (q-o-q) and 21.4 percent (q-o-q), respectively. Export sales mass and value went up y-o-y by 11.2 percent and 64.1 percent, respectively. The q-o-q and y-o-y increases are owing to an increase in the appetite for the material and Nokeng's bulk shipments which inflated exported volumes.

Phosphate rock production decreased in the second quarter of 2023 by 38.8 percent (q-o-q) and by 58.2 percent (y-o-y) to 220kt. The decrease in phosphate production is attributed to decreased demand for high priced fertilizers. However, fertilizer prices have eased from their early 2022 peaks. Local sales mass and volumes increased by 38.4 and by 48.5 percent (q-o-q) respectively. Local sales mass and volumes recorded a decrease of 2.4 percent and increased by 32.3 percent (y-o-y). Export sales mass and volumes decreased by 25.4 and 48.9 (q-o-q) while export sales mass and volumes decreased by 30.6 percent and 8.1 percent (y-o-y). The decrease in export sales is attributed to decreased demand globally, after restrictions were lifted from some of the major exporting countries.

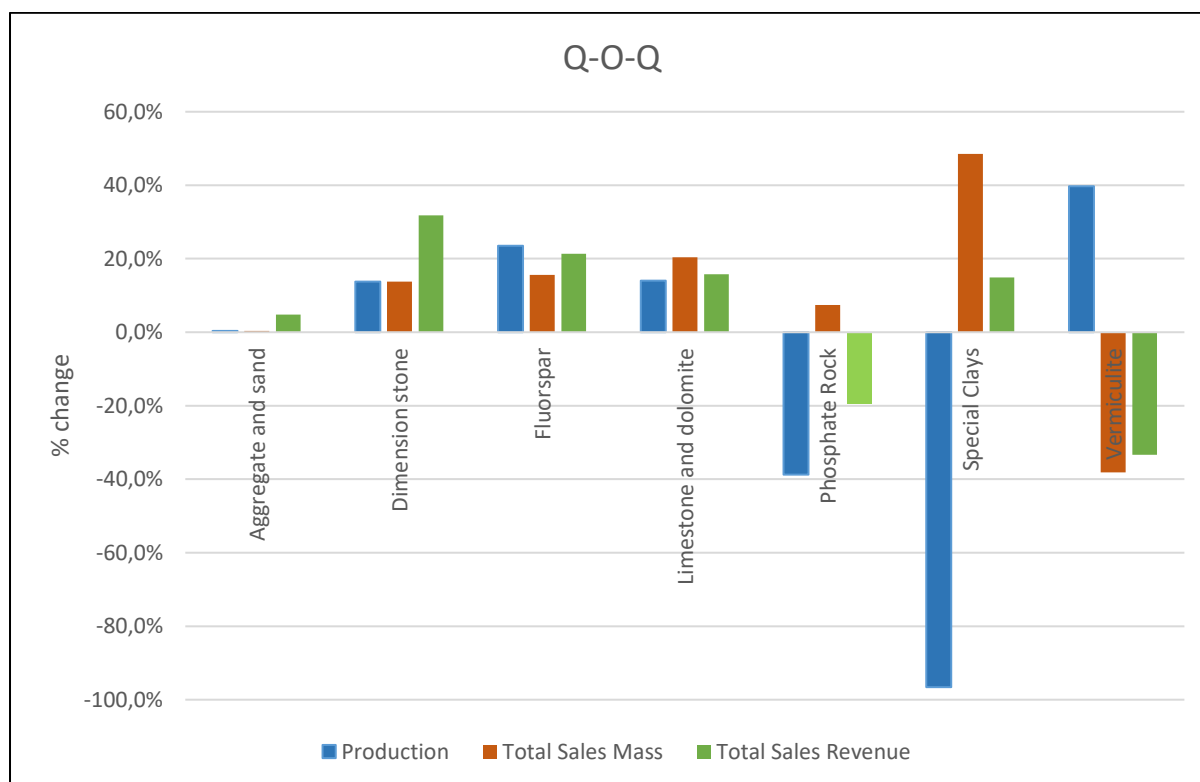
Production of special clays decreased by 96.6 percent (q-o-q) and by 52.7 percent (y-o-y). Decreased production figures are attributed to fireclay stockpiles. The stockpiles were remined in Q1 2023, for sales

at a later stage. Local sales volume and values increased by 47.8 percent and by 14.8 percent (q-o-q). However, local sales volumes and values decreased by 0.6 percent and increased by 0.4 percent (y-o-y). Export sales volumes decreased by 25.1 percent and increased by 37.6 percent (q-o-q). Export sales volumes and values increased by 0.8 percent and by 19.7 percent (y-o-y). The increase in exports figures is due to occasional exports by bentonite producer Yellow Star as per demand.

Sulphuric acid recovered as a by-product of PGMs has been on an upward trend, since Q1 of 2023, as domestic production increased by 50.2 percent (q-o-q) and by 14.9 percent (y-o-y). Local sales mass increased by 52.5 percent (q-o-q) and local sales value by 52 percent (y-o-y). Local sales mass depicted a surge of over 100 percent (y-o-y) and local sales value by 46.4 percent (y-o-y), the upswing maybe due to an increase in average local unit value.

South Africa's vermiculite production increased by 39.7 percent (q-o-q) and by 5.4 percent (y-o-y). The increase in production is attributed to recovering demand from agriculture and animal feed industry. Local sales mass increased by 11.5 percent (q-o-q) and by 21.7 percent (y-o-y). Local sales values increased by 17.7 percent (q-o-q) and by 35.2 percent (y-o-y). Export sales mass recorded a decrease of 41.8 percent to 21 kt while export sales values also decreased by 36.2 percent (q-o-q) to R109 728 million.

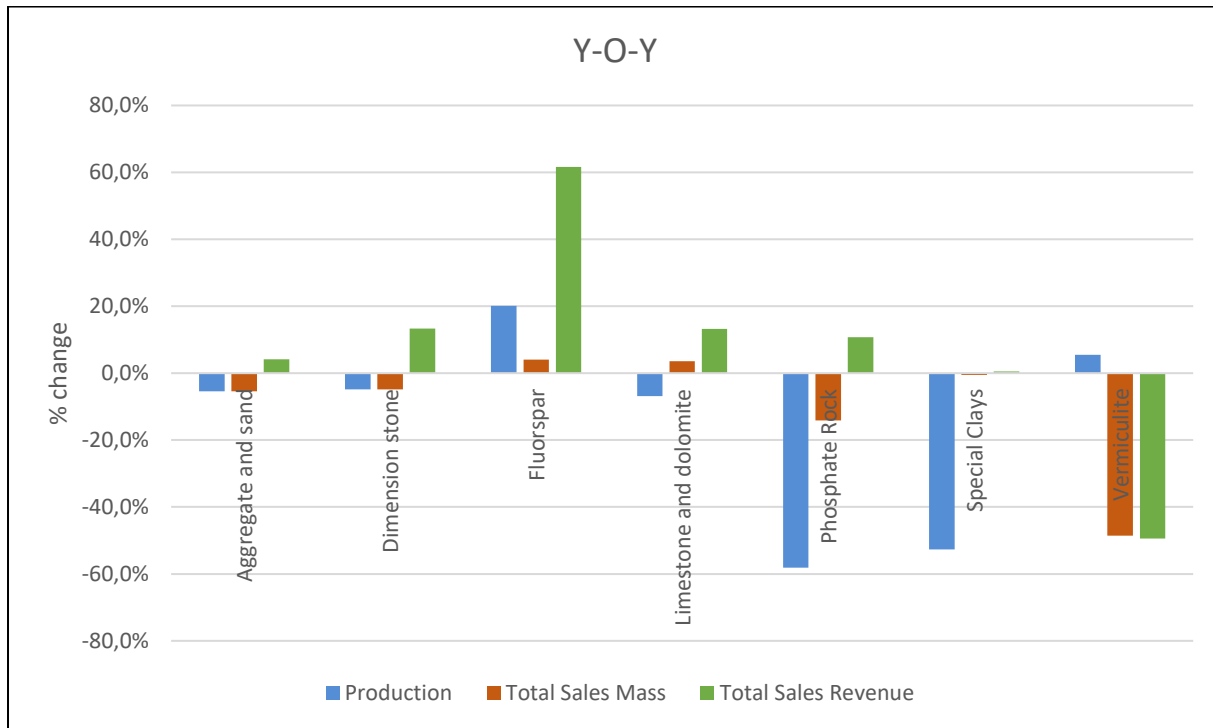
FIGURE 19: QUARTER-ON-QUARTER PERCENTAGE CHANGE OF PRODUCTION AND SALES.



Source: DMRE, Directorate Mineral Economics and Statistics

Export demand for vermiculite coarser grades is higher during farming seasons when vermiculite is used for fostering of seedlings and water retention in the soil. Export sales volumes and values decreased by 52.4 and by 52.5 percent (y-o-y).

FIGURE 20: YEAR-ON-YEAR PERCENTAGE CHANGE OF PRODUCTION AND SALES.



Source: DMRE, Directorate Mineral Economics and Statistics

The average local unit values of andalusite increased by 29 percent (q-o-q) to R6 454/t on the back of increasing demand from the refractory industry (Table 2). Average local unit value of fluorspar increased by 3.4 percent (q-o-q) to R4 502/t, owing to high purchase, heightened by metspar demand and Nokeng's bulk shipments which inflated exports volumes. Local sulphur prices decreased by 3.1 percent (q-o-q) to R319/t, owing to reduced demand from PGMs operations. Sulphur prices fluctuates regularly as the market often gets oversupplied from by-product sources. Vermiculite prices increased by 4.4 percent (q-o-q) to R3 778/t. Vermiculite is in high demand in international markets compared to local markets.

TABLE 17: AVERAGE LOCAL UNIT VALUE (R/t) OF SELECTED INDUSTRIAL MINERALS COMMODITIES

Commodity	Q2 (2023)	Q1 (2023)	Q2 (2022)	%Q-o-Q Change	%Y-o-Y Change
Andalusite	6 454	5 003	3 974	29.0%	25.9%
Fluorspar	4 502	4 352	2 407	3.4%	80.8%
Sulphur	319	330	711	-3.1%	-53.7%
Vermiculite	3 778	3 620	3 462	4.4%	9.1%
Phosphate Rock	2 302	2 211	1 742	4.1%	32.1%
Limestone and dolomite	207	214	189	-3.4%	13.2%
Dimension stone	1 999	1 660	1 747	20.4%	-5.0%
Aggregate and sand	136	130	123	4.6%	5.1

Source: DMRE, Directorate Mineral Economics and Statistics

Phosphate rock prices increased by 4.1 percent (q-o-q) R2 302/t. Prices eased, partly because farmers are cutting back on fertiliser applications because of affordability and availability challenges. Prices for aggregate and sand improved by 4.6 percent (q-o-q) to R136/t, while limestone prices decreased by 3.4 percent (q-o-q) to R207/t, owing to lower activity in the construction sector. Dimension stone prices also increased by 20.4 percent (q-o-q) to R1 999/t.

Employment

Industrial minerals workforce increased marginally by 0.3 percent (q-o-q) to 17 631 (Table 18) employees due to increased contractors in several operations. However, the year-on-year employment decreased slightly by 0.8 percent because of sluggish production capacity at most operations, compared with the same period in the previous year. Remuneration increased by 5.7 percent (q-o-q) to R1.4 billion. The year-on-year comparison saw remuneration increase by 12.9 percent on the back of bonuses being paid at several mines. The employment of male personnel decreased by 0.9 percent (q-o-q) and by 4.6 percent (y-o-y), while female employees increased by 0.7 percent (q-o-q) and by 1.8 percent (y-o-y). The number of contractors increased by 2.2 percent (q-o-q) and by 5.4 percent (y-o-y) coming from a low base.

TABLE 18: INDUSTRIAL MINERALS EMPLOYMENT AND EARNING DURING QUARTER 2, 2023

Period	Male	Female	Contractors	Total employment	Total earnings (R' mil)
Q2 (2023)	9,684	2,252	5,695	17,631	1,364
Q1 (2023)	9,772	2,236	5,574	17,581	1,291
Q2 (2022)	10,150	2,212	5,405	17,767	1,209
Q-O-Q (%)	-0.9%	0.7%	2.2%	0.3%	5.7%
Y-O-Y (%)	-4.6%	1.8%	5.4%	-0.8%	12.9%

Source: DMRE. Directorate Mineral Economics and Statistics

Outlook

Overall growth in industrial minerals is expected to be kept buoyed in the medium term on the back of expected activity in the construction sector. The South African construction industry growth momentum is expected to continue over the forecast period, recording an annual average growth rate of 5.8 percent supported by investments in the transport sector, renewable energy, housing, and manufacturing projects.

The Asia-Pacific region is one of the largest consumers of andalusite, due to the growth of the refractory industry in emerging markets such as China and India. China is the world's largest producer and consumer of refractories, driven primarily by the steel industry. Other important markets in that region are Indonesia, Vietnam, Philippines, Russia, and Turkey. Increasing demand for refractories is expected to drive the demand for andalusite. Increased demand for foundry products in the automotive industry is expected to boost the foundry industry and boost demand for the raw material, an important component of foundry products.

The future demand of most industrial minerals will remain strong in the long-term driven by demand in new applications such as the use of fluorspar and sulphur in Lithium-Ion Batteries (LIB). The growing battery market will lead to increased appetite for fluorspar. Fluorspar supply restrictions from China and the halting of production and closing operations in other regions, present an opportunity for the South African fluorspar market to supply the missing volumes. Increased investment in electric vehicles will significantly driving the growth of the lithium-sulphur battery market. The lithium-sulphur battery market size is expected to reach \$1.18 billion by 2026 at a CAGR of 29 percent on the back of increased

investment in electric vehicles. The commercialisation of lithium-sulphur batteries will ultimately lead to increased demand for sulphur.

Mphonyana Modiselle

11. THE A PROMISE FOR A BRIGHTER FUTURE FOR PHOSPHATE ROCK IN SOUTH AFRICA.

The role of phosphate rock in the production of rechargeable batteries.

Phosphates have long played a crucial role in various industries, particularly in agriculture for fertilisers. However, recent developments in battery technology have opened a new avenue for the use of phosphates, primarily in the production of rechargeable batteries. With the increasing demand for energy storage solutions to support renewable energy sources and electric vehicles (EVs), the future of phosphate use in South Africa and globally for batteries holds immense potential. The evolving landscape of phosphate utilization in battery production and its implications for South Africa's phosphate rock industry is currently being explored through research and development studies. Phosphate rock is not a direct component of batteries; however, it is used in the production of phosphoric acid and iron phosphate which are then used in various battery types. The mineral has several important applications in battery production.

Phosphate-based batteries, specifically lithium iron phosphate (LiFePO_4) batteries, are gaining traction as a safer and more environmentally friendly alternative to traditional lithium-ion batteries, which often use cobalt and nickel, minerals associated with environmental concerns. Lithium-ion batteries have been the dominant choice for portable electronic devices and EVs, owing to their high energy and long cycle life. South Africa, as one of the world's leading producers of phosphate rock, has a significant role to play in the global battery industry, especially in the context of emerging battery technologies and sustainable practices. The country produced a total of 1 985 kt in 2022, contributing 0.7 percent to the global production of 220 Mt. Globally, there exist more than 300 billion (bn) tons of phosphate resources including 71 billion tons of mineable reserves in more than 23 countries. South Africa is ranked 6th in the world for its known phosphate rock reserves, placing the country in a strategic position to contribute to emerging technologies locally and globally. Phalaborwa Complex in South Africa is one of the world's largest sources of phosphate rock emphasising the big role that South Africa must play as one of the world's largest sources of phosphate rock. The country's abundant reserves of phosphates provide a unique opportunity to capitalise on the growing demand for phosphate batteries.

The future of phosphate use in South Africa for batteries, holds great promise, however, there are challenges and considerations that need to be addressed. These include ensuring responsible mining practices, investing in research and development to improve battery technology and sustainability, and establishing a comprehensive recycling infrastructure to manage battery waste. The opportunity for use of phosphates in batteries allows the country to harness its abundant phosphate resources and contribute to the global transition toward clean and sustainable energy solutions. Furthermore, with the demand for batteries continuing to surge, particularly in the electric vehicle and renewable energy sectors, South Africa needs position itself as a key player in the battery supply chain, reaping economic benefits while promoting environmentally responsible practices. Careful planning, investment in research and development, and a commitment to sustainability will be crucial in realising this potential and shaping a greener future for both South Africa and the world.

The global battery market is projected to grow exponentially, and the country has the potential to become a major player in supplying battery materials, thereby creating jobs and changing the economic landscape of the phosphate rock industry. The development of a domestic battery industry could also reduce the country's dependence on imports for critical battery components, enhancing energy security. The phosphate rock industry is expected to increase in the long term, on the back of the anticipated surge in

the batteries industry and other planned projects (i.e., new mines in the pipeline) within the phosphate industry in South Africa.

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