SA Mine 2023

Adapt

to thrive

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Executive summary

2023 is a year of adapt to thrive for mining companies, as commodity prices have decreased, costs have increased, infrastructure challenges have worsened and we edge closer to Net Zero. Miners are positioning themselves to survive current challenges and build a portfolio for the future. It is not only miners who need to adapt but the regulatory environment as well to ensure South Africa is kept as an investment option. From record levels of performance and shareholder returns provided by South African mining companies since the post-COVID-19 economic rebound, there has been a regression experienced in these metrics.

Decreases in the prices of certain minerals, productivity, infrastructure constraints and increases in input costs have resulted in a decrease in profits and operating cash flows experienced by South African mining companies. Strong balance sheets have enabled miners to increase investments into operations and pay dividends.

The weakening of the South African rand may have provided some relief to the lower dollar mineral prices, but this has been offset against more expensive imports and increased costs for key chemicals, materials and equipment required for operations. In the face of shrinking reserves of certain minerals, it will be critical for mining companies and governments to adapt to this reality in developing strategies which can safeguard communities dependent on the mining industries. In most small towns where mining takes place, the miners play a significant role in providing social services such as education, clean water and sanitation, and infrastructure etc, so the need to transition the community from being dependent on the mines, reskilling employees and rehabilitating the mines becomes a critical conversation for all stakeholders; especially as some provinces have as little as six years of mining left based on currently declared resources and reserves.

As the plans and executions towards net zero take place, there is greater emphasis to secure critical minerals for our decarbonisation efforts. What are these critical minerals and their use? Southern Africa has some of the critical metals, and it is important for the region to look at the opportunities and take advantage of them. To take advantage of these opportunities will require significant cooperation between public and private stakeholders.

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Life of South African reserves and resources

The South African economy is still very dependent on the mining sector. Export data issued by the South African Revenue Service (SARS) for the first six months of 2023 shows that exports of mined materials amounted to R575b, which contributes 58% of the total exports made by South Africa to its trading partners. The mining sector is a significant contributor to South Africa's financial well-being through various taxes, foreign currency reserves from mineral sales and employment to name a few. This industry faces a number of risks as documented in their integrated reports. In the last few years mining companies have noted the following as risks:

- Electricity constraints.
- Logistical constraints for bulk commodity exports.
- Above-inflationary cost pressures.
- · Fluctuations in commodity prices and exchange rates.
- A poorly organised cadastral system that has made the identification of mining rights, including applications for new mining rights, quite slow, and acts as a major disincentive for the undertaking of mining exploration activities.
- Challenges with illegal mining jeopardising the safety and viability of some mining operations.
- Shortage of critical skills within the sector.

Considering these challenges and investors having investment options other than South Africa, an important question arises: How many years remain of mining can South Africa expect to have for certain key commodities; gold, coal, iron ore and platinum group metals? In assessing this, only the reserve, resource and production information for operations owned by the companies included in the publication as highlighted in the basis for compiling section which are situated in South Africa was included – no consideration was given to any foreign reserves and resources.



The assessment includes a ratio of reserves to exclusive resources. This ratio is an indicator of the flexibility and optionality for miners to convert resources into reserves. What can be noted is that 24% of operational coal mines yield a ratio greater than 1 and 9%, and operational gold mines yield a ratio greater than 1 and 71% of operational iron ore mines yield a ratio greater than 1. No PGM mines yield ratios which exceed 1. At an overall level, it can be concluded that except for iron ore miners, most South African miners have a degree of flexibility and optionality for converting exclusive resources into reserves.





Gold

Product	Province	Unit of measure	Reserves	Total Exclusive Resource	Reserves/Exclusive Resources*	Total output	Years left*
Gold	Free State	Moz	3.37	39.96	0.08	0.55	6
	Gauteng	Moz	56.88	66.84	0.85	1.56	37
	Mpumalanga	Moz	3.31	9.27	0.36	0.20	16
	North West	Moz	4.53	7.61	0.60	0.25	18
	Total	Moz	68.09	123.68	0.55	2.56	27

*Indicates an average in each of the tables

As of 30 June 2023, South Africa has approximately 68Moz of gold reserves declared as proven and probable from all operational mines included in this publication. Approximately 84% of these declared reserves are concentrated in Gauteng, with the remaining declared reserves being in Mpumalanga, Free State and North West.

The production realised over a 12-month period is approximately 2.56Moz. Approximately 61% of this production is sourced from Gauteng, whilst 22% is sourced from the Free State and the remainder from Mpumalanga and North West.

In Gauteng, there are currently ten mines in operation, with a single operation in development situated in the province. Total gold reserves in the province amount to 56.88Moz, of which 55% can be attributed to a single mine, with this mine expected to have approximately 95 years left of mining. Excluding this mine from the information would result in there being approximately 21 years of mining from the remaining gold operations at current depletion rates from the current 37 years as shown in the table above. The ratio of reserves to exclusive resources of 0.85 also indicates a fair degree of flexibility and optionality for Gauteng gold producers to convert existing resources into reserves.

In the Free State, there are currently five gold operations, as well as one project which is in development. Total gold reserves amount to 3.37Moz of gold. At current depletion rates, this will result in six years left of mining. One upside is that the ratio of reserves to resources indicates that there is flexibility for operations to convert resources into reserves, which may extend the number of years left of mining if capital investment decisions make sense and can be executed timely. In Mpumalanga there are currently seven operational gold mines, with one mine currently being developed, and total gold reserves amount to 3.31Moz. At current depletion rates, this will result in 16 years left of mining. The ratio of reserves to exclusive resources of 0.36 also indicates a reasonable degree of flexibility and optionality for the province's gold producers to convert existing resources into reserves.

In the North West province there are currently two gold mining operations and no projects in development. Total reserves for the province amounted to 4.53Moz of gold. At current mining rates, remain approximately 18 years of mining. The ratio of reserves to exclusive resources is 0.6, and this indicates a degree of flexibility in being able to declare additional resources into reserves.

Based on the reserves declared the gold industry is expected to exist in South Africa for approximately twenty seven years , with many of the mines coming to an end before twenty years. In the Free State for example, the five operations assessed directly employ roughly 24 thousand people, with these operations being concentrated in the proximity of the city of Welkom. The wider economic ecosystem and supply chain will most certainly be impacted, and will have to adapt to an economy which is not sustained solely on participation in the gold mining industry. Challenges relating to the effective rehabilitation of gold operations, the re-skilling of individuals and possible restructuring of operations for gold producers in the Free State, remain uncertain.



Iron Ore

Product	Province	Unit of measure	Reserves	Total Exclusive Resource	Reserves / Exclusive Resource*	Total output	Years left*
Iron Ore	Northern Cape	Mt	696.48	475.38	1.47	55.15	13

As of 30 June 2023, there are seven iron ore mines operated by three different companies. The total reserve for these mines equates to 696.48Mt. At current production rates, this translates roughly into 13 years left of iron ore mining in South Africa. Of the total reserves detailed above, roughly 80% can be attributed to only two mines. The number of years left for these two mines is approximately 14 years. For the remaining iron ore operations, there is approximately nine years of mining that remains. The ratio of reserves to exclusive resources for the iron ore sector is roughly 1.47 - this ratio is indicative that iron ore producers have limited scope to convert resources into reserves, hence there is a low likelihood of there being a significant conversion from resources to reserves. Currently, there is only one iron ore mine which is in development but given that the declared resources for

this mine equate to 1.5Mt, this mine development is not expected to have a material impact on the number of years left of iron ore mining in South Africa.

Analysis performed indicates that iron ore mining in the Northern Cape at current reserves will be depleted within the next two decades. Most of these operations are within the vicinity of the town of Kathu. The iron ore operations assessed give direct employment to around 18 000 people, and support a number of stakeholders in the region. The current situation underlines the importance of exploration to develop the country's resource base. The impact of closing of the mines will be great for the province. It is essential that the challenges faced by bulk commodity miners, such as manganese and iron ore, are addressed to extend mining in the province.

Coal

Product	Province	Unit of measure	Reserves	Total Exclusive Resource	Reserves / Exclusive Resource*	Total output	Years left*
Coal	Free State	Mt	24.99	141.00	0.18	1.10	23
	KwaZulu-Natal	Mt	11.14	11.98	0.93	0.47	24
	Limpopo	Mt	2,584.99	1,629.97	1.59	30.20	86
	Mpumalanga	Mt	2,484.67	5,520.54	0.45	93.73	27
	Total	Mt	5,105.78	7,303.49	0.70	125.51	41

Coal mining occurs predominantly in Mpumalanga and Limpopo. As of 30 June 2023, there is an estimated 5,106Mt of coal reserves from operational mines. Approximately 48% of these reserves are based in Mpumalanga and 50% are based in Limpopo, with this being concentrated largely to one mine which has declared reserves of approximately 2,568Mt.

Most recent 12-month depletion rates from the companies sourced were approximately 125.5Mt. Approximately 75% of production is derived from Mpumalanga coal operations, whilst 24% is derived from a single mine situated in Limpopo. These depletion rates indicate that there is approximately 41 years left of mining.

The total reserves for Mpumalanga from the companies assessed amount to 2,485Mt. This is attributable to 27 different collieries in operation, none of which contribute more than 20% to the current reserve base. Based on current 12-month depletion rates, this indicates that there is approximately 27 years left of mining on average in Mpumalanga. If we consider the ratio of reserves to resources, this indicates a ratio of 0.45, indicating a reasonable degree of flexibility for the conversion of resources into the reserve base. There are currently no mines placed under care and maintenance, but there are several developments being undertaken by three of the assessed companies, with the capacity to add 403Mt to existing reserve bases.

Of Limpopo's 2,585Mt coal reserves, 99% is attributable to a single mine. At current 12-month depletion rates, there is approximately 86 years left of coal mining. Considering the reserve to exclusive resource ratio of 1.59, this represents less flexibility in being able to convert resources into reserves. There are currently four projects in development in Limpopo, which in total add 426Mt to the existing reserve base, as well as exclusive resources declared for these projects amounting to 7,443Mt. This amount represents more than 100% of the current coal reserves in South Africa, which indicates that coal mining in Limpopo can practically continue well beyond the existing average period of mining left.



Product	Province	Unit of measure	Reserves	Total Exclusive Resource	Reserves / Exclusive Resource*	Total output	Years left*
PGMs	Limpopo	Moz 4E	188.80	549.59	0.34	3.19	59
	North West	Moz 4E	72.21	287.22	0.25	3.74	19
	Total	Moz 4E	261.01	836.81	0.31	6.94	38

Platinum Group Metals (PGM)

South Africa's Igneous Bushveld Complex is worldrenowned for its rich PGM deposits, which have enabled the country to be a major player in PGM mining and refining. As of 30 June 2023, there are approximately 261Moz 4E in reserves from operational mines. Seventytwo percent of these reserves are in Limpopo, whilst the remainder are situated in the North West.

Most recent 12-month production figures indicate that PGM production for South Africa amounts to 6.94Moz 4E. Of this total amount, 54% of the production is attributable to North West, with the remainder being attributable to Limpopo. Based on most recent 12 month depletion rates, there is approximately 38 years left of PGM mining from operating mines in South Africa.

Limpopo currently has approximately 189Moz 4E of reserves left. At current depletion rates, this entails that there are approximately 60 years left of mining. The ratio of reserves to exclusive resources is 0.34, indicating a fair degree of flexibility in allowing companies to convert resources into reserves, thereby increasing the number of years of mining. However, approximately 61% of Limpopo's reserves are derived from a single mine. On its own, this mine has approximately 115Moz 4E of reserves, which at current depletion rates of 0.99Moz 4E per annum translate to approximately 116 years of mining just on this specific mine. Excluding this mine from the rest of the Limpopo reserve information results in reserves of around 74Moz being concentrated in seven mines run by four different operators, which at current depletion rates of 2.21Moz 4E would yield around 33 years of mining.

There are currently two mines in Limpopo which have been placed on care and maintenance. Combined exclusive resources for these mines amounts to roughly 214Moz 4E. Assuming these mines come back online and that all resources are convertible into reserves, this would add around 97 years to existing reserves. There are currently three developments being undertaken in Limpopo with stated reserves of 21Moz, with a ratio of reserves to exclusive resources of 0.09, indicating a high degree of flexibility for these operators to convert resources into reserves as these projects are completed. Converting PGM resources to reserves often require significant capital investment and time to production hence the flexibility could be overstated here.

North West has approximately 72Moz 4E of reserves apportioned across nine mines, with only one of these mines comprising more than 20% of the total North West reserves. At the most recent 12-month depletion rates of 3.74Moz 4E, this would result in approximately 19 years left of mining. If we consider the ratio of reserves to exclusive resources, this ratio for North West is 0.25, with no mine in the province yielding a ratio which exceeds 1. This indicates that at an overall level, there is flexibility for miners to convert resources into reserves, thereby increasing the number of years left of mining. There are currently three mining operations which are placed under care and maintenance. These operations have estimated reserves of 2.9Moz 4E, with a positive ratio of reserves to exclusive resources of 0.14, indicating scope for converting resources in these mines into reserves once operations resume. There are also six PGM projects in development in the North West which have a combined reserve of around 8Moz 4E with a ratio of reserves to exclusive resources of 0.07, indicating a high degree of flexibility for converting resources into reserves once these projects commence with mining activities.

PGM's will play a key role in the efforts to decarbonise industries. Analysis performed by the World Platinum Investment Council projects a supply deficit to exist within the platinum market, owing to projections on the development of the hydrogen economy as well as increased usage in the development of highly durable electrical components. Although mining in the North West may indicate less years of available reserves than Limpopo, given the bulk of South Africa's refining capacity, companies with refining capabilities will be able to continue maintaining a footprint within the province.



Market performance, Merger & Acquisitions and trends

Industry and market analysis

If 2021/22 was an unprecedented period of seismic volatility (impacting overall sector performance), then the current period to June 2023 is no different for Johannesburg Stock Exchange (JSE) mining companies across the board. Systemic global influences were further amplified by ongoing challenges closer to home, including chronic energy availability constraints, transportation challenges including the degrading of road, rail and port infrastructure, in addition to labour issues and extreme weather events.

These idiosyncratic impacts have forced the market's hand in accelerating investment in renewable and offgrid solutions, as well as exploring logistics solutions via alternative corridors. Sustainability, both locally and globally, remained one of the most covered topics in the mining industry. Globally there has also been a strong shift in investor appetite to what is seen as less environmentally friendly commodities such as coal to those supporting the battery economy including cobalt, copper, lithium, nickel, graphite. Locally we have seen investment in greener technologies with a focus on water use and clean power generation. This is evidenced by local companies such as Seriti, Exxaro and Anglo American making investments in renewable energy projects, as well as the recent announcement of the Lebalelo Water Users Association where the largest mining companies are working with government on a R27bn water project to supply major platinum and chrome operations and several hundred thousand people with drinking water.



Figure 1: Average change in share prices (in ZAR) over the last 2 years, 1 year and year to date

Source: CapitallQ



Total shareholder returns: JSE ALSI vs the Resource Index



Figure 2: Relative sector total shareholder return performance

Source: CapitalIQ

Mining continues to be a key driver for growth in the South African economy, and over the long term it has outperformed the rest of the market. However, as commodity prices pulled back from their recent record highs, infrastructure constraints and significant growth in input costs is placing a damper on investor returns.





South African mining M&A activity

The first six months of 2023 (to 30 June) have shown activity that demonstrates reignited appetite for consolidation, the pursuit of diversification strategies, pursuit of various sustainability strategies as well as speculative acquisitions in the mining space.

Despite economic, structural and sector outlook concerns, a few notable transactions occurred in the first half of the year. These deals have been driven by the need for consolidation, greater operational efficiencies, larger market footprint and the just transition into green energy.



Figure 3: South African Announced (Disclosed) Mergers & Acquisitions Transactions (USD'm)

Source: CapitallQ

Note 1: The 2023 figures exclude Glencore's proposed acquisition of Teck Resources coal assets.

Note 2: Included in the prior 2022 report was the proposed United States Dollars (USD) 6.7bn Goldfields and Yamana Gold megadeal. This transaction was subsequently terminated and has been removed as a transaction in the 2022 figures.

Key transactions reflecting key themes in the mining sector

Northam Platinum and Impala Platinum (Implats) pursuit of Royal Bafokeng Platinum (RBPlat):

Northam Platinum terminated its offer to buy RBPlat, citing low prices of platinum group metals as it ended its takeover battle with Implats. Northam had outbid Impala's initial offer to acquire RBPlat but mentioned that PGM prices had fallen to levels amounting to a "material adverse change" that proved fatal to its offer.

Post 30 June 2023, Implats has finally completed its acquisition of RBPlats, having closed its offer to shareholders and securing more than 98% of the company's share capital. This has resulted in Implats holding an aggregate of 98.35% of RBPlats issued ordinary share capital. As such, RBPlats will be delisted after 13 years on the JSE.

Amongst those shareholders who sold into the Implats offer is Northam Platinum, which will receive R9bn (USD 505m) and around 30 million Implats shares.

Goldfields and Yamana Gold megadeal:

At the end of May 2022, Gold Fields announced the USD6.7bn acquisition of the Toronto Stock Exchange (TSE) Listed gold producer Yamana Gold, creating a top four global gold major, with a portfolio of 14 mines across 4 continents.



In November 2022, Yamana announced that it had received another offer from Agnico Eagle Mines and Pan American Silver, and its board had resolved that the new proposal was superior.

As a result of this, Gold Fields did not revise its offer and terminated engagements with Yamana. This led to its share price rising, which was an indication that the market approved of the termination of the intended transaction.

Gold Fields and AngloGold Ashanti mega Joint Venture (JV) proposition:

Gold Fields and AngloGold Ashanti proposed a JV to create Africa's single largest gold mine. On 16 March 2023, the parties announced the key terms of a proposed joint venture in Ghana between Gold Fields' Tarkwa and AngloGold Ashanti's neighbouring Iduapriem mines.

The Tarkwa Mine is held by Gold Fields Ghana, in which Gold Fields currently owns a 90% share and the Government of Ghana (GoG) holds 10%. The Iduapriem Mine is currently 100% owned by AngloGold Ashanti. Both mines are located near the town of Tarkwa in the country's Western Region.

The parties have commenced with preliminary, high-level engagements with senior government officials in Ghana, relevant regulators and other key stakeholders, with a view to implementing the proposed joint venture as soon as practically possible.

New Century Resources sees Sibanye-Stillwater increase stake:

New Century Resources sees Sibanye-Stillwater increase its stake to 70.55%. Sibanye-Stillwater is now the controlling shareholder in New Century. The offer price represented a premium of 42.9% to the trading price at the close of trading on 20 February 2023.

Gold Fields Windfall project:

Gold Fields acquired 50% of the Canada based Windfall gold project from Osisko Mining, the Canada based mining company focused on the exploration and development of precious metals resource properties. The consideration was USD 460m.

Sereti and Windlab Africa:

Seriti Resources acquires a controlling stake in Windlab Africa, the local wind power generation company. The consideration was R892m. In the transaction Seriti acquired a 51% controlling interest in Windlab Africa – with Rand Merchant Bank (RMB) (14.5%), Standard Bank (14.5%) and two individual partners, collectively taking up the remaining stake. The transaction supports the advancement of Seriti's objectives to rebalance its portfolio of assets, lowering its carbon footprint and ensuring long-term sustainability as a diversified energy producer.

Anglo American and First Mode:

Anglo American has signed an agreement to acquire an undisclosed stake in First Mode Holdings. The consideration was USD 200m. First Mode Holdings is a UK based engineering company engaged in producing and distributing hydrogen powered power systems and related equipment.

Harmony Gold Eva Copper Project:

Harmony Gold acquired the EVA Copper project, the Australia based mining assets from Copper Mountain Mining Corp, the Canada based copper exploration company. The total consideration was USD 230m.

AngloGold Ashanti Crown and Sterling assets:

AngloGold Ashanti acquired Crown and Sterling exploration properties from Coeur Mining, the United States based gold and silver mining company. The consideration was USD 200m.

Glencore seeks to grow through consolidation:

Teck Resources rejected an unsolicited acquisition proposal from Glencore. Glencore submitted a proposal to the board of directors of Teck Resources on March 26 this year to merge with Teck and to simultaneously demerge their combined metals and coal businesses.

Thungela acquires controlling interest in Ensham coal mine:

Thungela has agreed with co-investors Audley Energy Limited and Mayfair Corporations Group to acquire a majority shareholding interest in Sungela Holdings Pty, a newly incorporated private company, and will loan fund a portion of the co-investors equity contributions. Sungela Holdings will, in turn, acquire an 85% interest in the Ensham business from Idemitsu.

The transaction comprises a subscription of AUD 267m by Thungela Australia for an initial 75% shareholding in Sungela Holdings and a mezzanine loan of AUD 68m from Thungela to the co-investors, which, in turn, will use the funds and their own capital to subscribe for a 25% shareholding in Sungela Holdings for a total contribution of AUD 73m.

Copper 360 listing:

Copper 360 is a copper mining company with operations based in the Northern Cape, building South Africa's next major copper producer. Formed in November 2022, following a reverse take-over of copper producer Big Tree Copper, and copper mining company SHiP Copper, the company has a focus on producing premium copper that will yield high cash margins.

The company's mining right covering 19,000 hectares to the north of the town of Springbok, holds 12 copper mines (some with developed infrastructure) and 60 copper prospects with advanced geological datasets. It is estimated that the life-of-mine across the various operations is over 100 years.

South Africa mining companies have ensured they secure their long-term growth through expanding to critical minerals or for some changing their portfolios either geographically or transitioning to clean energy.



The 'Big Six' critical metals

As highlighted in PwC's 'Mine 2023' report we have entered the era of critical minerals.

To make the energy transition real, the world must dramatically ramp up the use of low-emission green energy technologies. What unites all these technologies, whether they're well-established or cutting edge, is their reliance on metals and minerals.

Among the myriad metals, minerals and engineered materials essential for green energy technologies, there exists a group of metals of particular importance. These metals form the core of our net zero aspirations. They are of foundational importance to green energy technologies required in significant quantities across applications and expected to experience strong demand growth.

The 'Big Six' comprises:

1.	Copper
2.	PGMs (Platinum and Iridium) ¹
3.	Lithium
4.	Nickel
5.	Cobalt
6.	REEs (Rare Earth Elements) ²

Copper (1) is needed across all green energy technologies.

Copper's unique properties of high conductivity, machinability, and corrosion resistance are needed across all green energy applications including renewable energy generation, transmission, distribution, storage and end-use. Importantly, renewable generation technologies are more copper intensive than traditional technologies. Photovoltaic panels, offshore wind turbines, and electric vehicle (EV) charging infrastructure are key demand areas for copper.

Platinum and iridium (2) stand at the heart of the hydrogen economy.

Platinum and iridium are required in several hydrogen core technologies, including electrolysers and Polymer electrolyte membrane (PEM) fuel cells. Iridium is one of the earth's rarest elements. Iridium miners face the challenge that they typically co-produce iridium together with palladium and rhodium which are primarily used in the production of catalytic converters that are expected to decline³ in the long term.

Lithium (3), cobalt (4) and nickel (5) underpin energy storage and electric vehicles.

In the energy space, lithium, nickel, and cobalt are needed in the rapidly growing battery market which is primarily driven by EVs. Lithium-ion type batteries dominate the market by volume, while demand for other types of batteries is comparatively lower.

As new and alternative technologies emerge and disrupt in the medium to long term, demand for other types of batteries requiring different materials may increase. In the short-term lithium is not considered substitutable and will experience strongest demand growth.

Battery metals require a particularly complex and lengthy chemical beneficiation process into 'battery grade material' which today is concentrated in a small number of Asian companies.

Rare Earth Elements (6) power wind energy and electric vehicle motors.

Due to their unique physical and chemical properties Rare Earth Elements (REEs) are needed in trace amounts across a myriad of other applications where they often cannot be easily substituted. In the energy space, rare earth magnets made from neodymium, dysprosium and terbium are of particular importance. They are required in electric vehicle motors and wind turbine generators amongst others.

About 50% of today's platinum demand, and 80% of today's palladium demand account for catalytic converters needed for internal combustion engines. This demand is expected to gradually decline as electric vehicles replace traditional cars.



In particular Platinum and Iridium; Palladium is not needed in significant quantities in future green technologies.

Materials such as steel and aluminium (which are primarily used as a structural component around the green technology) have been out of scope of this analysis. As this publication focuses on metals, we have also excluded other critical elements and critical engineered materials including graphite and silicon carbide.

The 'Big Six' and Southern Africa

Across Southern Africa potential exists to mine and beneficiate all 'Big Six' energy metals⁴. South Africa's Bushveld Complex is a well-known world leading producer of PGMs and, through mines such as Steenkampskraal, the country also has access to very high grade Rare Earth Elements.

Figure 4: Southern African countries with critical energy metal reserves and resources (not conclusive)



Energy metal supply and demand

A critical supply gap: There's nowhere near enough metals.

Demand for energy minerals is rapidly surging. By way of example, projected 2030 supply deficits of lithium will total 2.5 times current world production⁵. For cobalt the supply gap amounts to 1.5 times current world production. It will be a challenge for miners to keep up supply. Doing so without taking sustainability shortcuts will be even harder.

Significant investments are required to bridge the supply gap.

As reported in PwC's 'Mine 2023', very strong demand for critical energy minerals has led to a significant surge in investments across the value chain. Exploration spending for lithium discovery alone has doubled between 2021 and 2022 to ca. \$500m.

While in 2021 only one-in-four deals of the Top 40 global mining companies was in critical energy minerals, this number flipped to 2 in 3 deals in 2022.

Still, it's not enough. The intergovernmental 'International Energy Agency' estimates an investment gap of up to nearly 1/4 trillion US\$⁶. If the gap isn't closed by 2030, the world won't be able to deploy sufficient green energy technologies to achieve its 'net zero' ambition.

Critical Metal value chains are global, complex, and interwoven.

Critical energy metal value chains are typically complex with various specialised players dominating its stages. In the value chain 'upstream' metal is mined and refined. In the 'midstream' the pure metal is beneficiated into required interim materials. Often beneficiation of energy metal requires particularly complicated and difficult processes. In the 'down-stream' the end-use products are manufactured.

- 4. In addition to the 'Big Six' the region can also boast other metals and minerals relevant to green technologies, albeit at a smaller scale. These include, amongst others, vanadium and manganese.
- 5. 2.7 million tonnes of lithium carbonate equivalent would be required by 2030 under an IEA Sustainable Development Scenario, but only 0.9 million tonnes are expected to be available.
- Supply Gap in % 100% equals total required investment of \$360-450b of which 46% is the investment gap. Adapted from: https://www.iea.org/data-and-statistics/charts/required-investment-to-meet-minerals-demand-in-the-net-zero-scenario-2022-2030



Let's look at the lifecycle of minerals used in batteries as an example (See Figure 2) to illustrate value chain complexity:

Circular

Batteries

Metals

Economy

3

8

7

Figure 5: Circular Batteries Minerals Economy

1. Primary mining of battery metals

Extraction of minerals from both hard rock mining as well as brine mining.

8. Recycling (Collection & Processing)

Spent batteries can be collected, sorted and shredded in a so-called 'black mass' which can be recycled – today only few batteries are recycled.

7. Second life

Batteries which have degraded and can no longer be used in electric vehicles can either be directly recycled, or be given a 'second life' in stationary energy storage.

6. First use

First use of batteries in EV as we as other application (such as computers, cell phones etc.) EV demand is by far the greatest.

2. Refining of battery metals

Refining of both mined ores as well as spent battery scrap into high grade metals through pyrometallurgical and hydrometallurgical processes.

3. Production of active materials

Chemical production process of the 'active materials' needed in battery anodes and cathodes; highly R&D driven.

4. Manufacture of cells

Manufacturing of individual battery cells; this process consists of chemical mixing and mechanical assembly, is highly automated and required large power inputs (~50% OPEX).

5. Manufacture of packs (batteries)

Manufacturing of battery modules and packs (finished batteries) which can consist of several thousand cells; packs will also require structural casing, battery management systems etc.

In the Upstream, lithium, cobalt and nickel ore are mined (1) and refined (2) into pure metal. The refined metal is shipped to a specialised Midstream producer who crafts 'active material' from the metal. This producer is likely situated in Asia (3). The 'active material' - metal in a chemical form - is used to manufacture battery cells (4) in a highly automated process of chemical mixing and mechanical assembly requiring significant power inputs. Next, battery cells are manufactured into battery modules and packs (5).

The finished battery packs are shipped Downstream for first use, for example in an electric vehicle (6) where they are used for several years. Once batteries have degraded and can no longer be used safely in electric vehicles they can be given a 'second life' in stationary storage (7).

In future, significant volumes of spent batteries are expected to be recycled into pure minerals which can be used again (8), thereby closing the circle. Today, only a few batteries are recycled, and significant recycling process challenges remain.

Most value is captured not in upstream mining, but further down the value chain.

Energy metals do not differ from other metals in the fact that most value is not unlocked in extraction, but in beneficiation. Analysts estimate that refining and beneficiation of metals such as lithium can generate 2-4x as much value as mining, while lithium-ion battery pack assembly can unlock between 65-100x more value than primary mining.

China strongly dominates the 'Big Six' Critical Energy Minerals.

Energy metals are produced globally, but the value chain is dominated by China.

China is a leading miner of rare earths as well as lithium and copper. It also beneficiates 58% of lithium, 87% of rare earths and 40% of copper. These market shares far exceed its primary mining shares.

In addition China is also the leading processor of cobalt (65% market share) and nickel (35% market share)⁷. This allows it to extract significant additional value. The main reason for China's advantageous position were significant strategic investments which started in the 1990s. The country has included global investments into mines to secure supply as well as significant built up of beneficiation capabilities which are required to turn 'raw' minerals into pure and refined material.

^{7.} While China does not yet process significant volumes of Platinum Group Minerals, Chinese recovery of PGM from used vehicles grew by 15% in the last year – while dropping in other locations (JM May 2023 Report).



Energy metals are 'part of the solution' – but they have consequences too

Today's green energy technologies needed to achieve carbon neutrality require significant mineral inputs to function, with no alternatives available.

Replacing traditional cars and trucks with electric vehicles and replacing fossil-based energy production with renewable energy reduces emissions and is the right thing to do.

But mining and beneficiating the increasingly large amounts of minerals needed to build batteries, photovoltaic panels, wind turbines, fuel cells and hydrogen electrolysers results in new and significant environmental, social and governance challenges.

Extraction, and the chemical treatment of metals as well as downstream manufacturing are resource intensive processes with significant water and energy requirements.

South Africa's opportunity

There's a clear shortage of energy metals with committed mine production nowhere near projected demand. This presents several opportunities for South Africa which could reshape industries, diversify the economy and drive future prosperity. This will require additional investments, starting with more exploration, which in turn will depend on sensible regulation, available infrastructure and balanced tax regimes.

Opportunity: Reduce concentration risk for international partners

Significant concentration risks exist across all areas of the critical energy mineral value chains. Southern Africa can act as an alternative source of supply for foreign investors.

This could significantly reduce geopolitical supply chain risk in the global economy.

Opportunity: Leverage extensive mining experience and metal endowment

The region's mining experience can be harnessed to establish efficient, sustainable, and resource-conscious ventures in the sector. Southern Africa is blessed with a significant natural endowment including PGMs, copper, lithium, cobalt, nickel as a by-product of PGM mining, albeit at smaller quantities as well as REEs. (While currently no battery grade lithium is produced across Southern Africa, several mines could potentially produce it in the future.)

Opportunity: Unlock beneficiation value

It is critical that Southern Africa seeks to also play a role beyond primary mining. This role is fulfilled already in PGMs, and not in other metals: For example, only first steps have been made with several companies active in battery cells manufacturing, battery pack assembly as well as battery testing and production of electric vehicles. These activities need to dramatically scale up to matter. This will require significant cooperation from public and private stakeholders.

Opportunity: Considered global partnerships through strategic use of resources

Until a point in time, where it is realistic for Southern Africa to have developed highly specialised capabilities across the full energy metal value chain which will require time, skills and capital to build up, global partnerships are a realistic way forward. Strategic use of our minerals in a market of structural undersupply can make these partnerships strong and beneficial for South Africa.

For example, Southern African producers of lithium may make investments into global battery plants to extend value chain exposure in the next few years. This may practically mean Southern African miners buying into Asian plants producing battery active materials and battery cells. Metals would be sourced from Southern Africa, processed overseas, with interim products returned for final assembly and finishing in Southern Africa. Similar partnerships around iridium and platinum for use in hydrogen technologies should be considered.

If Southern Africa only focuses on mining, global competitors will capture considerably more value of the battery value chain – while regional metal resources are exploited, and regional firms are exposed to extraction risk. Therefore foreign investments into Southern African geographies must be tested: Do they extend our value chain presence and create real long term economic value for Africa? Do they support sustainable growth and improve lives and livelihoods? Or do they simply exploit resources, while most value is created out of the country.

In summary, the global economy's pursuit of carbon neutrality hinges on specific minerals such as copper, PGMs, lithium, nickel, cobalt, and rare earths. The rising demand for these 'Big Six' energy metals poses a supply challenge on a global scale. To mitigate this risk, increasing the production of critical energy metals in Southern Africa can enhance global supply diversity while growing the local and regional economy.

South Africa must use its metal resources to build strong partnerships across the value chain. The country must recognise that the most value is generated downstream in the energy mineral value chain. If we engage in the energy minerals value chain, we should prioritise sustainable production. Importantly, this sustainability-focused approach need not conflict with economic growth and shareholder returns. In fact, it's increasingly evident that responsible resource use (E), positive relationships with mining communities (S), and effective governance (G) substantially reduce operational risks, ultimately enhancing shareholder value.

The regulatory landscape in South Africa

There is no question that mining has played, and continues to play, a pivotal role in the development and industrialisation of South Africa. In order for the mining industry to thrive, an efficient and internationally competitive regulatory environment is required. South Africa has its own unique circumstances with a tumultuous history. Although the industry historically had a positive impact on the economy, it was found on racially based foundations. Until the inception of democracy in 1994, mining had an adverse effect on the South African socio economic landscape. As a result, over the past three decades the mining regulatory environment has undergone significant changes in an attempt to redress the legacy imbalances.

The South African regulatory environment

The MPRDA was introduced in 2004 to provide for equitable access to, and the sustainable development of, the nation's mineral and petroleum resources. The preamble to the MPRDA recognises that mineral and petroleum resources are non-renewable natural resources and that South Africa's resources belong to the nation and that the state is the custodian thereof. It clearly highlights the state's obligation to protect the environment for future generations, ensure the sustainable development of mineral and petroleum resources, and promote equitable economic and social development. The latter specifically relates to local and rural development and the social upliftment of communities that are affected by mining operations. Not only should the MPRDA bring the necessary reform to ensure equitable access, it should also eradicate all forms of discriminatory practices and redress the results of past racial discrimination. All of this whilst creating an internationally competitive and efficient administrative and regulatory regime.

The MPRDA also introduced the necessity for a broadbased socio-economic empowerment charter, colloquially known as the Mining Charter. The first Mining Charter was introduced with the MPRDA in 2004. It is however not a fixed policy and its third iteration was issued in 2018. The objectives of the latest Mining Charter encompass the following:

- i. Affirm the internationally recognised principle of state sovereignty.
- ii. Deracialise ownership patterns in the mining industry through redress of past imbalances and injustices.
- iii. Substantially and meaningfully expand opportunities of Historically Disadvantaged Persons (HDPs) to enter the mining and minerals industry.
- iv. Utilise and expand the existing skills base for the empowerment of HDPs.
- v. Advance employment and diversify the workforce to achieve competitiveness and productivity of the industry.

- vi. Enhance the social and economic welfare of South Africans so as to achieve social cohesion.
- vii. Promote sustainable growth and competitiveness of the mining industry.
- viii. Enable growth and development of the local mining inputs sector by leveraging the procurement spend of the mining industry.
- ix. Promote the beneficiation of South Africa's mineral commodities.

It is clear from the aforementioned that the main objective of the Mining Charter is to ensure non-discriminatory participation of HDPs in the mining industry through deracialised ownership, more business opportunities for HDPs, and enhancing the socio-economic welfare of employees and mining communities.





The 2018 Mining Charter's scorecard hinges on six elements to achieve the desired outcomes:

1. Ownership

The Mining Charter requires a 30% HDPs shareholding of which should be held as follows: 5% by employees, 5% by mining community and 20% by HDPs of which 5% should preferably be held by women.

2. Mine Community Development

Meaningful contribution towards Mine Community Development through approved Social Labour Plans that must be published in English and the dominant language of the mine community.

3. Employment Equity

Lays out specific targets regarding the makeup of staff across all levels in the organisation, which ranges from 50% to 70% of HDPs representations. It further requires that employees with disabilities should represent at least 1.5% of all employees.

4. Human Resource Development

Requires investment on essential skills development activities such as science, technology, engineering, mathematics, artisans, internships, learnerships, apprentices, literacy and numeracy skills bursaries for employees and community members.

5. Inclusive Procurement, Supplier and Enterprise Development

Sets out certain requirements regarding the procurement of goods and services from HDPs. In addition, investment into enterprise and supplier development which may then be offset against its procurement obligations.

6. Housing and Living Conditions

Mining companies must improve the standard of housing and living conditions of their employees across the following principles: decent and affordable housing, home ownership, socially, physically and economically integrated human settlements and proper healthcare services.

Companies conducting mining activities in South Africa also need to comply with the National Environmental Management Act (NEMA) and its regulations. NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for coordinating environmental functions exercised by organs of state, and to provide for matters connected therewith.

In addition to the aforementioned, mining companies are also regulated by the general business regulatory environment that all companies should adhere to, including but not limited to the environmental, health and safety and labour regulations. From a government institution perspective, the Department of Mineral Resources and Energy (DMRE) is the primary regulator overseeing the minerals and mining sector in South Africa. The DMRE's functions are quite broad and not only regulate impact assessments, environmental management plans and programmes for new and existing mining activities, but it is also responsible for the administration of prospecting rights, mining rights and mining permits. Adding a layer of complexity in the South African regulatory environment is the fact that water user licences and elements of rehabilitation are regulated by the Department of Water and Sanitation and the Department of Forestry, Fisheries and the Environment.

Taxes and Royalties in South Africa

With the recent reduction in the corporate income tax (CIT) rate, mining companies in South Africa are taxed at a rate of 27% (excluding gold mining operations, which are taxed at a tax rate that is linked to profits). This reduction coincided with the introduction of the assessed loss limitation rule and amendments to the cross border interest limitation rules, both of these being tax base broadening measures juxtaposed to the reduction in the CIT rate.

Companies conducting mining operations are afforded certain accelerated capital allowances on mining assets. In essence, a 100% capital allowance deduction is available to the extent that the company has taxable mining income, with any amount not utilised to be carried forward to the following year of assessment. It should be noted that certain ring fencing principles apply. Accordingly, the taxable income of certain mining operations is calculated on a stand alone basis and cross utilisation of capital expenditure is not allowed.

In addition to corporate taxes, mining companies in South Africa are also liable for value-added tax, withholding taxes and import and export duties.

In March 2010 South Africa introduced an additional natural resource tax, namely the mineral royalty tax. Mining companies are liable for the tax, which is governed by the Mineral and Petroleum Resources Royalty Act (MPRRA), which details an ad *valorem*⁸ royalty regime. It is worth noting that the South African Mineral Royalty Tax regime is quite complex, basing the mineral royalty liability on a variable rate that is driven not only by the class of mineral (i.e., unrefined vs refined minerals), but also by the profitability of the mining operations. The minimum rate payable for unrefined and refined minerals is 0.5%, whereas the maximum rate differs – being 7% for unrefined minerals and 5% for refined minerals. The differentiation between unrefined and refined minerals is intended to ensure that beneficiated minerals do not attract a higher mineral royalty based on the higher value attributable to refined mineral resources.

8. Royalty based on the value of sales or production

What about the rest of Africa?

How does the South African regulatory environment compare to the rest of Africa? Regulations across the continent do significantly differ. The salient features of some are shown in the table that follows. Africa is however plagued with knee-jerk amendments to legislation, which can destabilise the sector, specifically investment and development within the sector.

Country	Regulatory and legislative environment	Ownership	Electronic / Interactive online cadastre system	Taxes and Royalties
Ghana	The Ministry of Lands and Natural Resources and the Minerals Commission administer the mining industry.	Small-scale mining licences may only be issued to Ghanaian citizens.	Yes	The CIT rate for mineral operations is 35%. Each mineral operation is treated as a separate business in determining taxable / assessable income.
		Restricted reconnaissance licence, prospecting licence or mining lease may only be granted to a Ghanaian person. A non-citizen may apply for a mineral right in respect of industrial minerals where the proposed investment exceeds a certain threshold.		Mining royalties are payable at a flat rate of 5% of revenue.
		The Ghanaian government has a 10% free carried interest in the rights and obligations of any mineral operation and is not precluded from any other or further participation.		
Mozambique	Mineral rights are awarded by	The state reserves the right	No	A CIT rate of 32% applies.
	and Energy or the Provincial Governor, depending on the	participation of no less than 5%.		The following additional taxes also apply to mining companies:
	nature of the operations, by means of a licence or contract.			(i) Mining Production Tax (Royalty) – the taxable base is the value of the mineral product after treatment with fixed rates for different minerals.
				(ii) Surface Tax – the taxable base corresponds to the number of hectares of the area subject to the exploration and prospecting licence and the applicable rates vary from 17.5 MZN per ha to 50 MZN per ha.
				(iii) Mining Resource Tax – levied on the net cash flow under the mining title from the moment the cash flow gives rise to an internal rate of return of 18%, before the CIT.
				The rate is 20%.
Kenya	The mining industry is administered by the Ministry of Mining which is headed by a Cabinet Secretary. Assisting the Cabinet Secretary is the Mineral Rights Board whose key function is to advise the Cabinet Secretary on decisions relating to matters such as the issuing and revocation of permits and licences, the demarcation of exploration areas and the categorisation of minerals.	The state has the right to acquire 10% free carried interest in the share capital of the mining company of a large-scale mining operation or a mining operation relating to strategic minerals without paying any financial contribution and further interests at arm's length prices.	Yes	The CIT rate is 30% for companies and 37.5% for a branch or permanent establishments of non-residents. Companies in the extractive sector are exempt from minimum tax, whose said rate is 1% of gross turnover. Corporate tax is based on taxable income net of allowable deductions and is ring fenced.
				A Natural Resource Income applies and is based on (i) an amount including a premium or such other like amount paid as consideration for the right to take minerals, or a living or non-living resource, from land or sea; or
				(ii) an amount calculated in whole or in part by reference to the quantity or value of minerals or a living or non-living resource taken from land or sea.



Country	Regulatory and legislative environment	Ownership	Electronic / Interactive online cadastre system	Taxes and Royalties
Namibia	The mining sector is governed by the Ministry of Mines and Energy. The ministry is divided into three key departments.	No compulsory government share and foreign ownership is allowed.	Yes	Companies carrying on mining (other than diamond mining) are subject to a CIT rate of 37.5%. Diamond mining is subject to a 55% CIT rate.
	The Geological Survey of Namibia is responsible for the generation and management of the country's geoscientific data and information. The Department of Mines is			It is important to note that the 55% and 37.5% CIT rates also apply to taxable income of entities rendering services in connection with the mining operations on behalf of any person licensed to conduct such mining operations.
	responsible for promoting the responsible, sustainable and optimal exploitation of the country's mineral resources, and integrating the mining sector into other sectors of the economy. Diamond Affairs is the department tasked with protecting the Namibian diamond industry from illicit activities, and with optimising the contribution of diamond mining to the country's socio economic development.			A mineral royalty tax on the market value of minerals extracted applies at a fixed rate for different minerals.
Tanzania	Mining is regulated by the Mining Commission that was	The Mining Act 2010 provides	Yes	The CIT rate is 30%.
	established under the Mining Act 2010.	require a free carry interest (a minimum of 16% but entitled to acquire up to 50%, commensurate with tax expenditures incurred by the government in favour of the mining company).		Fixed rate defined for different minerals, based on the gross value of the mineral resource determined in accordance with a legislated valuation process

What does this mean?

It is clear that various African countries have adopted an approach that allows the government to obtain a share in the mining operations, which is vastly different from the approach that South Africa has taken. The South African approach is to ensure that ownership and economic benefits flow through to HDPs and mine communities rather than the government, which is arguably a better approach in redressing past inequalities and ensuring the upliftment of HDPs and mine communities.

In South Africa the administration of prospecting rights, mining rights and mining permits is still a very manual and tedious process, whereas many of our counterparts on the continent have electronic cadastral systems and application portals. This area, if correctly managed, could have a significant impact in the growth and development of the mining industry.

The one thing that can be said is that South Africa has quite a stable regulatory environment albeit with its own challenges.





Financial performance

Market capitalisation



Source: S&P Capital IQ, Iress, PwC analysis

Total market capitalisation decreased in the current year to R1,087bn from R1,309bn.

This total is a R222m (21%) year-on-year (YOY) decrease from 2022, mainly attributable to the decrease in market capitalisation of companies within the Coal and PGMs sectors.

PGMs and gold accounted for 75% of the market capitalisation (2022: 74%) of the companies analysed this year. A slower than expected recovery of the Chinese economy and the COVID restrictions across China, the continued decline in automotive production, resulted in a decrease in both iron ore and platinum prices. These lower prices resulted in a significant decrease in market capitalisation for the large PGM producers.

The market capitalisation of PGM companies decreased by 12%. This is depicted in Anglo American Platinum Limited losing a further massive 41% – or more than R154bn of its market capitalisation due to said continued decreases in commodity prices.

Gold saw an increase of 14% as the US banking crisis saw investors fleeing to invest in gold – a traditional 'safe haven' investment – amid nervousness leading investors to reduce their risks. This saw Gold Fields and Harmony increase their market capitalisation by 42% and 35% respectively. This was further supported by Gold Fields' new joint venture with AngloGold Ashanti in Ghana.





A new entrant to the SA Mine 2023 companies is Copper 360 Limited which completed its listing on the JSE on 21 April 2023.





Source: S&P Capital IQ, Iress, PwC analysis

The composition of the top ten companies remained consistent with the prior year, but there has been some movement in the rankings. The biggest climb was Gold Fields Limited moving from fourth place to replace Anglo American Platinum at the top.

Anglo American Platinum dropped from the first position for the first time since 2016 with the PGM prices showing a downward decline in the year.

The top three companies are Gold Fields (2022:4th), Anglo American Platinum (2022: 1st) and Kumba Iron Ore (2022: 2nd).



Source: IRESS, PwC analysis

There is a relatively good correlation in USD terms between the HSBC Global Mining Index and the JSE Mining Index. The JSE Mining Index was stronger in relative terms than the HSBC Global Mining Index during the year.

Revenue

Revenue in rand terms decreased by 5% between June 2023 and June 2022. PGMs continued to be the highest contributor to the total industry revenue, followed by coal. PGM revenue results decreased by 33%, followed by iron ore, which decreased by 22% and coal by 12%. Chrome experienced a good year with 38% increase.

The results of PGM production have been adversely impacted by feed and yield problems, as well as the fact that PGM prices are under pressure.

Coal sales to Europe increased a reported eightfold in the first half of 2022 compared to the same period the year before, due to a surge in demand for fossil fuels in the wake of the Russian coal ban resulting in a steep increase in benchmark coal prices. Locally, companies continue to navigate Transnet Freight Rail (TFR) struggles which saw Richards Bay Coal Terminal (RBCT) reach a 30-year low in total coal deliveries last year. Coal still remains the primary source of power production in the country and some parts of the world despite volatility in demand and price.

This year, chrome surpassed all other commodities in terms of YOY growth, although not in Rand value. This was largely due to the logistical issues in South Africa, as well as the fact that port stocks in China remained low, which resulted in a significant increase in chrome ore prices during the first six months of the year. Additionally, China, which sources the majority of its chromium ore from South Africa, imported a 3% increase in chrome ore during the same period.



Source: Stats SA, PwC analysis









Source: Stats SA, PwC analysis

Production

Figure 15: Indexed monthly production per commodity



Source: Stats SA, PwC analysis

The industry failed to maintain production levels from the previous year as the government searched for a solution to the country's persistent power shortages. Year on year, overall production has dropped by 5.4%. De Beers reported in its most recent interim results that South African production fell by 59% to 1.2 million carats (30 June 2022: 2.9 million carats) as a result of operations transitioning to underground at its Venetia Mine.



The largest contributor to industry production, manganese, increased by 1.57% year on year and accounted for a total of 15.6% of industry output. Compared to the prior year, production of coal, iron ore, PGMs, and gold remained largely steady. The Chinese government announced new stimulus measures early last year, and shutdown restrictions were relaxed, which helped to increase demand for iron ore. However, general weak demand sentiment in China and Europe as well as worries of a worldwide recession weigh on the iron ore market.

Furthermore, the inability to transport minerals to ports and the buildup of stock piles at mines forces producers to scale back output. Recently, some of the biggest coal producers and exporters in South Africa noted decreases in the production of coal due to the rail issues, which resulted in less coal being exported.

Prices

Coal

Coal prices spiked in March 2022 as a result of the Russian-Ukraine conflict, leading to increased demand in Europe for coal. The Coal prices remained elevated until September 2022, after which they came down sharply due to increased gas supplies to Europe and the more favourable winter weather in Europe softening demand for the commodity.

On the supply side, as a result of the record prices achieved in 2022, coal producers increased production to record highs in 2022, further contributing to the subsequent rebalancing of the demand supply equation and the resultant fall in coal prices.

Furthermore, as a result of the sanctions against Russia by western countries, there was a strong reallocation of South African coal to Europe, with China and India being supplied by cheaper Russian coal exports. Coal prices are expected to taper further for the remainder of 2023, albeit at a slower rate, as the transition to greener energy sources continues. Notwithstanding, prices will also be impacted if a stronger rebound in the Chinese economy materialises.

Additionally, local coal producers felt the impact of the ongoing difficulties faced by Transnet on the Richards Bay corridor, leading to a decline in export volumes.

Gold

Given its safe haven status it is traditionally expected that, in periods of high inflation and economic uncertainty, gold prices should show a strong growth trajectory. The growth has however been subdued by softer investment demand as a result of a stronger dollar and higher bond yields driven by increased interest rates.

In Africa, Ghana reclaimed its position as the top gold producer with a 32% increase in output.

On the local front, gold production has shown a steady increase in volumes from its 2020 lows despite labour unrest, which particularly impacted Sibanye Gold's production output. The long-term outlook on production volumes remains subdued due to lower grades, higher complexity in extraction and increased costs.

Over the last 12 months, South African gold miners have benefited from stronger commodity prices and also from the exchange rate differential created by the largely weaker rand denominated cost base versus stronger dollar denominated sales prices.

This has been reflected in the share price of JSE listed gold miners with DRDGOLD (Up 63%) and Gold Fields (Up 49%) both ranked in the top ten performing stocks on the JSE over the six months to June 2023.

The positive outlook for a further uptick in gold prices, given the expected weakening of the dollar and a slowdown in interest rate hikes from central banks, should continue to benefit JSE listed gold miners in the short term.

PGMs:

PGM prices as a basket have declined from 2021 highs. While platinum remained flat over the last 12 months despite macroeconomic volatility as internal combustion engine demand started recovering post COVID-19 and the widely publicised electronic chip shortage which influenced car production. Palladium has come off sharply due to the unwinding of speculative long / short trade positions together with an increase in supply at suppressed prices from Russian producers.

Locally, supply has been hampered by load shedding, which is expected to lead to a decline in production of between 5% to 25% while increased labour costs and ageing plants are having a further adverse effect on production.

As a result of the headwinds faced on both the supply and demand sides of the equation, paired with increasing production costs, precious metal and minerals producers consisting mainly of the big PGM producers have seen significant declines in their share price. Most notably, Impala platinum was down 41% year to date (YTD), Anglo Platinum down 40% YTD, Sibanye Stillwater down 35% YTD, and Northam Platinum down 33%.

The outlook for PGM's is based on the use case of each metal, the recent decline in demand for platinum iridium and ruthenium can be offset by the offtake of the hydrogen economy over the long term. Demand for palladium continues to decline in line with the predicted decline in the use of combustion vehicle engines and especially diesel engines.









Figure 17: Commodities at rand-indexed prices



Source: World Bank, PwC analysis





Further assessing the commodity prices movement from July 2022 to June 2023 shows the decrease in prices upon the strong growth in 2022. It is also evident that the rand-indexed prices increase is higher and decrease is lower than those measured in USD - due to the weak level of the rand that has been pressured by the effects of load shedding.

Commodity price movements Jul-22 to Jun-23									
	Thermal Coal	Iron Ore	Copper	Palladium	Platinum	Silver	Gold	Brent Crude Oil	
USD	-65%	-2%	4%	-35%	2%	15%	6%	-37%	
ZAR	-59%	13%	19%	-25%	17%	32%	22%	-27%	





Source: EquityRT, PwC analysis

The rand was significantly weaker in the period compared to the previous period, pummelling to its weakest level ever of R19.80 during May 2023.

Despite the subsequent recovery in the rand since June 2023, it is still at weaker levels and will continue supporting mining revenues, yet will add to already above inflation input costs in the medium term.





Cash flows

Cash flows	Current year Rbn	Prior year Rbn	Difference Rbn	% Change
Cash generated from operations before working capital changes	257	358	(101)	(28%)
Working capital changes	3	3	0	0%
Cash generated from operations after working capital changes	260	361	(101)	(28%)
Other	3	2	1	44%
Income taxes paid	(51)	(82)	30	(37%)
Net operating cash flows	211	281	(70)	(25%)
Purchases of Property, plant and equipment	(111)	(86)	(25)	29%
Free cash flow	100	195	(96)	(49%)
Cash flows related to other investing activities				
Purchase of investments	(12)	(25)	14	(54%)
Sale of investments	5	6	(1)	(20%)
Other	1	3	(2)	(69%)
Net other investing cash flows	(6)	(17)	11	(64%)
Cash flows related to financing activities				
Proceeds from ordinary shares issued	1	0	1	0%
Proceeds from interest-bearing liabilities	39	50	(11)	(21%)
Repayment of interest bearing liabilities	(31)	(50)	19	(38%)
Distribution to shareholders	(113)	(194)	81	(42%)
Other	0	1	(1)	(83%)
Net financing cash flows	(104)	(193)	89	(46%)
Net increase/(decrease) in cash and cash equivalents	(23)	(23)	0	0%

Source: PwC analysis

Free cash flows

Free cash flow is defined as cash from operating activities less purchase of property, plant and equipment (PPE). It provides an indication of a company's ability to settle debt, pay dividends and fund acquisitions. Free cash flows have decreased from the prior year by 49% due to the decrease noted in cash from operations. A continued increase in capital expenditure in line with the sustaining and expansionary capital commitments the mining companies communicated. Taxes paid decreased as profits decreased.

Other investing Cash flows

The purchase of investments decreased from the prior period by R14bn. This is as a result of the prior period purchase of the interest in Royal Bafokeng Platinum Limited by Impala Platinum Holdings Limited and Northam Platinum Limited, in the platinum sector.

Financing activities

The current year saw a decrease in proceeds from third party loans of 21% as well as a decrease in the repayment of loans by 38%.



Distribution to shareholders

Dividends are generally paid after the financial year end. In the current year we saw distribution to shareholders decrease to R113bn (2022: R194bn) on the back of decreased cash flows.



Figure 19: Dividend yield

Source: PwC analysis

Income statement

Income statement	Current year Rbn	Prior year Rbn	Difference Rbn	% change
Revenue from ordinary activities	654	726	(72)	(10%)
Operating expenses	(374)	(337)	(37)	11%
Metal purchases	(84)	(91)	7	(8%)
EBITDA	197	298	(102)	(34%)
Impairment charge	(23)	(5)	(18)	377%
Depreciation charge	(32)	(33)	1	(3%)
Profit/(loss) before interest and tax	141	260	(119)	(46%)
Net interest	(2)	(3)	1	(45%)
Tax expense	(48)	(72)	24	(34%)
Equity accounted income	15	20	(5)	(24%)
Discontinued operations	0	1	(1)	(100%)
Net profit	108	206	(98.4)	(48%)
EBITDA margin	30%	41%	(11%)	



Revenue

	Current year Rbn	Prior year Rbn	Difference Rbn	% change
Gold	92	79	14	17%
PGMs	370	439	(69)	(16%)
Other mining	40	44	(4)	(9%)
Iron Ore	69	81	(12)	(15%)
Coal	82	82	0	(1%)
Total	654	726	(72)	(10%)

Source: PwC analysis

Most sectors decreased y-o-y except for the coal mining sector which remained flat, and the gold mining sector which experienced an increase. The platinum sector remained the biggest contributor to revenue results even with a significant decrease in PGM basket prices. The decrease in the sector was slightly offset by an increase in Northam's revenue from an increase in sales volumes. The iron ore sector saw a decrease in revenue y-o-y of 15%. Kumba Iron Ore Limited noted a decrease in revenue due to the decrease in iron ore prices as well as a decrease in sales volume on the back of logistical constraints.

The gold sector was the only sector that noted an increase y-o-y of R14bn or 17%. The biggest contributor to the increase was Harmony Gold Mining which noted an increase in revenue as a result of higher underground recovered grades as well as a higher average gold price received.

Operating expenses

Operating expenses, excluding metal purchases, increased by 11%, reflecting the above inflation increases in energy cost (electricity and fuel), chemicals and labour cost.



Source: PwC analysis

Employee benefits and contractors

This category has seen a 9% increase from the prior year and remains one of the largest contributors to expenses for these companies.

Royalties

The decrease in revenue resulted in royalty taxes of R13bn. A decrease of R5bn or 38% was noted in royalties in the current year. This was in line with the decrease in revenue of 10%.





Impairments

Impairment charges during the current year increased by R18bn to R23bn. Impairment charges of R16bn were accounted for by Impala Platinum Holdings Limited during the most recent financial year. This related to a R10.9bn impairment on the carrying value of Impala Canada, a loss of R1,8bn on the remeasurement of the previously held equity investment in Royal Bafokeng Platinum Limited (BPlat) and the date it became a subsidiary of the Group and a R4,2bn impairment of goodwill arising on the acquisition of RBPlat. Northam also recorded an impairment of R4.1 bn on its investment in associate for RBplats. A R5,4bn impairment charge was also recognised by Kumba Iron Ore Limited during the financial period on its Kolomela asset. This was due to the revised forecast production and cost profile of the Kolomela mine. Production volumes were revised down in line with anticipated logistics performance.

EBITDA

The average EBITDA margin of the mining companies included in this analysis was 30%, an 11% decrease from the previous period. Although this margin is still above the long term average in South Africa for the last ten years of 27%, signs of cost pressure which will translate into margin pressure are being seen. The decrease noted in EBITDA in the current year is as a result of the decrease noted in revenue of R72bn as well as the increase in operating expenses of R37bn and the decrease in metal purchases of R7m.

The significant change in gold is driven by an increase in revenue and no impairments in the current year. The category of other mining is heavily weighted towards diamond revenue decreasing by 70%.

EBITDA	Current year R' billions	Prior year R' billions	Difference R' billions	% change	EBITDA Percentage Current Year	EBITDA Percentage Prior Year
Gold	18	9	9	96%	9%	3%
PGM's	101	190	(89)	(47%)	52%	64%
Iron Ore	34	43	(9)	(21%)	17%	15%
Other Mining	11	19	(8)	(43%)	6%	6%
Coal	33	37	(5)	(13%)	17%	12%
Total	196	298	(102)	(34%)		

Source: PwC analysis

Tax expense

The aggregate tax expense for the mining companies was R48bn with an effective tax rate of 34%. This represents a decrease from the previous year of 34%.

Net profit/(loss)

Net profit decreased by 48% which represents a R98bn decrease. This is as a result of the decrease noted in revenue of 10% or R72bn as well as an increase in operating expenses of 11% or R37bn. Other reasons for the net profit decrease related to the impairment charges recorded and a decrease in equity accounted investments which related to investments in operations that experienced commodity price decreases or logistical challenges.





Financial position

Financial position	Current Year Rbn	Prior Year Rbn	Difference Rbn	% change
Current assets				
Cash and cash equivalents	172	179	(7)	(4%)
Inventories	123	120	4	3%
Receivables and other current assets	94	87	6	7%
Total current assets	389	385	3	1%
Non-current assets				
Mining and production assets	584	509	75	15%
Investments	134	134	(1)	0%
Other Non-Current Assets	50	30	19	63%
Total non-current assets	767	674	93	14%
Total assets	1,156	1,059	97	9%
Share capital & reserves				
Share capital and reserves	735	682	53	8%
Total equity	735	682	53	8%
Current liabilities				
Accounts payable and other liabilities	145	151	(6)	(4%)
Interest bearing liabilities	30	5	26	524%
Total current liabilities	176	156	20	13%
				0%
	70	70	-	0%
NC Interest bearing liabilities	70	70	(0)	0%
Deferred taxation liabilities	99	87	11	13%
Other non-current liabilities	77	64	12	19%
Total non-current liabilities	246	222	24	11%
Total liabilities	421	378	44	12%
Total equity and liabilities	1,156	1,059	97	9%

Source: PwC analysis

Key ratios

The financial and liquidity position of the industry slightly weakened but remained strong, providing it with an opportunity to implement strategy.

Key ratios	Current year	Prior year
Market capitalisation to net asset value (times)	1.5	1.9
Net borrowing (R'bn)	(71)	(103)
Gearing percentage	(9%)	(13%)
Solvency ratio (times)	2.7	2.8
Current ratio (times)	2.2	2.5
Acid ratio (times)	1.5	1.7
Net borrowings to EBITDA	(0.4)	(0.3)



Building towards value in the future

The mining sector operates under the Mineral and Petroleum Resources Development Act (MPRDA) of 2002 regulatory framework designed to balance the financial gains from mining with environmental preservation, social equality, and long-term viability. Achieving the objectives of the framework means that communities surrounding mining operations benefit from investments in education, health care, clean water and sanitation, housing and social infrastructure made by miners. Due to limited or inconsistent public reporting, it is impossible to provide a robust industry picture on these social investments. This section concentrates on the financial value created through mining operations and how it is measured and reported. An overview of the 2022-2023 financial period value creation suggests that miners are continuing to look forward. Investment in the future of operations has increased, while continuing to return value to shareholders through dividends even though profits have decreased. This has meant a decrease in funds retained.

The 2022-2023 downturn in PGM market prices has been clearly felt in the value added for the period as distributions from the large PGM miners decreased. This was however offset by contributions from the coal miners after a year of spectacular results off the back of high coal prices during the 2022 calendar year. Distributions from Kumba Iron Ore also decreased off the back of weaker price performance. Rising costs and expansionary spending on capital investment has also redirected value creation in the gold mining sector from high distributions in the 2022 period.

Miners have continued to invest in projects in South Africa, with the largest increase identified in capital spending on assets year on year, from 18% in 2022 to 37% in 2023. Miners clearly continue to see and invest for value in the future and have opted to dig deep into their pockets and have retained less of their funds in order to fund these capital investments. They have again contributed significant amounts to the national coffers through their payment of direct taxes, employee taxes and mining royalties. The returns of miners have continued to be a key driver of the balancing of the national trading account. The taxes that miners pay support numerous other entities and, as a result, their value creation inevitably drives values for the other stakeholders.

Share of value added

Share of value added	2023	2022
Employees	21%	20%
Employee taxes	6%	3%
Direct taxes	17%	18%
Mining royalties	7%	5%
Capital expenditure	37%	18%
Return to lenders	3%	1%
Return to shareholders	37%	40%
Community investment	2%	1%
Funds retained	(38%)	(6%)





Ten-year summary

The information included below differs from that in the rest of our analysis as it includes the aggregated results of those top companies as reported on in each respective edition of *SA Mine*.

Ten-year summary of financial information (Rbn)

Rbn	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Market capitalisation	1,087	1,299	1,471	1280	884	482	420	560	414	675
Aggregated income statement										
Revenue	654	726	735	594	443	398	371	333	335	327
EBITDA	197	298	299	182	111	86	95	66	75	100
Impairment charges	(23)	(5)	10	(6)	(22)	(46)	(22)	(60)	(24)	(49)
Net finance costs	(32)	(33)	(33)	(11)	(11)	(11)	(10)	(10)	(7)	(6)
Income tax expense	(48)	(72)	(88)	(37)	(15)	(9)	(11)	(2)	(8)	(8)
Net (loss)/profit	108	206	208	88	32	(11)	17	(46)	2	5
EBITDA margin	30%	41%	41%	31%	25%	22%	26%	20%	22%	31%
Cash flow from operating activities										
Cash flow from operating activities	211	281	255	153	100	79	83	69	62	69
Total capital expenditure	(111)	-86	53	66	68	62	48	49	55	57
Free cash flow	100	195	202	87	32	17	35	20	7	13
Other investing cash flows	(6)	(17)	6	(4)	4	(20)	(8)	4	3	(5)
Dividends paid	(113)	(194)	(78)	(49)	(27)	(16)	(6)	(8)	(19)	(19)
Other financing cash flows	9	2	(2)	(14)	(6)	27	(8)	(7)	11	3
Aggregated balance sheet										
Cash	172	179	194	133	70	65	58	46	38	33
Property, plant and equipment	584	509	455	494	430	406	403	414	425	422
Total assets	1,156	1,059	996	956	780	717	692	709	724	694
Total liabilities	421	222	375	465	360	325	296	311	293	270
Total equity	735	682	621	491	420	392	395	398	431	424













About this publication

Basis for compiling the report

The results aggregated in this report have been sourced from the latest publicly-available information, primarily annual reports, and financial reports available to shareholders. We aggregated the financial results of mining companies with a listing on a stock exchange and whose main operations are in South Africa for the financial year ends to 30 June 2023. We used a cut-off market capitalisation of R200m and excluded all companies with suspended listings. All companies with audited results released and their comparatives up until 15 September 2023 have been captured.

Companies depicted in the publication have different year ends and report under different accounting regimes. Information has been aggregated for the individual companies and no adjustments have been made to consider the different reporting requirements. As far as possible, we have aligned the financial results of reporters to be as at, and for, the year ended 30 June 2023. For companies that do not have June year ends, we added and deducted reviewed results to reflect the comparable 12 -month period. We have also taken into account any restatements and /or adjustments to the prior period as currently reflected in the latest published results.

All currency figures are reported in South African rands, except where specifically stated otherwise. The results of companies that report in currencies other than the rand have been translated at the average rand exchange rate for the financial year, with balance sheet items translated at the closing rand exchange rate.

Our selection criteria excluded global mining companies Anglo American plc, BHP, South32 and Glencore plc. Although these companies have a significant South African footprint, their global exposure and size mean that they do not necessarily reflect trends in the South African mining environment. While a large number of the entities included also have international exposure, the bulk of their operations are in Africa.

Some diversified companies undertake part of their activities outside the mining industry. No attempt has been made to exclude such non-mining activities from the aggregated financial information.

Basis for compiling resources and reserves article

The assessment comprises 135 mining projects, with 86 being operational, and the remainder being placed either on care and maintenance or in development. The data obtained is split across seven of South Africa's provinces. Values have been converted to the following common units of measure:

- For PGMs, production amounts and reserve and resource amounts are expressed in 4E million ounces (4E – platinum, palladium, rhodium and gold) – expressed in 4E Moz.
- For gold, production amounts and reserve and resource amounts are expressed in million ounces – expressed in Moz.
- For iron ore, production amounts and reserve and resource amounts are expressed in million tons – expressed in Mt.
- For coal, production amounts and reserve and resource amounts are expressed in million tons – expressed in Mt.

Total Reserves include both probable and proven reserves. A proven reserve is the economically mineable part of a measured mineral resource. A proven mineral reserve implies a high degree of confidence in the Modifying Factors. A Probable Reserve is the economically mineable part of an indicated and, in some circumstances, a measured mineral resource. The confidence in the modifying factors applying to a probable mineral reserve is lower than that applying to a proved mineral reserve.

Total Exclusive Resources include measured, indicated and inferred resources, and excludes amounts relating to proven and probable reserves. A resource is that part of a minera for which quantity, grade or quality, densities, shape and physical characteristics are estimated with confidence sufficient to allow the application of modifying factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation. A measured mineral resource has a higher level of confidence than that applying to either an indicated mineral resource or an inferred mineral resource. Measured and inferred resources may be converted into proved mineral reserves or into probable mineral reserves. An inferred resource has the lowest level of geological confidence, and has less likelihood of being converted into a reserve.



The PwC SA Mine team has obtained the most recent publicly available reserve and resource statements for listed companies with operations in South Africa, adjusted for depletion until 30 June 2023. The companies considered for this assessment include the following::

Company name	Date of information	Product classification	
African Rainbow Minerals	30 June 2022 (one mine based on 31 December 2022)	PGMs, Coal, Iron Ore	
Afrimat Limited	28 February 2023	Coal, Iron Ore	
Anglo American Platinum Limited	31 December 2022	PGMs	
DRDGOLD Limited	30 June 2022	Gold	
Eastern Platinum Limited	01 January 2022	PGMs	
Exxaro Limited	31 December 2022	Coal	
Glencore PLC	31 December 2022	Coal	
Gold Fields Limited	31 December 2022	Gold	
GoldPlat PLC	31 March 2023	Gold	
Harmony Gold Limited	30 June 2022	Gold	
Impala Platinum Holdings Limited	30 June 2022	PGMs	
Ivanhoe Mines Limited	31 March 2022	PGMs	
Kumba Iron Ore	31 December 2022	Iron Ore	
MC Mining Limited	30 June 2022	Coal	
Northam	30 June 2022	PGMs	
Pan African Resources PLC	30 June 2022	Gold	
Platinum Group Metals Limited	09 April 2019	PGMs	
Royal Bafokeng Platinum Limited	31 December 2022	PGMs	
Salungano Group Limited	31 March 2022	Coal	
Sasol	30 June 2022	Coal	
Sedibelo Resources	31 December 2021	PGMs	
Sibanye-Stillwater Limited	31 December 2022	PGMs, Gold	
Southern Palladium	01 July 2021	PGMs	
Sylvania Platinum Limited	31 March 2023	PGMs	
Tharisa Plc	30 September 2022	PGMs	
Thungela Resources Limited	31 December 2022	Coal	
Wesizwe Limited	31 December 2022	PGMs	



Companies analysed

	Company name	Year end
1	African Rainbow Minerals Limited	30 June 2023
2	Afrimat Limited	28 February 2023
3	Anglo American Platinum Limited	31 December 2022
4	Copper360 Limited	28 February 2023
5	DRDGold Limited	30 June 2023
6	Eastern Platinum Limited	31 December 2022
7	Exxaro Resources Limited	31 December 2022
8	Gold Fields Limited	31 December 2022
9	Goldplat PLC*	30 June 2023
10	Harmony Gold Mining Company	30 June 2023
11	Impala Platinum Holdings Limited	30 June 2023
12	Jubilee Metals Group PLC*	30 June 2023
13	Kropz PLC*	31 December 2022
14	Kumba Iron Ore Limited	31 December 2022
15	MC Mining Limited*	30 June 2023
16	Merafe Resources Limited	31 December 2022
17	Northam Platinum Limited	30 June 2023
18	Orion Minerals Limited*	30 June 2023
19	Pan African Resources PLC	30 June 2023
20	Petra Diamonds Limited	30 June 2023
21	Platinum Group Metals Limited	31 August 2023
22	Royal Bafokeng Platinum Limited**	31 December 2022
23	Salungano Group Limited*	31 March 2023
24	Sibanye-Stillwater Limited	31 December 2022
25	Southern Palladium Limited*	30 June 2023
26	Sylvania Platinum Limited	30 June 2023
27	Tharisa PLC	30 September 2022
28	Thungela Resources Limited	31 December 2022
29	Wesizwe Platinum Limited*	31 December 2022

For the entities indicated with an asterisk (*), results were not released in time for inclusion in the publication.

** Royal Bafokeng Platinum Limited has a planned termination of its listing on the JSE. However, as at 30 June 2023, the entity was still listed on the JSE.



Glossary

Terms	Definition
Acid ratio	(Current assets less inventory) / current liabilities
CIT	Corporate income tax
COVID-19	Coronavirus disease 2019
Current ratio	Current assets/current liabilities
DMRE	Department of Mineral Resources and Energy
EBITDA	Earnings before interest, tax, depreciation, amortisation and impairments
EBITDA margin	EBITDA / revenue
EV	Electric Vehicle
Gearing percentage	Net borrowings / (net borrowings plus equity)
GoG	Government of Ghana
HDPs	Historically Disadvantaged Persons
JSE	Johannesburg Stock Exchange
JV	Joint Venture
Market capitalisation	The market value of the company calculated as the number of shares outstanding, multiplied by the share price
M&A	Mergers and acquisitions
MPRDA	Mineral and Petroleum Resources Development Act
MPRRA	Mineral and Petroleum Resources Royalty Act
NEMA	National Environmental Management Act
Net asset value	Total assets less total liabilities
Net borrowings	Interest-bearing debt less cash
PEM	Polymer electrolyte membrane
PGM	Platinum group metal
PV	Photovoltaic



Terms	Definition
REEs	Rare Earth Elements
RBCT	Richards Bay Coal Terminal
RMB	Rand Merchant Bank
SARS	South African Revenue Service
Stats SA	Statistics South Africa
Solvency ratio	Total assets / total debt
TSE	Toronto Stock Exchange
TFR	Transnet Freight Rail
US	United States
USD	United States Dollar
Working capital	Inventories plus accounts receivable less accounts payable
у-о-у	Year on year
YTD	Year to date







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