MANAGEMENT DISCUSSION AND ANALYSIS

MARKET REVIEW

Global Economy:

The global economy remained resilient in 2023 despite the escalation of geo-political conflicts, higher-for-longer interest rates and demand slowdown. High interest rates have also speculated a period of recession in the major economies like the US and the EU, which have been outdone in CY2023. After projecting global economic growth of 3.1% in CY2023 in its Jan 2024 outlook, the IMF has upgraded its projection to 3.2% in its April 2024 outlook[1].

Global inflation is receding at a faster pace than anticipated. It declined from 8.7% in CY2022 to 6.8% in CY2023 and is expected to further decline to 5.9% in CY2024, according to IMF [1]. Though headline inflation witnessed a sustained decline from the unprecedented peaks, core inflation has maintained its sticky nature and required strict vigilance of the central banks to bring it down to the desired levels. Inflation levels in most of the countries remained above the target levels which compelled the central banks to maintain their stance on monetary tightening for the year. The global economy also dealt with the challenge of high borrowing costs due to the persistent high interest rates. However, the prospect of further relaxation of financial conditions has prompted an upswing in equity markets, although uncertainty persists regarding the timing of interest rate reductions. Financial market sentiments have been fluctuating, with evolving perspectives on an early pivot by central banks in advanced economies [10]. Central banks are exercising caution and have stalled the interest rates to fully transmit the impact of tight monetary policy. This has led to subdued commodity demand and a softening in prices in CY2023.

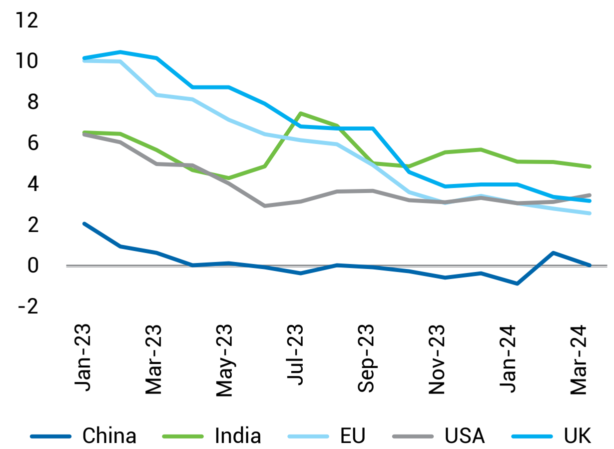
The global manufacturing industry focussed on the high tech and energy transition technology resulting from the policy push from the respective governments. As a result, the metal demand has been majorly driven by the energy transition activities and is expected to provide a cushion to the economic slowdown. The global Manufacturing PMI has been under contraction in CY2023 but has indicated stabilisation towards the start of CY2024. Additionally, commodity prices have remained relatively stable in CY2023 despite the ongoing economic slowdown in China and Europe and geo-political challenges in Europe and the Middle East. Global trade growth was nearly stagnant in CY2023 due to elevated inflation and a sluggish pace in global industrial production. Geoeconomic fragmentation is expected to exert continued pressure on global trade and cause additional price volatility. The IMF expects global trade to grow at 3.0%, Y-O-Y, in CY2024 before improving marginally to 3.3%, Y-O-Y, in CY2025. [1]

Geo-political challenges and climate change have impacted the supply chain

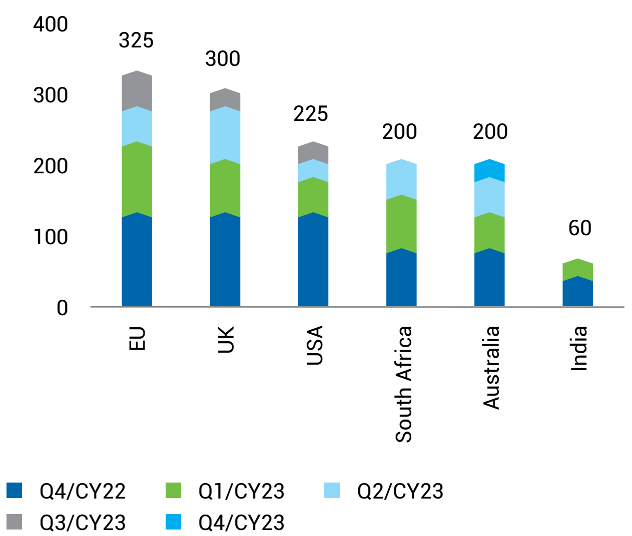
Apart from the ongoing Russia-Ukraine war, the intensifying conflict between Israel and Gaza has become an additional source of concern for the global economy. Furthermore, the trade disruption caused by the crisis in the Red Sea route, responsible for 12-15% of the global trade flow and 20% of the container trade, is leading to delays and heightened logistic costs [2]. The trade flow between the European and Asian counterparts has been impacted majorly by the significant hike in logistics costs. This has kept the commodity prices volatile in Q4 CY2023 and in Q1 CY2024.

The climate change has also impacted the supply chain. The Panama Canal route is witnessing a low water level. According to the United Nations, low water levels have caused a decrease of 36% in ship transits compared to a year ago and are almost 62% down from two years ago [2]. On top of that, the El Niño effect also poses a threat to agricultural commodities which can shoot up the inflation causing the interest rates to remain high for a longer period.

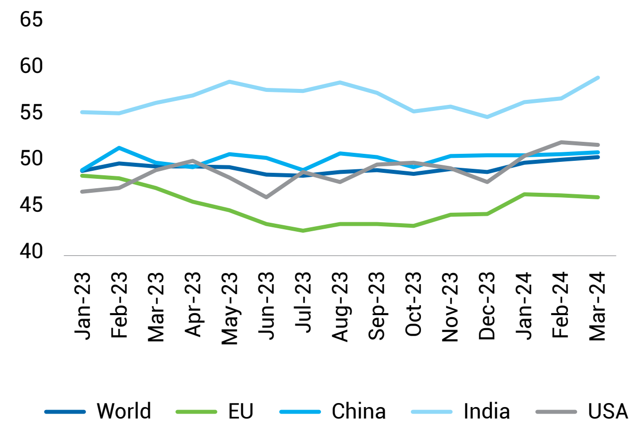
World's Retail Inflation in 2023 (%Y-o-Y)



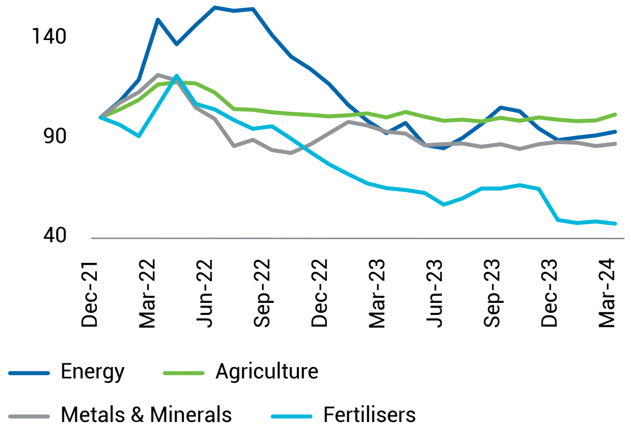
Central Bank Interest Rate Hikes (In basis Points)



S&P Global Manufacturing PMI (%)



World Bank Commodity Index (Base: Dec-2021) (%)



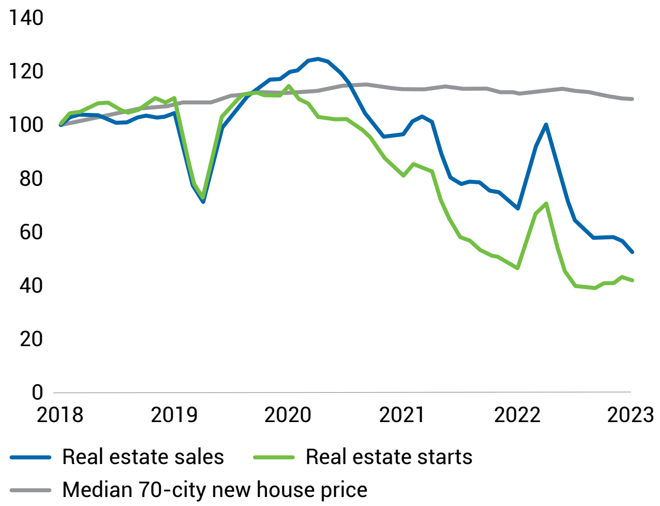
The Chinese economy continues with the ailing real estate sector

Despite the failed recovery of the real estate sector, Chinese economy has grown by 5.2% in CY2023 which was in line with the government's target of 5%. As the rest of the world is dealing with high inflation, the Chinese economy has been experiencing a period of deflation. After the unfolding of the property sector status, the dwindling consumer sentiments persisted in CY2023. The People's Bank of China has reduced the interest rates lower with additional support to the vulnerable sectors.

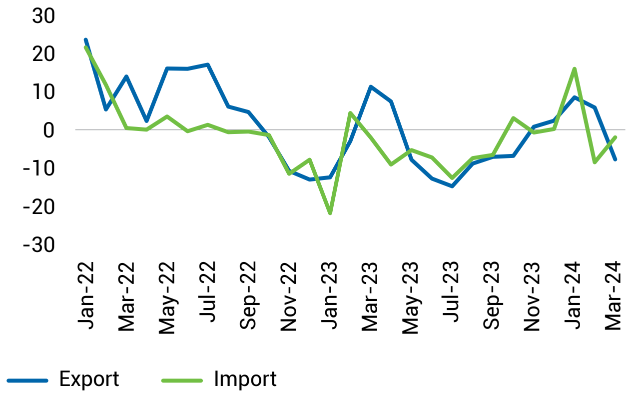
China's property sector has continued with its downward trend in CY2023. While the construction activity has remained subdued, the real estate prices have remained elevated and did not decline much [3]. The Chinese government has extended the support like expanding the financial support to the property developers, relaxation of the loan defaults by the home buyers, relaxation of the rules to boost the home purchase, and so on. However, the stimulus packages announced by the government are yet to reflect on the indicators.

On top of the domestic consumption, the slowdown in the export market has also impacted the Chinese economy's growth. Chinese domestic demand has also witnessed a shift from conventional infrastructure-related demand to energy transition demand. The growth of renewable energy capacity, EV production and sales and other structural changes have initiated a structural change in the economy.

Chinese Real Estate Sector (%)



China's Foreign Trade Growth (% Y-o-Y)



Source: IMF Country Focus [3], CEIC [4]

The IMF has projected the Chinese economy is expected to witness a slowdown and grow at 4.6% in CY2024 and 4.1% in CY2025 [1]. China's central banks announced cutting the reserve requirement ratio (RRR) for all banks by 50 basis points (bps) as part of a slew of measures to support the fragile economy.

The US economy remains resilient

The US economy has performed better than expected in CY2023 amid a high level of uncertainty and high interest rates maintained by the US Federal Reserve. A tight labour market and healthy consumer spending have supported the economic growth. Retail inflation also came down considerably from its CY2022 peak but remained under observation as it witnessed a slight upward trend towards the end of CY2023. The stickiness of the core inflation has kept the interest rate high and impacted the business investment and the real estate sector's performance in CY2023.

The US economy was previously expected to face challenges due to the impact of the prolonged high interest rate, but the economy has been responding with resilience. The Fed has kept the interest rate unchanged after the increase in July 2023. The market had anticipated aggressive rate cuts post December 2023 announcements, but that expectation was diffused after the Fed Chair's comments to keep the decision longer for the need of the economy around the ongoing global uncetainty. After growing at the rate of 2.5% in CY2023, IMF projects that the US economy will further grow by 2.7% in CY2024 before slowing down to 1.9% in CY2025. [1]

The European economy stagnates but falling inflation keeping hopes up

The European Union managed to avoid the recession in CY2023, but the block is struggling to attract growth due to the contraction of Germany, Austria, Estonia, Finland, Hungary, the Ireland, Netherlands, and Sweden. The hike in energy prices in CY2022 led to the closure of the manufacturing units across Europe which continue to suffer due to the slowdown in demand. Among the major economies, Germany has witnessed a setback as the GDP growth on a Y-O-Y basis contracted in three consecutive quarters in CY2023 from Q2 to Q4. Moreover, the European Central Bank has kept the interest rates high and is expected to maintain the monetary tightening to control the inflation level. Core inflation has been coming down, but the geopolitical and supply chain uncertainty is expected to keep consumer sentiments restricted. Despite challenges, the European economy has resisted the recession supported by falling inflation levels with a tight labour market supporting private consumption.

The expectations in CY2024 from the European economy are better than that of CY2023 as the worst impact is likely to be over. After witnessing a marginal growth of 0.4% in CY2023, the IMF projects that the Euro Area will grow at 0.8% in CY2024 and 1.5% in CY2025. Germany which is expected to have contracted by 0.3% in CY2023 will grow by 0.2% in CY2024 and 1.3% in CY2025 [1].

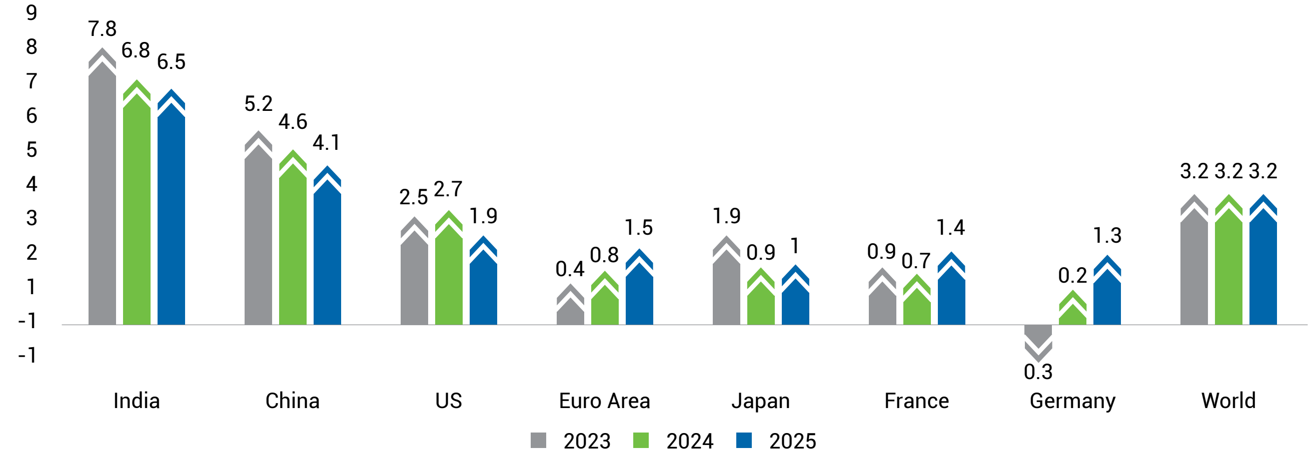
Global Economy Outlook

The global economy is expected to sustain its resilience in 2024. However, the economic outlook for CY2024 will be impacted by the heightened geopolitical unrest which could raise the risks of supply disruptions, elevate energy and commodity prices, and pose downside risks to the global economy. Moreover, the performance of the Chinese economy has also been a major concern. The Chinese government's efforts to support the property sector and financial market and encourage consumer spending might need more time to indicate any significant improvement.

The slowdown in inflation has raised the anticipation of interest rate cuts but most of the central banks are expected to hold it till H2 2024. After successful economic performance, it is expected that the impact of high inflation rates will not be reflected in CY2023 and CY2024 might witness its completion. Global headline inflation is projected to decrease to 5.9% in CY2024 and further to 4.5% in CY2025 [1].

The IMF has upgraded the global GDP forecast for CY2024 to 3.2% from the earlier projection backed by the better-than-expected performance of the US and other large emerging markets and developing economies in CY2023 [1].

Global GDP Growth (% Y-O-Y)



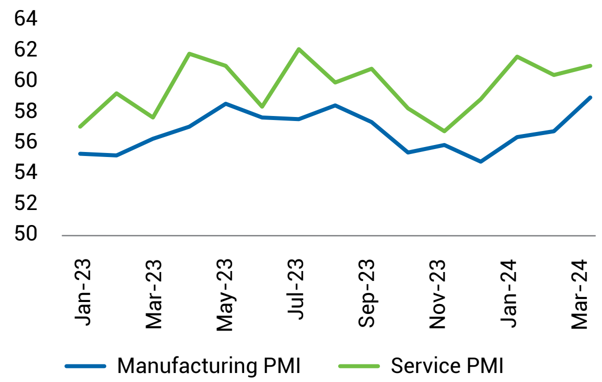
Source: IMF Country Focus [3], CEIC [4]

Indian Economy

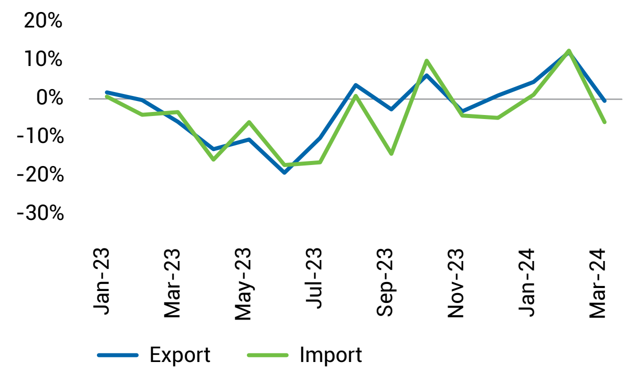
Indian economy came out as a top performer in FY 2023-24 despite the domestic challenges of high inflation and subsequent monetary tightening, and setbacks in the export market due to the global slowdown. As per the second advance estimates released by the National Statistical Office (NSO), real GDP is expected to grow by 7.6% in FY 2023-24 as against 7.0% in FY 2022-23 [11], driven by robust domestic demand, moderate inflation, a stable interest rate environment, and strong investment activities. Furthermore, India also concluded a successful presidency of G20, showcasing India's capability to cater to global needs and providing a platform to address global concerns.

Globally, high inflation and interest rates, coupled with supply surplus, have exerted significant pressure on demand. However, India's robust government spending on infrastructure development and positive consumer sentiments have not only provided a cushion but also boosted economic growth. Despite the persistent monetary tightening by the RBI, the domestic demand has remained resilient and supportive.

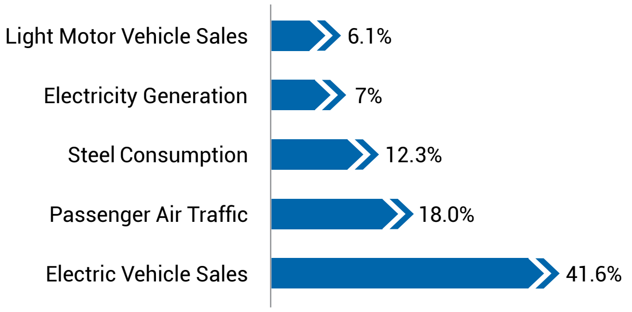
S&P Global PMI



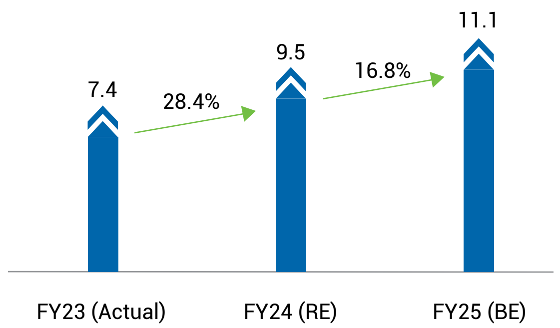
India's Trade Growth



Demand Growth in FY 2023-24



Capital Expenditure by Govt. (₹ lakh crore)



Source: S&P Global, RBI, CMIE

India's manufacturing sector has maintained its expansionary state in CY2023 with consistent positive levels of new orders, according to the PMI survey. At the start of CY2024, international sales have also witnessed a pickup creating a positive sentiment towards the export market. The positive response of domestic and a hint of global demand expansion have fuelled the expectations from CY2024. The Index of Industrial Production (IIP) shows that the output of India's industry grew by 6.1% in the first three quarters of FY 2023-24 compared to 5.5% in the corresponding period of last year. The performance in January 2024 and February 2024 has also been moderate with Y-O-Y growth of 4.1% and 5.7%, respectively [11]. From April 2023 to February 2024, mining and quarrying activity has contributed to 8.2%, Y-O-Y, followed by electricity which grew by 7.5%, Y-O-Y, and manufacturing which grew by 5.01%, Y-O-Y.

India's foreign trade has witnessed a contraction in FY 2023-24. India's overall exports including merchandise and services in FY 2023-24 are estimated to be US$ 776.68 billion, which is US$ 0.28 billion higher than 2022-23. Overall imports in FY 2023-24 are estimated to be US$ 854.8 billion, witnessing a drop of -4.8% over FY 2022-23 [12]. India's POL product import has witnessed a drop of -14.2% in FY 2023-24 as compared to FY 2022-23 [5]. India's crude oil consumption has been robust in CY2023, OPEC has indicated that India's crude oil import in CY2023 will reach to record high of 4.7 mbpd from 4.6 mbpd in CY2022 [6]. The drop in crude oil prices in CY2023 as compared to the CY2022 level is indicating a contraction in the import value. India's non-POL export has also witnessed a drop of -1.7% in FY 2023-24 from FY 2022-23 levels [5].

On the brighter side, the gross GST collection witnessed a healthy 11.8% Y-O-Y growth, reaching ₹ 120.18 lakh crore during the FY 2023-24 period as against ₹ 18.06 lakh crore collected in the same period of the previous year (FY 2022-23) [13].

Despite repetitive food price shocks and volatility in fuel prices, CPI inflation is on a downward trajectory and eased to 4.85% in March 2024 from 5.09% in February 2024 [11]. Core inflation which has remained sticky in CY2022 has come down to the RBI's tolerance limit. The RBI keeps the policy repo rate unchanged at 6.50% and retains the CPI inflation forecast at 5.4% in FY 2023-24 and expects to drop down to 4.5% in FY 2024-25[10].

Fiscal and monetary policy spurring economic growth

A conducive domestic policy environment will continue to improve the business environment, promote industrial activity, accelerate manufacturing, create economies of scale, and make India an integral part of the global value chain. With the rollout of schemes like PLI and FAME and the government's push for infrastructure development, India is now one of the attractive destinations for foreign investments. Bilateral agreement to facilitate trade opportunities has expanded the markets for Indian MSMEs and businesses. The India-Middle East-Europe Economic Corridor announced at the G20 Summit has not only brought focus to India's importance in the global economy but has also provided an opportunity to diversify the logistic constraints.

In the interim budget of FY 2024-25, the Government of India continued with its robust spending on capital expenditure, which grew by 11.1% to ₹ 11.1 lakh crore for FY 2024-25. The primary focus of the government has been to further strengthen the infrastructure of the country. Implementation of the economic railway corridor programmes under the PM Gati Shakti scheme will further strengthen the connectivity and logistic capabilities. Efforts towards green energy by supporting the installation of renewable energy capacity and reducing high carbon intensity fuel have also been made.

The RBI has been vigilantly monitoring India's economic conditions under the influence of global upturns and has successfully provided stability in the monetary environment of the country. Amid the volatility of the US Dollar Index, the RBI has successfully steered the monetary policy to maintain stability in the economy and reduced the risk associated with external factors.

Indian Economy Outlook

India's economic outlook remains positive and it is poised to become the third largest economy in the world, with a GDP of US$ 5 trillion by FY 2027-28. The support of infrastructure spending, efforts to build a manufacturing ecosystem, and strong consumer and business sentiments have become the fundamental drivers of the growth. The global concerns related to the supply chain disruption, high logistics cost, escalation of the geo-political crisis and volatility in global financial markets pose a downside risk, however, the Indian economy is well-positioned to navigate forthcoming uncertainties due to its robust domestic demand. The RBI is expecting inflation to moderate to an average of 4.5% in FY 2024-25, under the upper tolerance limit of 6% but still above the comfort level of 4%. **The IMF expects India's GDP to grow at 7.8% in FY 2023-24 in April 2024 World Economic Outlook, an upward revision from the 6.7% projected in the January 2024 economic outlook [1]. The GDP growth outlook for FY 2024-25 and FY 2025-26 is expected to be 6.8% and 6.5%, respectively [1]**.

India's growth outlook by domestic and global agencies

Agency/Institution	Month of Release	FY 2024	FY 2025
NSO, MOSPI (GoI)	February 2024	7.6%	7.0%
RBI	April 2024	7.3%	7.0%
IMF	April 2024	7.8%	6.8%
World Bank	April 2024	7.5%	6.6%
Asia Development Bank (ADB)	April 2024	7.6%	7.0%
S&P Global Ratings	March 2024	7.6%	6.8%
Fitch Ratings	March 2024	7.8%	7.0%
Nomura	March 2024	6.7%	6.2%
OECD	February 2024	6.3%	6.2%

Source: CMIE

References
1. IMF, WEO, April 2024 | 2. https://news.un.org/en/story/2024/01/1145902
3. https://www.imf.org/en/News/Articles/2024/02/02/cf-chinas-real-estate-sector-managing-the-medium-termslowdown#:~:text=With%20the%20property%20downturn%20in,in%20the%20last%20three%20decades.
4. CEIC | 5. CMIE | 6. OPEC | 7. S&P Global | 8. World Bank, The Pink Sheet | 9. CMIE | 10. RBI, Monetary Policy Committee
11. MOSPI | 12. Ministry of Commerce & Industry | 13. Ministry of Finance

SEGMENT REVIEW

ALUMINIUM

Market Overview

FY 2023-24 presented a dynamic environment for the aluminium market. While the early part of the year witnessed LME prices adjusting to US$ 2,100/tonne by June 2023 due to global macroeconomic factors, the market demonstrated resilience. Despite ongoing geopolitical tensions and economic headwinds, including the ongoing Russia-Ukraine war, the European energy crisis, and global inflation, metal prices remained relatively stable throughout most of the year. This stability reflects the continued robust underlying demand for aluminium across various sectors. A brief price increase in the latter part of the calendar year, particularly in December 2023, likely driven by concerns about potential sanctions on Russian metal, further underscored the market's sensitivity to supply disruptions. However, prices ultimately returned to around US$ 2,200/tonne by year-end, demonstrating a degree of market stability.

In CY2023, global primary aluminium production remained flat at ~70.0 million tonnes, while demand also stagnated at 69.8 million tonnes, resulting in a global surplus of 0.2 million tonnes. Excluding China, production and consumption of aluminium remained stable. In India, the domestic demand surged 17% from ~4.6 million tonnes in FY 2022-23 to ~5 million tonnes in FY 2023-24.

Products and customers

Vedanta is India's largest primary aluminium producer with an annual capacity of ~2.4 million tonnes. The Company's product portfolio includes aluminium ingots, primary foundry alloys, wire rods, billets, and rolled products which cater to varied industries globally such as energy, transportation, construction and packaging, aerospace and defence, among others. It has achieved a domestic market share of 46% as of 31 March 2024 after its domestic sales volume increased by ~25% in FY 2023-24.

In line with the evolving market needs and the focus on value creation through expanding margins, the Company has been steadily increasing its value-added product (VAP) share in the portfolio which currently accounts for ~45% of its total global aluminium sales.

Market Outlook

The global aluminium market is on an exciting growth trajectory, with annual demand projected to reach 122 million tonnes by CY 2030. The demand is expected to increase at a CAGR of ~3%, driven by the global push for decarbonisation. Aluminium's lightweight, corrosion resistance, electrical conductivity and recyclable nature make it an ideal material for clean energy solutions, with sectors like renewable energy and electric vehicles expected to consume a substantial 16 million tonnes by 2030. Furthermore, increased investment in infrastructure development will create another avenue for aluminium demand.

China, the world's largest aluminium consumer, shows promising signs of continued domestic consumption growth. However, its long-term success hinges on sustained growth in the transportation sector and modest recovery of the building and construction industry. For the Rest of the World (RoW), CY 2024 is expected to bring a modest increase in demand as inflation rates decline, enabling acceleration in the rate of investment.

Meanwhile, India stands out with a robust domestic demand outlook, projecting growth of over 10% for FY 2024-25. Key sectors like electronics, appliances, and anticipated growth in renewables, defence, and aerospace will continue to drive aluminium consumption in the country.

ZINC

The Zinc Market in FY 2023-24

In FY 2023-24, the zinc market navigated a dynamic landscape marked by fluctuating LME prices. Early price corrections saw a dip from US$ 2,900/tonne in April 2023 to US$ 2,300/tonne in June 2023. However, the market demonstrated remarkable resilience by stabilising in the latter half of the year. This stability came in the form of a range-bound pattern supported by rising LME inventories. The year concluded with a healthy average LME price of US$ 2,475/tonne, showcasing the market's ability to adapt to changing conditions.

On the supply and demand side, FY 2023-24 witnessed a modest 1% increase in global production of refined zinc, reaching 13.6 million tonnes. While global demand plateaued at 13.5 million tonnes, primarily due to reduced consumption in some regions, the market effectively adjusted. This adjustment involved an increase in warehouse stocks, which mitigated spot metal premiums and provided a buffer against price volatility. The market's resilience was further tested by factors like subdued demand from China and persistent global interest rate hikes. However, positive anticipation surrounding Chinese economic stimulus measures instilled intermittent market optimism. The latter part of the year saw adjustments due to concerns over China's recovery and rising inventories, highlighting the market's responsiveness to external influences.

In contrast to these global trends, India emerged as a bright spot in zinc demand. The country experienced a robust 17% Y-O-Y surge in FY 2023-24, fuelled by strong economic policies and a focus on infrastructural development. This growth trajectory serves as a testament to India's growing industrial prowess and the government's commitment to building a robust infrastructure network.

Products and customers

Hindustan Zinc Limited (HZL), a leader in the Indian zinc market, holds the distinction of being the country's largest and only primary zinc producer. With a commanding 75% market share in FY 2023-24, HZL plays a pivotal role in driving the industry forward. The Company's domestic sales success story reflects the thriving Indian market, with a remarkable 20% Y-O-Y growth in FY 2023-24, reaching a record-breaking 580 kt of sales. HZL is strategically expanding its product portfolio, evident in its historically high sales of 161 kt of value-added products (VAP) in FY 2023-24. This diversification from 15% to 20% VAP demonstrates HZL's commitment to cater to the evolving needs of the market. Aligning with the positive momentum in the zinc market, HZL projects a 20% Y-O-Y increase in domestic sales for FY 2024-25, marking a historic high, further bolstered by an expanded Value-Added Products (VAP) portfolio.

Looking Ahead: A Promising Future for Zinc

The global zinc market is poised for continued growth in FY 2024-25. Global refined zinc production is projected to rise by 1.53% to approximately 13.9 million tonnes, while consumption is expected to grow by 2.3% to 13.8 million tonnes. The People's Bank of China's proactive measures, such as the reduction in the Reserve Requirement Ratio, signal a commitment to economic revitalisation. This, coupled with the anticipated easing of US interest rates and a potential 3% increase in Chinese zinc consumption in 2024, suggests a favourable environment for zinc prices and broader economic health.

The Indian zinc market is particularly well-positioned for significant growth, with an estimated 19% Y-O-Y increase projected for FY 2024-25. This growth is driven by the government's consistent push for infrastructure development, urbanisation and industrialisation, which will create significant demand for zinc-intensive materials. India's leadership in steel production and the strong growth observed in the Index of Industrial Production (IIP) and Manufacturing PMI numbers further underscore a thriving economy with a growing appetite for zinc. Positive market sentiments continue to prevail in India, driven by the nation's comprehensive growth across sectors like construction, electricity, and automotive. This growth fuels zinc demand, leading to a projected expansion of the Indian zinc market by 5.2% to 810 kt in FY 2024-25.

LEAD

Overview

Global lead market exhibited remarkable resilience despite macroeconomic headwinds in FY 2023-24. Global lead prices averaged a healthy US$ 2,121/t, reflecting a slight increase from FY 2022-23. However, downward pressure emerged towards the second half of the year. This correction was mainly driven by two key factors, subdued demand growth in developed economies (USA, EU, China) due to high inflation and rising interest rates, and an increase in refined lead production reaching 13.8 million tonnes in FY 2023-24 (1.8% increase). This imbalance between mined and refined lead output and demand led to temporary metal surpluses, suppressing prices. LME and SHFE warehouse inventories saw a significant rise in Q4 FY 2023-24, further impacting prices.

India presented a contrasting picture compared to the global market. Primary lead demand in FY 2023-24 reached an estimated 199 kt, marking a slight decrease from the previous year. This is primarily attributed to the increased consumption of secondary lead and alternative materials. Interestingly, the Indian auto industry defied the global trend with a robust 10% Y-O-Y growth. The EV segment exceeded expectations, with BEV sales experiencing a phenomenal 100% increase in FY 2023-24.

Company Overview

Hindustan Zinc Limited (HZL) proudly stands as a premier lead producer in India, commanding an impressive 66% market share in the primary market in FY 2023-24. Its commitment to quality is reflected in its production of high-grade lead ingots with a purity level of 99.99%, which has earned the distinction of being registered with the London Metal Exchange (LME). During the fiscal year, a significant 63% of the Company's output catered to the increasing domestic demand, while the remainder was exported to international markets. Moving forward, the Company's strategy is geared towards deepening its footprint across India. It aims to amplify domestic sales to 100%, leveraging its vigorous customer acquisition initiatives and the development of innovative applications. This underscores its dedication to nurturing the Indian market and its confidence in its growth potential.

Market Drivers

Looking ahead, the lead market is expected to witness a more balanced supply-demand scenario in FY 2024-25. Global supply is projected to increase by 1.3% to 14.1 million tonnes, while demand is anticipated to reach 14.1 million tonnes, reflecting a 1.7% growth.

Globally, lead-acid batteries, despite facing competition from substitutes in the evolving EV landscape, will continue to be crucial for powering essential electrical systems in these vehicles, contributing to lead demand. Additionally, the global transition towards sustainable solutions will drive the adoption of lead-acid batteries for renewable energy storage systems.

The Indian market is expected to benefit from its buoyant economic growth and rising vehicle population, leading to continued strong lead demand. Furthermore, growth in Battery Energy Storage Systems (BESS) deployments will create significant lead demand opportunities as the contribution of renewable energy to the grid increases.

Government initiatives like FAME-II and Electric Mobility Promotion Scheme 2024 (EMPS 2024), promoting the adoption of electric vehicles (EVs), will further solidify domestic lead demand. The automotive sector, projected to grow by 6.4% in India until 2031, will remain a key driver due to its reliance on lead-acid batteries and inverter batteries. Additionally, government stimulus programmes and strong export demand for lead-intensive products like galvanised sheets are expected to indirectly drive lead consumption through its role as a by-product of zinc mining.

SILVER

A Year of Growth and Promise

The silver market showcased a stellar performance in FY 2023-24, overcoming initial price volatility to ultimately deliver a year marked by growth. LBMA prices commenced robustly at US$ 23.8/oz but underwent a period of consolidation. Despite these fluctuations, the market found stable ground, culminating in a commendable 10% Y-O-Y increase, with an average price of US$ 23.55/oz. This positive trend was underscored by silver prices performing strongly in the closing month of March 2023.

Globally, the silver supply experienced a notable 5% increase in CY 2023, reaching an estimated 1.055 billion ounces (Boz). This expansion is largely credited to a 5% surge in mine production, propelled by the inauguration of new mining operations in Mexico and enhanced silver yields from Chilean gold mines. Moreover, silver recycling made a significant contribution, adding ~200 million ounces to the total supply.

On the demand front, global silver consumption soared to a near-record 1.15 Boz, reaffirming its status as the second-highest level in history. Despite a modest downturn in jewellery and silverware sectors, this was compensated by the industrial sector's robust performance. Industrial silver demand, projected to have grown by 4%, reached an unprecedented 576 Moz. This increase is attributed to the escalating application of silver in vehicle electrification and the development of essential charging infrastructure.

Company Overview

Hindustan Zinc (HZL), a key player in the global silver arena, continues to exert a major influence. Ranking as the world's 5th largest silver producer, HZL recorded a historic high in domestic sales, reaching 740 kt in FY 2023-24, marking a 4% increase from the previous year. With an eye on the increasing demand for silver, HZL is strategically augmenting its production capabilities to cater to the expanding market needs.

Market Drivers

Looking ahead, the prospects for silver are even brighter with an estimated 1.2 Boz silver demand in FY 2024-25. The overall demand is being driven by several factors:

- Industrial Demand Surge: The industrial sector's appetite for silver is forecasted to climb by an impressive 4%, achieving a historic peak of 690 Moz. This growth is driven by the further increasing photovoltaics (PV) and automotive industries, which heavily depend on silver's exceptional conductive qualities.
- Resurgence in Jewellery Fabrication: Jewellery production, especially in India, is poised for a significant 9% uptick, contributing to a worldwide consumption increase of 6%. This resurgence underscores silver's enduring cultural value, particularly during India's festive seasons such as Diwali and Akshaya Tritiya.
- India's Industrial Silver Revolution: India's industrial silver usage, currently trailing behind global averages, is set for a substantial leap forward. The rise of cutting-edge technologies like electric vehicles (EVs) and 5G networks is anticipated to fuel a considerable surge in domestic silver demand.

OIL AND GAS

India's oil demand in CY 2023 increased to 5.34 Mb/d (+0.21 Mb/d). In the near term, India's economic growth is expected to remain robust on the back of strong domestic demand, ongoing economic and business activities, proactive government policy measures, and increased capital expenditure for sustainable infrastructure development, which is expected to boost India's oil demand in H12024.

During the year, the average crude oil price stood at US$ 82.6/bbl in CY2023, an 18% drop compared to CY2022. This decline in crude price vis-à-vis CY2022 can be attributed to the potential easing of sanctions imposed by G7 nations due to the Russia-Ukraine war. The major drivers of oil prices in CY2023 were the OPEC+ production cuts and the Israel-Hamas conflict in Gaza that heightened the tensions in the Middle East with ongoing maritime disruptions in the Red Sea. Apart from this, concerns about the weaker economic outlook of major economies also impacted the prices.

Global Oil Market Overview

The year 2024 has witnessed a moderate increase in the global oil supply, primarily driven by non-OPEC countries, with the United States and Brazil leading the charge. The global oil demand has followed an upward trajectory, with an estimated increase of 1.3 million barrels per day (mbpd), reflecting the ongoing economic recovery. This demand is primarily driven by non-OECD countries. A steady increase in transportation and industrial fuel demand, supported by the recovery in economic activity in China and other non-OECD regions boosted the demand.

Products and customers

Cairn India is the largest private oil & gas exploration and production company in India with gross proven and probable R&R of 1,376 million barrels of oil equivalent (Mmboe). The Company's crude oil is sold to public and private refineries and its natural gas is consumed by the fertiliser industry and the city gas distribution sector in India. The Company's entire crude oil and natural gas production in FY 2023-24 was sold in India as per government regulation. The Company is focussed on strengthening its dominance in the Indian market, with an ambition of producing 50% of India's oil & gas.

Market Drivers

As per OPEC, global oil demand is expected to increase by 2.2 Mbpd to 104.5 Mbpd in CY 2024 supported by strong air travel demand, increased road mobility, including on-road diesel usage and trucking, as well as thriving industrial, construction and agricultural activities, especially in non-OECD countries. The anticipated growth in non-OPEC petroleum liquids production stands at 1.1 million barrels per day (mb/d) in CY 2024. The primary drivers for the growth in liquids supply in CY 2024 include the United States, Canada, Brazil, and Norway, while notable declines are projected for Russia and Mexico. Geopolitical uncertainties like the Russia-Ukraine war and the Red Sea crisis can be major factors that affect the global oil supply.

According to the US Energy Information Administration (EIA), Brent crude oil prices will average at US$ 87 per barrel in CY 2024. Persisting tensions in the Middle East along with the OPEC+ production cuts can push oil prices upwards.

India is projected to significantly amplify its presence in global oil markets throughout the rest of the decade, driven by robust expansion in its economy, population, and demographics. India's oil demand is expected to grow by 0.2 Mbpd to 5.6 Mbpd in CY 2024 supported by the expansion of airline activities and increasing GDP growth rate. The current positive momentum of economic activity in India is expected to continue in CY 2024.

POWER SECTOR

Demand and Supply

India's power sector is experiencing explosive growth. Currently ranking third in global electricity production with a staggering 428 GW installed capacity (as of December 2023), the country has witnessed an impressive 11 GW increase from the previous fiscal year. Despite significant investments in renewable energy sources (comprising 42% of installed capacity), thermal power remains the dominant force, contributing a substantial 79% to total generation. This highlights the ever-increasing power demand in line with India's robust economic growth. In FY 2023-24, electricity demand surged by 7.9% to reach 1,227 BUs, with peak power demand experiencing a remarkable 12.5% jump to 243 GW.

Products and customers

Vedanta Group is exceptionally well-positioned to capitalise on this flourishing power market. With a robust total portfolio of ~12 GW (combining IPP and CPP capacities), Vedanta currently holds the title of second-largest private player in the Indian power sector. The Company has key IPP assets like Talwandi Sabo plant (1980 MW) and Jharsuguda plant (600 MW). Furthermore, the soon-to-be operational Meenakshi (1000 MW) and Athena (1,200 MW) power plants will bolster the Company's growth. Upon completion of these projects by FY 2025-26, Vedanta's commercial power portfolio is expected to reach a remarkable 4,780 MW, solidifying its position as a dominant player in the thermal power sector.

Market Drivers

Several key macroeconomic factors are fuelling this power sector boom in India. India's population is projected to reach a staggering 1.5 billion by 2030, with rapid urbanisation further propelling electricity demand. Additionally, India's current per capita electricity consumption is significantly lower compared to global averages. At 1300 kWh, it is merely one-third of the world average and one-fifth of China's consumption. This vast disparity signifies an enormous potential for growth in the coming years.

Looking ahead, the future of India's power sector is shining with exciting possibilities. The government and industry experts anticipate a phenomenal rise in installed capacity, reaching an estimated 800 GW by CY 2030, at a projected CAGR of 11%. This expansion presents a substantial opportunity for private players like Vedanta to play a pivotal role in meeting the nation's growing energy needs.

There is a minimum of ~87 GW of additional thermal capacity addition required in the next 7 years, which presents an enormous opportunity for the industry. In contrast, this is the same quantum of thermal capacity installed in the last 15 years (2007-2022). Furthermore, the CEA has issued an advisory to existing thermal power utilities not to retire or repurpose their plants before 2030, considering the expected power demand. It is noteworthy that thermal power is expected to continue serving as the primary source for baseload demand until efficient and economical RE storage solutions are readily available.

These favourable trends in the power industry, have resulted in an increase in thermal Plat Load Factors (PLFs) across the country to 70% in FY 2023-24 from 66% in FY 2022-23. Additionally, RTC (round the clock) tariffs for power in the power exchanges (IEX, PXIL) have consistently increased, with an average of ₹ 5.4/kWh in FY 2023-24, resulting in better realisations for the power sector.

IRON ORE

The global iron ore market in CY 2023 displayed remarkable resilience and adaptability in the face of challenges including price volatility. While prices fluctuated throughout the year, reaching a low in May 2023 due to temporary demand dips, they recovered significantly due to several positive developments. These included:

- **Reduced Raw Material Inventories:** Lower stockpiles at steel mills created a buying urgency, pushing prices upwards.
- **Resumption of Steel Mill Operations:** The restart of some steel mills increased demand for iron ore, further stabilising prices.
- **Concerns Over Future Supply:** The BHP strike raised concerns about potential supply disruptions, prompting some buyers to secure stocks, which in turn supported prices.

The year ended on a positive note with global iron ore prices averaging US$ 119/t in CY 2024, an increase of 2.5% Y-O-Y.

India, a key player in the iron ore market, witnessed a stellar year in FY 2023-24. Domestic iron ore production reached an all-time high of ~282 million tonnes, reflecting a significant 13% Y-O-Y increase. This growth was mirrored in domestic steel production, which surged by 10% to reach ~139 million tonnes. Additionally, India's iron ore exports rose to a three-year high of over 44 million tonnes, showcasing the country's growing importance in the global iron ore landscape.

Company Overview

The Company has established itself as a significant player in the production of iron ore and pig iron, serving the steelmaking, construction, and infrastructure sectors. With a strategic focus on enhancing its mining operations, the Company has successfully increased its output to 5.9 million tonnes per annum (MTPA) of iron ore from its Karnataka mines. In a recent expansion, the Company acquired the FEE grade and BICO iron ore blocks located in Barbil, Odisha, during the fiscal year 2022. These mines became operational in FY 2022-23, contributing an additional 5.5 MTPA to the Company's capacity.

Expanding its global footprint, the Company commenced operations at the Bomi mine in Liberia. As of 19 March 2024, the mine has produced 0.5 million tonnes of saleable ore, with an ambitious target of 2.5 MTPA set for FY 2024-25. The Company's reach has grown in India with the acquisition of the Bicholim mine in Goa, which boasts resources of 84.92 MTPA. The Bicholim mine will be operational by the end of FY 2023-24, with a production target of 3 MTPA for FY 2024-25.

Demand Drivers

Looking ahead, the outlook for the Indian iron ore sector appears even brighter. Production is expected to climb further, reaching an estimated 330 million tonnes in FY 2024-25, a 17% increase Y-O-Y, fuelled by the operationalisation of new mines and capacity expansions at existing ones. This growth aligns with the National Steel Policy's projections for crude steel production, paving the way for a robust iron ore market in India.

The global iron ore market will likely be influenced by Chinese stimulus policies in the near term, considering China's position as the largest consumer of iron ore in the world. With China's ongoing economic recovery, marked by a strong infrastructure and export sector balanced against a slump in consumption and property sectors, any stimulus decisions following the April politburo meeting could significantly impact iron ore prices.

India's iron ore beneficiation capacity is also expected to increase in FY 2024-25, reaching 143 million tonnes from the existing 136 million tonnes. This aligns with the government's push for low-grade ore beneficiation, promoting the utilisation of domestic resources and reducing dependence on imports.

While a recent surge in iron ore exports has led to concerns from some small steel producers, the overall outlook for domestic steel demand remains positive. The Indian government's optimistic projections for the country's economic growth further bolster this confidence. With continued growth in domestic production, rising beneficiation capacity, and a strong demand outlook, India is well-positioned to be a major force in the global iron ore market for years to come.

STEEL

Overview

India is the second-largest steel producer in the world with steel as one of India's core industries, contributing more than 2% to the GDP. In FY 2023-24, India's crude steel production is expected to increase by ~14% on a yearly basis with crude steel production at ~143 million tonnes.

The government's emphasis on infrastructure development and affordable housing has led to an increase in finished steel consumption which is expected to grow by ~14% to 135 million tonnes in FY 2023-24. Backed by a slew of initiatives, including the National Infrastructure Pipeline (NIP) and PM Gati Shakti National Master Plan (NMP), India's per capita steel consumption jumped to 87 Kg per capita in FY 2023-24 from 77 Kg per capita in FY 2022-23. As per the National Steel Policy, steel consumption is projected to reach 158 Kg per capita by FY 2030-31 with a capacity of 300 million tonnes.

With subdued global demand, prices of steel products reduced globally, along with an increase in exports from China. India is likely to remain a net importer of steel in FY 2023-24 which has impacted domestic prices as well.

Products and customers

ESL Steel Limited boasts a state-of-the-art integrated steel plant with a capacity of 1.7 MTPA, supported by its own captive mines in Odisha and a coke oven plant.

The Company has a robust and diversified product portfolio, offering TMT rebars, wire rods, ductile Iron pipe, billet and pig Iron to its customers. With ongoing projects, the plant's capacity is expected to reach 3 MTPA by FY 2024-25.

In FY 2023-24, the Company achieved its highest-ever finished sale of 1.4 MTPA (~11% increase Y-O-Y) supported by strong domestic demand for steel and pipe segment. The Company consistently prioritises the sales of value-added grades and developed various new grades during the year, achieving its highest ever (~75%) sales of high carbon and alloy grade in Wire Rod. ESL has achieved its highest ever Ductile Iron pipe sales of ~0.21 million tonnes in FY 2023-24, supported by robust demand and product optimisation.

In the TMT segment, the Company has received various key approvals. With the UK CARES quality certificate in place for TMT, the Company has made its first-ever export shipment to Tanzania. With its vision to reach the last customer and expansion underway, the Company conducted a national retail launch from Bihar in October 2023, garnering media coverage and attended by 250+ engineers, dealers and influencers.

Market Drivers

The government has been focussed on its vision of achieving a steel capacity of 300 million tonnes by 2030, and this commitment was evident in the increased capital expenditure outlay by 11.1% to ₹ 11.11 lakh crore in the Interim Budget FY 2024-25.

Driven by an unwavering commitment to make India a US$ 5 trillion economy, initiatives such as 'Make in India', Pradhan Mantri Awas Yojna and PLI Schemes are propelling the growth of the country. With increasing disposable income, urbanisation and a strong impetus to infrastructure development, steel demand is expected to remain robust in the coming year.

In FY 2024-25, the government will maintain its focus on the infrastructure, construction and auto sectors. 2 crore additional houses have been planned in the next 5 years under the PM Awas Yojana, while 3 new Economic corridors have been sanctioned under the PM Gati Shakti, and various new airport developments have been planned in the UDAN scheme. Furthermore, the reduction in import duties for machine parts used in producing Li-ion batteries for electric vehicles will boost the auto industry and consequently, steel consumption. Additionally, the government has prioritised ensuring clean and safe water supply in India through various schemes such as the Jal Jeevan Mission and Amrut, with an allocation of over ~₹ 1 lakh crore in FY 2023-24.

HIGH CARBON FERRO CHROME

Overview

High Carbon Ferro Chrome (HCFC) is pivotal to the global stainless-steel industry, enhancing its non-corrosive, durable, and temperature-resistant qualities. Over 85% of HCFC production is dedicated to stainless steel manufacturing, indicating that a flourishing stainless-steel sector is a bellwether for strong HCFC demand.

Asia, with China at the helm, dominates the HCFC landscape, accounting for 85% of consumption and holding substantial chromite ore reserves, the essential raw material. Although South Africa is the premier chromite ore supplier worldwide, China's leadership in HCFC production positions it as a dominant force in shaping global market dynamics and pricing structures.

India is playing a significant role in the HCFC market, securing the position as the world's fourth-largest producer with an output of ~1.3 million tonnes in CY 2023. India's HCFC market is characterised by an export orientation, with ~60% of its production being exported.

Despite a downturn in international HCFC prices in FY 2023-24, attributed to subdued purchasing in China and Europe, India's domestic market demonstrated remarkable resilience. International prices may have receded to US$ 1,183/mt by Q4, but India's domestic prices saw a significant rebound, averaging US$ 1,364 from December 2023 to February 2024, underscoring a robust internal demand.

Company Overview

Ferro Alloys Corporation (FACOR) stands out in the domestic HCFC sector, ranking as the fourth-largest supplier amidst a predominantly export-oriented industry. In FY 2023-24, FACOR channeled 85% of its HCFC production to meet the needs of domestic stainless steel and alloy steel manufacturers.

FACOR is also strategically augmenting its Value-Added Products (VAP) portfolio, thereby securing a competitive edge to serve specialised markets in Europe and South Korea. Looking forward to FY 2024-25, FACOR's strategy is geared towards amplifying production volumes and expanding its market presence, both domestically and globally.

At our Ferroalloy business, our strategic emphasis remains on capacity expansion, domestic sales, VAP development, and international market expansion. We are ideally positioned to thrive in this dynamic market landscape.

Market Drivers

With India's solid domestic market and the anticipated global upswing in stainless steel production, the outlook for HCFC is optimistic. With increasing infrastructure initiatives in developing nations and an expected resurgence in demand from China, stainless steel production is projected to grow steadily by 4-5% in the upcoming year. This growth trajectory is set to catalyse HCFC demand worldwide, with production forecasts suggesting an increase of 3-4%.

India, however, is on track to surpass the global growth rate, emerging as the fastest-expanding market for both stainless steel and HCFC production. The anticipated 7-8% growth is propelled by the Indian government's substantial investment in infrastructure development. Moreover, India's per capita consumption of stainless steel is poised for a significant uptick, mirroring the expanding domestic HCFC market.

COPPER

Overview

FY 2023-24 was a dynamic year for the copper market. While global consumption, particularly in China, navigated a period of moderation, India's copper market emerged as a robust and promising space. Notably, the latter part of the year witnessed a resurgence in LME copper prices, driven by a combination of supply disruptions and a positive shift towards renewable smelting methods.

India's refined copper consumption witnessed a stellar 26.6% increase in CY 2023. This surge was fuelled by several key growth drivers, including the electrification of the transportation sector, increased use of copper in construction activities, and industrial expansion spurred by the PLI scheme. Additionally, a rise in consumer durables like air conditioners and electronics further bolstered demand.

It is noteworthy that ~40% of India's domestic copper consumption fuels the building and infrastructure sector, while another 11-13% caters to the consumer durables and automotive industries. While India's domestic copper production has faced some limitations, the vibrant economy continues to flourish. This gap is being effectively bridged by a rise in refined copper imports, a trend projected to continue in the near future.

Company Overview

The Company, with its strong presence, product diversification, and focus on innovation, is well-positioned to capitalise on the lucrative opportunities in the industry. As one of the largest copper producers in India with a diverse product portfolio, the Company caters to a wide range of customers, including housing wire, winding wire and cable, transformer, and electrical profile producers. Its commitment to new product development further strengthens its market position. Notably, the Company holds a significant 20% market share in India and is actively exploring export markets, particularly in neighbouring countries and the Gulf region. Additionally, its focus on developing green copper production methods underlines its commitment to sustainability and long-term competitiveness.

Market Drivers

India's copper demand is projected to reach a staggering 3 million tonnes by CY 2030, with an estimated increase of ~9.5% expected for CY 2024. This growth will be driven by key sectors such as building and construction, manufacturing, transportation, and consumer durables. The burgeoning Electric Vehicle (EV) segment, with its inherently higher reliance on copper compared to traditional vehicles, is poised to be a major catalyst for demand.

Looking ahead, several factors contribute to the positive outlook for the Indian copper market:

- **Government Initiatives:** The government's strong commitment to infrastructure development, evidenced by initiatives like the National Infrastructure Pipeline (NIP) and increased budgetary allocations, bodes well for copper demand as a crucial infrastructure material.
- **Economic Growth:** A robust Indian economy fosters activity in copper-intensive industries like construction and power, leading to sustained demand.
- **Green Focus:** India's ambitious renewable energy goals and the burgeoning EV market, both heavily reliant on copper, are creating exciting new avenues for demand growth.

FINANCE REVIEW

Executive summary:

We had a strong operational and financial performance in FY 2023-24 amidst the challenges faced due to macroeconomic uncertainty. We remained focussed on controllable factors, including resetting the cost base through diverse cost optimisation initiatives, disciplined capital investments, working capital management, marketing initiatives, and volume control, all the while ensuring safe operations in line with Government and corporate guidelines.

In FY 2023-24, we recorded an EBITDA of ₹ 36,455 crore, marking a 3% increase Y-O-Y, with a robust double digit adjusted EBITDA margin[1] of 30%. (FY 2022-23: ₹ 35,241 crore, margin 28%). This growth was primarily attributed to the softening of input commodity prices coupled with cost savings, one time arbitration award in Oil & Gas business and rupee depreciation partially offset by slip in commodity prices primarily of aluminium, zinc and brent and strategic hedging gain recognised in previous year.

Cost savings resulted in increase in EBITDA by ₹ 1,508 crore, driven by Aluminium partially offset by Iron Ore and Zinc business.

Market factors resulted in decrease in EBITDA by ₹ 1,817 crore. This was primarily driven by decrease in output commodity prices partially offset by softening of input commodity prices and rupee depreciation.

Gross debt as on 31 March 2024 was ₹ 71,759 crore, increase of ₹ 5,577 crore since 31 March 2023, driven mainly by increase at THL Zinc Ventures, Meenakshi Energy and Balco, partially offset by reduction of debt at HZL and CIHL. Meanwhile, our Net debt as on 31 March 2024 was ₹ 56,338 crore, increased by ₹ 11,078 crore since 31 March 2023 (FY 2022-23: ₹ 45,260 crore), primarily due to capex outflow and return to shareholders, partially offset by cash flow from operations and working capital release.

Despite these dynamics, Vedanta Limited's balance sheet remains robust, boasting cash and cash equivalents of ₹ 15,421 crore and a Net Debt to EBITDA ratio of 1.5x (FY 2022-23: 1.3x).

1. *Excludes custom smelting at copper business.*

Consolidated EBITDA

EBITDA increased by 3% in FY 2023-24 to ₹ 36,455 crore.

(₹ crore, unless stated)

Consolidated EBITDA	FY 2023-24	FY 2022-23	% change
Zinc	14,255	19,408	(27%)
- India	13,562	17,474	(22%)
- International	693	1,934	(64%)
Oil and Gas	9,777	7,782	26%
Aluminium	9,657	5,775	67%
Power	971	913	6%
Iron Ore	1,676	988	70%
Steel	225	316	(29%)
Copper	(69)	(4)	
FACOR	115	149	(23%)
Others	(152)	(86)	(77%)
Total EBITDA	**36,455**	**35,241**	**3%**

Consolidated EBITDA bridge:

(₹ crore, unless stated)

EBITDA for FY 2022-23	**35,241**
Market and regulatory: (1,817)	
Prices, premium / discount	(12,438)
Direct raw material inflation	8,364
Foreign exchange movement	2,257
Operational: 1,165	
Volume	(343)
Cost savings	1,508
Others	**1,866**
EBITDA for FY 2023-24	**36,455**

a) Prices, premium/discount

Commodity price fluctuations have a significant impact on the Group's business. During FY 2023-24, we saw a net negative impact of ₹ 12,438 crore on EBITDA due to slip in commodity prices.

Zinc, lead and silver: Average zinc LME prices during FY 2023-24 decreased to US$ 2,475 per tonne, down 25% Y-O-Y; lead LME prices increased to US$ 2,122 per tonne, up 1% Y-O-Y; and silver prices increased to US$ 23.55 per ounce, up 10% Y-O-Y. The cumulative impact of these price fluctuations decreased EBITDA by ₹ 4,852 crore.

Aluminium: Average aluminium LME prices decreased to US$ 2,200 per tonne in FY 2023-24, down 11% Y-O-Y, this had a negative impact of ₹ 5,270 crore on EBITDA.

Oil & Gas: The average Brent price for the year was US$ 83 per barrel, down 13% Y-O-Y. This had negative impact on EBITDA by ₹ 1,645 crore.

Iron & Steel: Lower realisations negatively impacted EBITDA at ESL by ₹ 974 crore. Higher realisations positively impacted EBITDA at Iron Ore by ₹ 607 crore.

b) Direct raw material inflation

Prices of key raw materials such as imported alumina, thermal coal, carbon and coking coal have decreased in FY 2023-24, positively impacting EBITDA by ₹ 8,364 crore, primarily at Aluminium, Zinc and Iron & Steel business.

c) Foreign exchange fluctuation

Rupee depreciated against the US dollar during FY 2023-24. Stronger dollar is favourable to the Group's EBITDA, given the local cost base and predominantly US dollar-linked pricing. The favourable currency movements positively impacted EBITDA by ₹ 2,257 crore.

Key exchange rates against the US dollar:

	Average year ended 31 March 2024	Average year ended 31 March 2023	% change	As at 31 March 2024	As at 31 March 2023
Indian rupee	82.78	80.27	3.13%	83.34	82.16

d) Volumes

Lower volume led to decrease in EBITDA by ₹ 343 crore by following businesses:

Oil & Gas (negative ₹ 618 crore): In FY 2023-24, sales reduced from 91 Kboepd to 82 Kboepd

ZI (negative ₹ 489 crore): In FY 2023-24, MIC sales lowered to 209 kt, down 24% Y-O-Y

Partly offset by:

Aluminium (positive ₹ 249 crore): In FY 2023-24, Aluminium sector achieved sales of 2,357 kt, up 3% Y-O-Y

Iron Ore (positive ₹ 229 crore): In FY 2023-24, Iron Ore Karnataka achieved sales of 5.9 million tonnes, up 19% Y-O-Y and Pig Iron achieved sales of 836 kt, up 23% Y-O-Y

HZL (positive ₹ 144 crore): In FY 2023-24, HZL achieved silver sales of 746 tonnes, up 4% Y-O-Y

e) Cost savings

Lower cost resulted in increase in EBITDA by ₹ 1,508 crore during FY 2023-24, primarily due to cost savings at Aluminium partially offset by higher cost at Iron Ore, Zinc and Oil & Gas business.

f) Others

This primarily includes one-time arbitration award in Oil & Gas business partially offset by strategic hedging gain recognised in previous year, impacting EBITDA positively by ₹ 1,866 crore.

Income statement

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% Change
Net Sales/Income from Operations	1,41,793	1,45,404	(2%)
Other Operating Income	1,934	1,904	2%
EBITDA	36,455	35,241	3%
EBITDA margin[1] (%)	30%	28%	-
Finance Cost	9,465	6,225	52%
Investment Income	2,341	2,851	(18%)
Exchange Gain /(Loss)	(264)	(492)	46%
Exploration Cost written off	(785)	(327)	-
Profit before Depreciation and Taxes	28,283	31,048	(9%)
Depreciation and Amortisation	10,723	10,555	2%
Profit before Exceptional items	17,560	20,493	(14%)
Exceptional items[2] : credit/ (expense)	2,803	(217)	
Taxes[3]	12,826	5,770	-
Profit after taxes[4]	7,539	14,503	(48%)
Profit after taxes (before Exceptional Items)	11,254	14,449	(22%)
Minority interest	3,300	3,929	(16%)
Attributable PAT (after exceptional items)	4,239	10,574	(60%)
Attributable PAT (before exceptional items)	7,956	10,521	(24%)
Basic earnings per share (₹/share)	11.42	28.50	(60%)

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% Change
Basic EPS before exceptional items (₹/share)	21.40	28.36	(25%)
Exchange Rate (₹/US$) – Average	82.78	80.27	3%
Exchange Rate (₹/US$) – Closing	83.34	82.16	1%

1. *Excludes custom smelting at Copper business*
2. *Exceptional Items gross of tax*
3. *Tax includes tax expense on exceptional items of ₹ 6,520 crore on special items in FY 2023-24 (FY 2022-23: tax benefit of ₹ 274 crore)*
4. *Includes share in profit/ (loss) of jointly controlled entities and associates*

Revenue

Revenue for the year was ₹ 1,41,793 crore, lower 2% Y-O-Y. This was primarily driven by lower output commodity prices primarily of zinc, aluminium and brent, partially offset by higher volume at Aluminium, Copper and Iron Ore business and rupee depreciation.

EBITDA for the year was ₹ 36,455 crore, 3% higher Y-O-Y. This was mainly due to softening of input commodity prices coupled with strategic cost savings, one time arbitration award in Oil & Gas business and rupee depreciation partially offset by slip in commodity prices primarily of aluminium, zinc and brent and strategic hedging gain recognised in previous year.

We maintained a robust adjusted EBITDA margin[1] of 30% for the year (FY 2022-23: 28%)

1. Excludes custom smelting at copper business.

Depreciation and Amortisation

Depreciation for the year was ₹ 10,723 crore compared to ₹ 10,555 crore in FY 2022-23, higher by 2%, primarily due to increase in ore production at Zinc India and higher capitalisation at Aluminium business.

Net Interest

The blended cost of borrowings was 9.65% for FY 2023-24 compared to 7.8% in FY 2022-23.

Finance cost for FY 2023-24 was ₹ 9,465 crore, 52% higher compared to ₹ 6,225 crore in FY 2022-23 mainly on account of increase in average borrowings and cost of borrowings.

Investment income for FY 2023-24 stood at ₹ 2,341 crore, 18% lower compared to ₹ 2,851 crore in FY 2022-23. This was mainly due to decrease in average investments partly offset by mark to market movement.

Exceptional Items

The exceptional items for FY 2023-24 was at ₹ 2,803 crore, mainly on account of impairment reversal in Oil & Gas, foreign currency translation gain on redemption of optionally convertible redeemable preference share and liability for capital creditors written back in Power segment partly offset by impairment in Copper, Aluminium and Zinc International.

[for more information, refer note [34] set out in P&L notes of the financial statement on exceptional items].

Taxation

Tax expense for FY 2023-24 stood at ₹ 12,826 crore (FY 2022-23: ₹ 5,770 crore). The normalised ETR is 36% as compared to 30% in FY 2022-23 due to change in profit mix and reversal of deferred tax assets.

Attributable profit after tax (before exceptional items)

Attributable PAT before exceptional items was ₹ 7,956 crore in FY 2023-24 compared to ₹ 10,521 crore in FY 2022-23.

Earnings per share

Earnings per share before exceptional items for FY 2023-24 was ₹ 21.40 per share as compared to ₹ 28.36 per share in FY 2022-23.

Dividend

Board has declared total dividend of ₹ 29.50 per share during the reporting period.

Shareholders Fund

Total shareholders fund as on 31 March 2024 aggregated to ₹ 30,722 crore as compared to ₹ 39,423 crore as of 31 March 2023. This was primarily driven by net profit attributable to equity holders earned, partially offset by dividend paid during the reporting period.

Net fixed assets

The net fixed assets as on 31 March 2024 were ₹ 1,21,852 crore. This comprises ₹ 20,331 crore as capital work-in-progress.

Balance Sheet

Our financial position remains strong with cash and liquid investments of ₹ 15,421 crore.

The Company follows a Board-approved investment policy and invests in high quality debt instruments with mutual funds, bonds, and fixed deposits with banks.

Gross debt as on 31 March 2024 was ₹ 71,759 crore, an increase of ₹ 5,577 crore since 31 March 2023. This was mainly due to increase of debt at THL Zinc Ventures, Meenakshi Energy and Balco partially offset by reduction of debt at HZL and CIHL.

Gross Debt comprises term debt of c. ₹ 69,062 crore, working capital loan of c. ₹ 1,159 crore and short-term borrowing of c. ₹ 1,538 crore. The loan in ₹ currency is 82% and balance 18% in foreign currency. Average debt maturity of term debt is ~c. 3 years as of 31 March 2024.

OPERATIONAL REVIEW
ZINC INDIA

The year in brief

Zinc India is in first decile of the global zinc mining cost curve. It achieved highest ever mined metal production of 1,079 kt, increased by 2% Y-O-Y on account of improved mined metal grades and recorded 3rd largest silver production globally at 746 mt grew by 5% Y-O-Y in line with management's operational and financial strategy.

1,079 kt
Best-ever mined metal production

1,033 kt
Highest-ever refined

746 tonnes
Highest-ever silver production

ESG Update

Occupational health and safety

In line with our commitment to ensure zero harm to employees, the leadership has undertaken the prime responsibility of providing a safe workplace for all the employees entering our premises. Setting a milestone in FY 2023-24, in-line with our commitment to 'Zero Harm' we have achieved zero fatalities in this financial year.

LTIFR for the year was 0.88 as compared to 0.70 in FY 2022-23.

To avoid fatalities and catastrophic incidents in the Company, **'Vihan': a critical risk management (CRM) initiative** was launched in FY 2022-23 to improve managerial control over rare but potentially catastrophic events by focussing on the critical controls. Through the initiative, we have reinforced the focus upon seven more risks in FY 2023-24.

In alignment with our vision of zero-harm, Hindustan Zinc Limited introduced **'SURAKSHA KAVACH' phase I of fatality prevention controls initiative** for underground mining operations which can proactively address potential risks associated with activities conducted at our sites, encompassing 25 diverse activities, both routine and non-routine, for underground mining operations in Phase I. It outlines clear NO-GO criteria and critical checks that must be conducted by our statutory supervisors and competent personnel.

During the reporting period, **safety pause** was conducted across all our operational units under the theme 'stop work if it's not safe'. During this connect, all recent safety incidents that had occurred across the Group were discussed and key learnings were shared. The programme was organised by business partners in all the three shifts, including the night shift.

In line with our vision of 'zero-harm' and to prevent reoccurrence of similar fatalities within the Group, we have launched **infrastructure Inframatrix** across Hindustan Zinc for 9 top risks that exist in our business. It helps to eliminate the probability of occurrence of fatalities for the identified critical risks in the business by improving the infrastructure of various risks.

A 10-day capacity-building training programme on disaster management was conducted by the National Disaster Response Force (NDRF) emergency response at Dariba Smelting Complex (DSC). The training covered various aspects including medical first response, collapsed structure search and rescue, fire management, and chemical and gas disaster management emergencies.

To further enhance the safety of our assets and facilities, Hindustan Zinc established the **'Structure Integrity Management'** community. This community is dedicated to predictive assessment, corrosion mapping, and timely rectification of old, damaged, and corroded structures within the plant, ensuring the safety and reliability of our operations.

For demonstrating a higher degree of safety, we have been awarded with below awards:

- Highly prestigious International Safety Awards by British Safety Council in the year 2024.
- Zinc Smelter Debari and Zawar group of mines have been awarded in Distinction Category, Chanderiya Lead Zinc smelter, Rajpura Dariba projects and DSC in Merit Category and Rampura Agucha Mine, Sindesar Khurd Mine and Rajpura Dariba in pass category.

- DSC was also honoured with platinum in metal and mining sector at Apex India Occupational Health and Safety Awards 2023.

Environment

Hindustan Zinc has received validation on its near-term and net-zero targets by the Science Based Targets initiative (SBTi). Our targets include a commitment to reduce 50% of absolute scope 1 and 2 GHG emissions and further reduction of 25% of absolute scope 3 GHG emissions by FY 2029-30 from the base year FY 2019-20 and achieving net-zero emissions across the value chain by FY 2049-50. These target ambitions have been approved by the SBTi in line with 1.5°C trajectory. We also became the only company in India to be shortlisted for setting Science Based Targets for Nature (SBTN) based on which we will set targets against freshwater and land.

In FY 2022-23, we signed renewable energy supply agreement of 450 MW round-the-clock renewable energy (RE-RTC), the project is progressing well and the Company is expected to start receiving renewable energy from April 2024. This 450 MW RE-RTC will help us reduce our GHG emissions significantly by 2.7 million tCO_2e per annum.

We have deployed 2nd BEV in our underground operations at Sindesar Khurd Mine. We have taken a significant leap towards sustainable logistics by signing an agreement which marked the deployment of 10 EV Trucks, each boasting a capacity of 55 mt, helping in interunit transport of goods and reduction of Scope 3 emissions.

Hindustan Zinc has led by example by inducting an LNG powered truck for upstream and downstream transportation which shall reduce GHG emissions. With their deployment, we will reduce our carbon footprint by 30% in comparison to traditional diesel vehicles, thereby reducing Scope 3 emissions.

The Company is also working along with International Zinc Association (IZA) and its climate action taskforce for standardisation of Scope 3 emissions guidelines across the zinc sector.

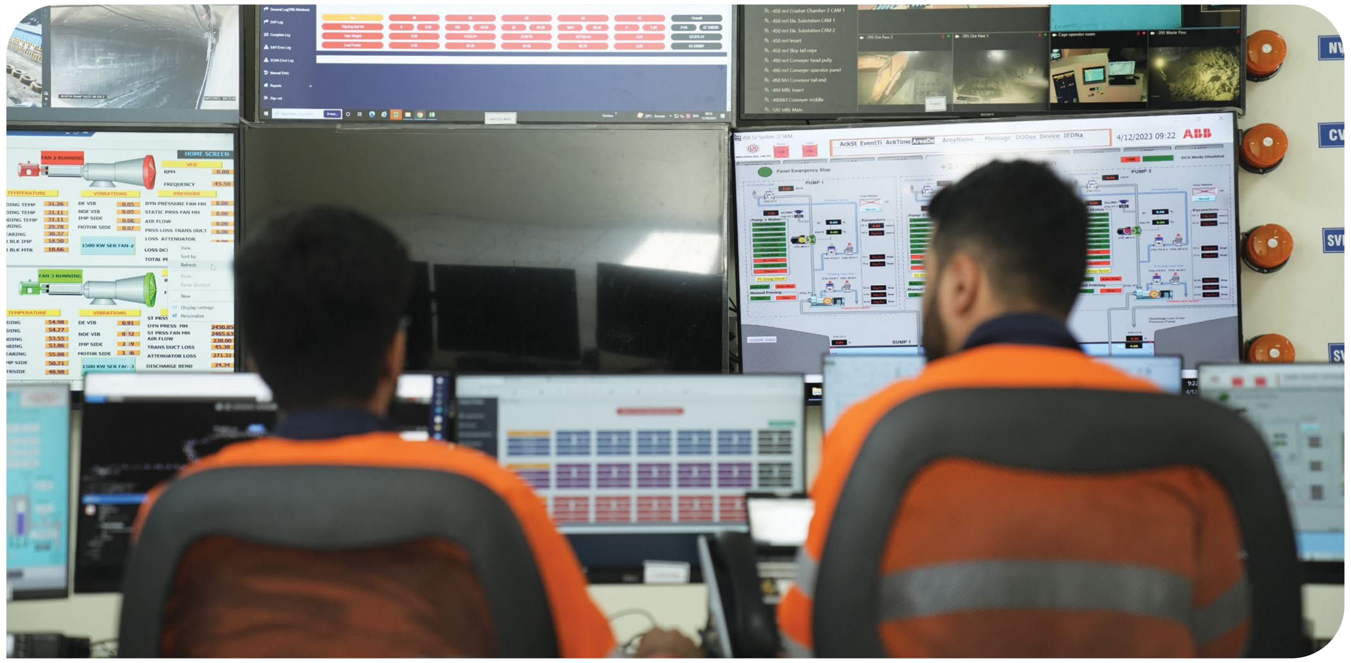
The Company has inaugurated a 4,000 KLD zero liquid discharge (ZLD) plant phase 1 at Zawar Mines, which utilises advanced technology to help in water conservation. The plant has resulted in reduction of freshwater dependency, aligning with the vision of becoming 5 times water positive by 2025.

Dry tailing plant at Rajpura Dariba mine is in progress and will result in significant amount of water recovery from the tailings.

The 3-year engagement with International Union for Conservation of Nature (IUCN) is in progress with 3rd season assessment completed. Under this, we have prepared an integrated biodiversity assessment tool (IBAT) report for all Rajasthan-based locations. Site visit by IUCN team members was done for three seasons. These studies will help the Company prepare a strategy to achieve 'no net loss' towards biodiversity.

First fuming furnace commissioning was completed at Chanderiya Lead Zinc Smelter (CLZS) which will help us in improving metal recovery and reducing the generation of jarosite waste.

As a significant achievement in our pursuit of reducing waste by improving efficiency, Hindustan Zinc received two Indian patents titled "Method for production of lead by performing dross removal procedures" and "Method for production of zinc by utilising lead plant slag".



We organised a series of training sessions called "Wednesday for Transition", which were designed to provide suppliers with essential knowledge on ESG (Environmental, Social, and Governance) topics.

Consent to Establish was granted for PAP (Phosphoric Acid Plant) in March 2024 by State Pollution Control Board. The project includes the establishment of PAP plant with a capacity 240 KTPA inside CLZS complex based on Hemidihydrate (HDH) technology.

Environment clearance was granted for CLZS expansion project in December 2023 by the Ministry of Environment, Forest, and Climate Change ((MoEF and CC). The project includes expansion of pyro metallurgical smelter unit and other debottlenecking projects in CLZS.

Our sustainability-related activities received several endorsements during the reporting period:

- Hindustan Zinc ranked #1 globally at S&P Global Corporate Sustainability Assessment score in metal and mining sector. Score improved from 80 last year to 85 this year
- Included in Sustainability Yearbook 2024 amongst the top 1% most sustainable organisations globally
- Climate Action Programme (CAP) 2.0° - Oriented Award in the Energy, Mining and Heavy Manufacturing Sector
- Hindustan Zinc selected as Leadership band A- listed company by CDP in "Climate Change" and "Water Security "in CDP 2023
- Greenco Rating Award to Rampura Agucha Mine and Zawar Mines (Silver Rating)
- Zawar Mines was announced winner for CII best practices award for its dry tailing plant and CII National Awards in Innovation Project category for Environmental Best Practice

Production performance

Production (kt)	FY 2023-24	FY 2022-23	% Change
Total mined metal	1,079	1,062	2%
Refinery metal production	1,033	1,032	-
Refined zinc – integrated	817	821	-
Refined lead – integrated[1]	216	211	3%
Production – silver (in tonnes)[2]	746	714	5%

1. *Excluding captive consumption of 7,622 tonnes in FY 2023-24 vs. 7,912 tonnes in FY 2022-23.*
2. *Excluding captive consumption of 39.0 tonnes in FY 2023-24 vs. 41.4 tonnes in FY 2022-23.*

Operations

FY 2023-24 recorded the best-ever Mined Metal production of 1,079 kt compared to 1,062 kt in the prior year driven by improved mined metal grades. For the full year, ore production was lower by 1% Y-O-Y to 16.52 million tonnes on account of lower ore production at Zawar, Kayad and Rajpura dariba mine.

Silver recorded the highest volume in FY 2023-24 in line with management's operational & financial strategy, at 24.0 moz up 5% Y-O-Y. Refined lead production was at 216 kt, up 3% Y-O-Y.

Prices

Particulars	FY 2023-24	FY 2022-23	% Change
Average zinc LME cash settlement prices US$ per tonne	2,475	3,319	(25%)
Average lead LME cash settlement prices US$ per tonne	2,122	2,101	1%
Average silver prices US$/ounce	23.55	21.37	10%

In CY 2023, zinc price lost its shine as macro headwinds deterred investor sentiments, and unsustainable metal surpluses got piled up. Zinc LME ended FY 2023-24 at 2,391 US$/t which is 17.8% lower than 31 March 2023. At supply level, the refined zinc production increased by 1.5% to 13.8 million tonnes in CY 2023.

However, with expectations of interest rate cuts by the US Fed and geopolitical tensions in the Middle East, commodity prices went on a rally starting April 2024, with silver touching its highest in ₹ terms. Chinese manufacturing PMI has also increased from 50.9 in February to 51.1 in March, entering into expansion zone for the first time since September 2023.

Zinc Demand–Supply

Zinc Global Balance In kt	CY2022	CY2023	CY2024 E
Mine Production	12,843	12,497	12,567
Smelter Production	13,569	13,779	13,640
Consumption	13,641	13,434	13,779

E: Estimated

Source: Wood Mackenzie, March STO

The global refined zinc demand contracted by 1.5% to 13.4 million tonnes in CY 2023, largely due to a fall in Chinese, USA, EU regions. An increase in supply created a surplus in the market resulting to an increase in the warehouse (LME & SHFE) stocks by 386% (50 kt to 243 kt) and consequent increase in pressure on metal premiums on a spot basis.

The market anticipated that the removal of COVID restrictions in 2023 would signal a strong rebound in the Chinese economy and zinc demand. This optimism, however, turned out to be misguided, as the recovery has been stifled by the structural slump in the real estate industry as well as exceptionally low levels of confidence among consumers and businesses. Therefore, the combination of Government-backed stimulus programmes and strong export demand for Chinese-made galvanised sheets, white goods, and automobiles drove the zinc consumption in 2023.

European continent's zinc consumption also undergone a structural shift due to permanent capacity closures caused by rising energy prices, even though they have decreased. This is especially the case in Germany, where the effects of increasing energy costs have been most pronounced. US economy went through demand slump in 2023 on account of rising interest rates, rising unemployment and couple of other macroeconomic factors.

In terms of demand, India has surpassed the globe. The Indian economic environment has remained optimistic. The same was reflected by the S&P Global Manufacturing PMI which stood at 59.2 in March 2024 as compared to 56.4 in March 2023, reflecting expansion in the manufacturing sector. This highlighted 31 successive monthly improvement in operating conditions. The domestic production of finished steel went up by 13.2% to 118.947 million tonnes from April 2023 to January 2024 (P). Consumption in domestic market during the same period stood at 112.5 million tonnes, up by 14.5%. The total net finished steel exports till Jan'24 stood at 5.5 million tonnes, up by 3.6%.

Unit costs

Particulars	FY 2023-24	FY 2022-23	% Change
Unit costs (US$ per tonne)			
Zinc (including royalty)	1,450	1,707	(15%)
Zinc (excluding royalty)	1,117	1,257	(11%)

For the full year, Zinc COP excluding royalty was US$ 1,117 per tonne, down by 11% Y-O-Y (8% lower in ₹ terms). The reduction in COP has been achieved mainly due to lower coal and input commodity prices, better grades & better linkage coal availability.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% Change
Revenue	27,925	33,120	(16%)
EBITDA	13,562	17,474	(22%)
EBITDA margin (%)	49%	53%	-

Revenue from operations for the year was ₹ 27,925 crore, degrew by 16% Y-O-Y, primarily on account of lower zinc LME prices and zinc metal volume, partially offset by favourable exchange rates, higher silver and lead prices and volume. EBITDA for FY 2023-24 was at ₹ 13,562 crore, down by 22% Y-O-Y in line with the lower revenues.

Projects

As Zinc India advances in the journey of 1.25 MTPA metal in concentrate (MIC) expansion, several projects have been undertaken throughout the year:

- **Rajpura Dariba mill revamping project for improved recovery of zinc, lead, and silver has been commissioned in August'23 and is currently under ramp-up.**
- **To further enhance metal volume, 160 KTPA roaster project at Debari is under installation and has achieved 43% progress with final commissioning being targeted by fourth quarter of FY 2024-25.**
- **The project of Hindustan Zinc Alloys Private Limited has been commissioned in the third quarter of FY 2023-24 and complete ramp-up is under progress. Further, the 160 KTPA fumer plant has also been commissioned during the second quarter of FY 2023-24 and full ramp-up is in progress.**
- **Fertiliser plant of 5.1 lakh MTPA in Chanderiya work is under progress and the project is targeted to be completed by the second quarter of FY 2025-26.**
- **Company has also received requisite regulatory approvals for Bamnia Kalan Mines and is in the process of finalising the business partner to start the site activities.**
- **For next phase of expansion of mines and smelters, preliminary studies are under progress and proposals will be finalised by the first quarter of FY 2024-25.**

Exploration

Zinc India's exploration objective is to upgrade the resources to reserves and replenish every tonne of mined metal to sustain more than 25 years of metal production by fostering innovation and using new technologies. The Company has an aggressive exploration programme focussing on delineating and upgrading Reserves and Resources (R&R) within its licence areas. Technology adoption and innovations play key role in enhancing exploration success.

The deposits are 'open' in depth, and exploration has identified number of new targets on mining leases having potential to increase R&R over the next 12 months. Across all the sites, the Company increased its surface drilling to assist in Resource addition and upgrading Resources to Reserves.

In line with previous years, the Mineral Resource is reported on an exclusive basis to the Ore Reserve and all statements have been independently audited by SRK (UK).

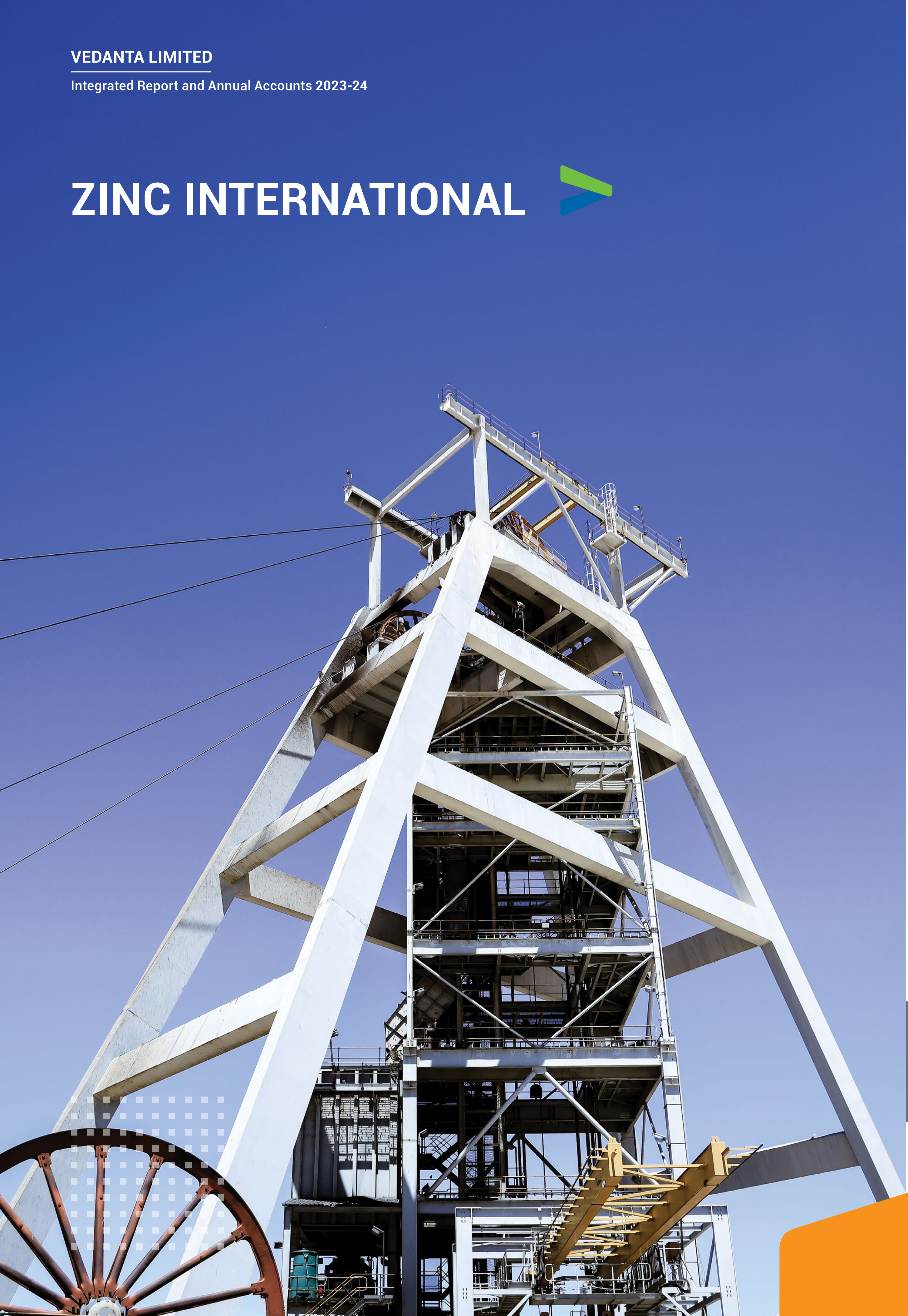
On an exclusive basis, total Ore Reserves at the end of FY 2023-24 stood at 175.1 million tonnes (net of depletion of 16.5 million tonnes during FY 2023-24) and exclusive Mineral Resources totalled 281.2 million tonnes. Total contained metal in Ore Reserves is estimated at 9.9 million tonnes of zinc, 2.8 million tonnes of lead and 312.2 million ounces of silver. The Mineral Resource contains approximately 12.7 million tonnes of zinc, 5.5 million tonnes of lead and 542.1 million ounces of silver. At current mining rates, the R&R underpins metal production for more than 25 years.

Strategic Priorities and Outlook

Our primary focus remains on enhancing overall output, cost efficiency of our operations, improving cost efficiency in our operations, maintaining disciplined capital expenditure, and ensuring sustainable operations. Despite the current economic uncertainty, our goals over the medium term remain unchanged.

Our key strategic priorities include:

- Further ramp-up of underground mines towards their design capacity, deliver increased silver output in line with communicated strategy
- Sustain cost of production within the range of US$ 1,050-US$ 1,100 per tonne through efficient ore hauling, higher volume and grades and higher productivity through ongoing efforts in automation and digitisation
- Disciplined capital investments in minor metal recovery to enhance profitability
- Increase R&R through higher exploration activity and new mining tenements, as well as upgrade resource to reserve
- Progressing towards sustainable future with continued efforts towards reduction in GHG emissions, water stewardship, circular economy, biodiversity conservation and waste management



ZINC INTERNATIONAL

The year in brief

During FY 2023-24, Zinc International recorded annual production of 208 kt. The significant decline in production for the year was mainly due to ore availability challenges, significantly lower throughput, and lower zinc and lead grades at both units.

Black Mountain production for FY 2023-24 stands at 61 kt down by 6% Y-O-Y, due to lower zinc and lead head grades partly offset by higher tonnes treated and better recoveries.

Gamsberg production for FY 2023-24 is down 29% Y-O-Y due to lower mining volumes driven by West pit geotechnical issue and lower grades.

Skorpion Zinc has been under Care and Maintenance since start of May 2020, following cessation of mining activities due to geotechnical instabilities in the open pit. Activities to restart the mine are still in progress.

208 kt
MIC production

ESG Update

Occupational health and safety

At Vedanta Zinc International (VZI), we prioritise the health and safety of our employees and stakeholders, and we remain committed to timely and transparent communication with all parties involved.

Airborne particulate management remains a key focus in reducing lead and silica dust exposures of employees (Exposure Reduction to Carcinogenic). Zero new HIV and any other Occupational Related Diseases for the year. VZI had 8 blood lead withdrawals for FY 2023-24 (a reduction from 17 in the previous year), against more stringent limits than required by law. We have strengthened our Employee Wellness Programme through weekly training and empowerment sessions presented by our Wellness Coordinator at our training centres as well as focussing on the increased participation of employees and communities in VCT for Aids / HIV, blood donation and wellness. Upgrade of BMC Occupational Health & Primary Health Care facility is also underway to improve space and flow within the facility. VZI has also embarked on a real-time monitoring strategy and additional controls at source to reduce and eliminate exposures to both silica and lead.

The VZI LTIFR for FY 2023-24 YTD regressed from 0.75 in FY 2022-23 to 1.26 in FY 2023-24. The TRIFR remained within the guidance of 3 per million-man hours worked in FY 2023-24 at 3.6. The regression in LTIFR was attributed to low energy types of injuries such as slipping and falling as well as manual handling of material. Short-term awareness campaigns such as "Season of Exceptional Care" were implemented to ensure that employees remain focussed whilst at work and return home to their families safe and healthy every day.

Environment

VZI has secured Portion 1 of the farm Wortel 42 as the fifth Biodiversity Offset Property and has presented the property to the Department of Agriculture, Environmental Affairs, Rural Development and Land Reform (DAERDLR) for declaration as part of the Gamsberg Nature Reserve (Protected Area under the National Environmental Management Protected Areas Act, 2003 (Act No.57 of 2003). Once declared, the property will be transferred to the Department of Public Works. This is a requirement of Clause 6 of the Biodiversity Offset Agreement (BOA).

During the reporting period, Gamsberg successfully renewed the Salvage yard waste licence that expired on 31 December 2023 and will be valid for the next 10 years. Gamsberg and Black Mountain Mine further maintained its ISO 14001:2015 certification. The Project offices achieved a Green Building Certification.

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Total production (kt)	208	273	(24%)
Production – mined metal (kt)			
BMM	61	65	(6%)
Gamsberg	147	208	(29%)

Operations

Total production for the year was 208 kt, down by 24% Y-O-Y. This was primarily due to lower tonnes treated and lower grades.

At BMM, production for the year 61 kt, down by 6% Y-O-Y. This was mainly due to lower lead grades (2.6% vs 3.0%) and lower zinc grades (1.6% vs 1.8%) offset by 0.1MT higher throughput (1.8 mt vs 1.7 mt), higher zinc recoveries (78.3% vs 71.9%) and higher lead recoveries (85.4% vs 82.8%).

At Gamsberg, production for the year was at 147 kt, down by 29% Y-O-Y. The low production at Gamsberg is attributable to mining underperformance resulting in lower ore availability, and lower zinc grades (5.6% vs 6.5%).

At Skorpion Zinc engagement with technical experts to explore opportunities of safely extracting the remaining ore is ongoing. The business is currently evaluating options to restart mining.

Unit costs

Production	FY 2023-24	FY 2022-23	% Change
Overall Zinc COP including TcRc (US$/t)	1,488	1,577	(6%)

Overall Zinc COP including TcRc for the year was US$ 1,488 per tonne, down by 6% This was mainly driven by lower mining and other costs, lower treatment and refining charges, higher production of copper, local currency depreciation against the US$ partially offset by lower production.

Financial performance

(₹ crore, unless stated)

Production	FY 2023-24	FY 2022-23	% Change
Revenue	3,556	5,209	(32%)
EBITDA	693	1,934	(64%)
EBITDA margin	19%	37%	

Revenue for the year was ₹ 3,556 crore, down by 32%, mainly due to significantly lower production volumes, and lower LME prices offset by lower treatment charges.

EBITDA for the year was ₹ 693 crore, down by 64% mainly due to lower production volumes, and lower LME prices partly offset by impact of exchange rate movement on cost, lower mining cost and lower treatment charges.

Exploration

- 1% increase in resources from 27.21 mt to 27.61 mt metal and 1% reduction in reserve metal tonnes from 7.66 mt to 7.20 mt
- Total R&R for VZI increased from 658 mt to 662 mt of ore, while metal decreased from 34.86 mt to 34.80 mt (0.2% decrease in total metal)
- Reduction reserve largely attributed mining depletions and the slight increase in resources due to addition of metal tonnes at Broken Hill which was offset by an increase in mining costs which impacted the cut-offs used

Projects

Refinery Conversion

The Skorpion Refinery Conversion project was at Ready-to-order stage, post completion of FEED, feasibility study, tendering activities, techno-commercial adjudication, contract finalisation, and now currently on hold pending finalisation of power tariff.

The application for environmental clearance renewal certificate for the refinery conversion project has been submitted and waiting for approval. Confirmation on agreed power tariff is awaited to take the final decision and start the project execution on ground.

Gamsberg Phase 2

Gamsberg Phase 2 project includes the mining expansion from 4 MTPA to 8 MTPA and Construction of New Concentrator plant of 4 MTPA, taking the total capacity to 8 MTPA ore. Owner's Engineering consultant has been appointed for conducting pre-feasibility studies, executing the basic engineering design, detailed engineering review, quality assurance and site construction management.

All activities related to tendering, techno-commercial adjudication, contract finalisation have been completed. All Major Long-Lead Free Issue Materials {Ball and Sag Mill (CITIC), Crusher, Floatation, Filter Presses and Thickeners Package (MO)} Orders placed. Major FIM supplies such as Thickeners, Mills, Transformers have been delivered to Project Site. Project is targeted to be completed by H1 FY 2024-25

The status on the project is as follows:

- Overall progress is at 52.6%
- Engineering and procurement are 99.6% and 94% completed respectively
- Construction progress is at 27%

Black Mountain Iron Ore project

This is a project to recover iron ore (magnetite) from the BMM fresh tailings. Detailed engineering and procurement have been completed and construction progress is at 76%. The project was on hold due to EPC Business partner (LeadEPC) going into Business Rescue (BR).

LeadEPC came out of BR in the third quarter of FY 2023-24. Team started mobilisation in February 2023-24, and have planned to complete the project by the second quarter of FY 2024-25. All the environmental approvals are in place to process fresh tailings and extract Iron Ore.

Strategic Priorities and Outlook

Zinc International continues to remain focussed to improve its Y-O-Y production by sweating its current assets beyond its design capacity, debottlenecking the existing capacity, and adding capacity through Growth Projects. Our immediate priority is to ramp-up the performance of Gamsberg mining operations and simultaneously complete Gamsberg Phase 2 project to add another 190 kt to the total production of VZI. Likewise, BMM continues to deliver stable production performance and focus is to debottleneck its ore volumes from 1.7 mt to 2.0 mt. Skorpion is expected to remain in Care and Maintenance while management is assessing feasible and safe mining methods to extract ore from Pit 112. Zinc International continues to drive cost reduction programme to place Gamsberg operations on 1st Quartile of global cost curve with COP< US$ 1,200 per tonne.

Core Growth strategic priorities include the following:

- Ramp-up of Gamsberg Phase 1 Mining up to 9 million tonnes per month to ensure adequate ore availability for the plant
- Completion of construction activities of Gamsberg Phase 2 project in the first half of FY 2024-25
- Continue to improvise Business case of Skorpion Refinery Conversion Project and Gamsberg Smelter Project through Government support, Capex and Opex reduction
- Magnetite project (waste to value) reinitiated with target completion by the first half of FY 2024-25

OIL AND GAS

The year in brief

During FY 2023-24, Oil and Gas business delivered gross operated production of 128 Kboepd, down by 11% Y-O-Y, primarily driven by natural reservoir decline at the MBA fields. The decline was partially offset by addition of volumes through new infill wells brought online in Mangala, Aishwariya, Bhagyam and Raageshwari Deep Gas fields. OALP assets were supported by ramp-up of volumes from Jaya discovery.

128 Kboepd
Average gross operated production

ESG Update

Occupational health and safety

There were two lost time injuries (LTIs) in FY 2023-24. Frequency rate stood at 0.06 per million-man hours (FY 2022-23: 0.03 per million-man hours).

Our focus remains on strengthening our safety philosophy and management systems. We were **recognised** with awards conferred by external bodies:

- RJ North SBU recognised with British Safety Council International Safety Award (ISA), UK 2023
- RJ North SBU awarded with 'Royal Society for Prevention of Accidents' Gold award for Health and Safety Management 2023
- Cairn received 'Sustainable Corporate of the Year Award 2023' by Frost and Sullivan, TERI under Sustainability 4.0 Award
- Platinum award under mining sector at 10th FICCI Awards for Excellence in Safety Systems 2023 and RJ North SBU received 2nd CII award for 'Best Practices in Waste Management' in Northern Region, CII National award for 'Excellence in Water Management' 2023
- Golden Peacock Award 2023' for Excellence in Health and Safety for RJ South SBU

Cairn Oil and Gas has taken various initiatives:

- Implemented uniform HSE Governance structure and critical risk management system for fatal risks
- Process Safety management gap assessment exercise across assets
- Digital initiatives include Artificial Intelligence-based safety surveillance, an Occupational Health MIS portal, a Digital Tanker inspection system, an E-dispensation management system, an E-HSE legal permit monitoring system, and a Static discharge palm plate

Environment

Our Oil and Gas business is committed to protect the environment, minimise resource consumption and drive towards our goal of 'zero harm, zero waste, zero discharge'.

Highlights for FY 2023-24 as follows:

- Suvali Site has been certified as 'Net Water Positive Certification' (NWPI) by TUV SUD with NPWI index of 1.14
- Constructed 69 community-based rainwater harvesting structure in Barmer having RWH potential of 0.78 million KL annually
- Re-use of boiler blow down water for injector at MPT of 35,000 KL annually

Biodiversity/wildlife conservation initiatives

- Plantation work completed in 400 hectares with 2 lakh saplings in Barmer district. 60 hectares mangroves planted for carbon offset and biodiversity in Surat Coastal area, over 13 hectares in Ravva terminal and MoU signed with Government of Gujarat for plantation of mangroves on 130 hectares in the coast of Surat
- ~0.27 mn saplings sourced from Rajasthan State Forest Department and distributed to Border Security Force (BSF), Army and local farmers
- Planted 5,000 saplings in Bhogat terminal along with Gujarat Forest Department.

Reduction in GHG emission

- Received certification of Energy Management System (ISO 50001:2018) for Ravva and Suvali
- Flare Gas utilisation from KW-02 through gas cascading and bottling. (Annual GHG reduction potential ~6,000 tonnes of CO_2e/annum)
- Commissioned motor-driven power fluid pump at MPT to replace the stream-driven pump. (Annual GHG reduction potential of ~86,000 tonnes of CO_2e/annum)
- Solar rooftop installed on 16 AGIs (above ground installations) for pipeline operations (Annual GHG reduction potential of 300 tonnes of CO_2e/annum)
- Installation of 126 KWP at Raag Gas WPs (Annual GHG reduction potential of ~157 tonnes of CO_2e/annum)
- Commissioned 40 KWP Solar Plant at Cambay asset (Annual GHG reduction potential of ~30 tonnes of CO_2e/annum)
- Introduced 15 new Electric Vehicles at RJ and 2 in Ravva for internal commuting
- Hydrocarbon recovery through the processing of skimmed oil amounted to approximately 43,253 barrels
- Suvali has been certified by TUV SUD towards 'Zero Waste to Landfill'

Production performance

Particulars	Unit	FY 2023-24	FY 2022-23	% change
Gross operated production	Kboepd	127.5	142.6	-11%
Rajasthan	Kboepd	106.5	119.9	-11%
Ravva	Kboepd	10.8	11.8	-8%
Cambay	Kboepd	8.9	10.8	-17%
OALP	Kboepd	1.4	0.1	-
Oil	Kboepd	104.0	118.6	-12%
Gas	Mmscfd	141	144	-2%
Net production – working interest*	Kboepd	82.5	91.5	-10%
Oil	Kboepd	66.8	76.1	-12%
Gas	Mmscfd	94	92	2%
Gross operated production	Mmboe	46.7	52.1	-10%
Net production – working interest	Mmboe	30.2	33.4	-10%

** Includes net production of 556 boepd in FY 2023-24 and 450 boepd in FY 2022-23 from KG-ONN block, which is operated by ONGC. Cairn holds a 49% stake.*

Operations

Average gross operated production across our assets was 11% lower Y-O-Y at 127.5 Kboepd. The Company's production from the Rajasthan block was 106.5 Kboepd, 11% lower Y-O-Y and from the offshore assets, was at 19.7 Kboepd, 13% lower Y-O-Y. The natural decline has been partially offset by infill wells brought online across all assets.

Block-wise production details as follows:

Rajasthan block

Gross production from the Rajasthan block averaged 106.5 Kboepd, 11% lower Y-O-Y. The natural decline in the MBA fields has been partially offset by infill wells brought online in Mangala, Aishwariya, Bhagyam, ABH and RDG fields.

Gas production from Raageshwari Deep Gas (RDG) averaged 140 million standard cubic feet per day (mmscfd) in FY 2023-24, with gas sales, post captive consumption, at 116 mmscfd.

The appeal against the Division Bench order (additional 10% profit sharing from 2020 onwards) was filed by us before the Supreme Court in June 2021. The matter was part heard on 16 February 2023 and mentioned by the Company several times for early listing. We await the next date of hearing.

The Government of India (GoI), acting through the Directorate General of Hydrocarbons (DGH), had raised demand up to 14 May 2020 for Government's additional share of Profit oil based on its computation of disallowance of cost incurred over retrospective re-allocation of certain common costs between Development Areas (DAs) of Rajasthan Block and certain other matters aggregating to US$ 1,162 million applicable interest thereon representing share of Vedanta Limited and its subsidiary.

We had disputed the aforesaid demand and invoked arbitration as per the provisions of the Production Sharing Contract. The Company had received the Final Partial Award dated 22 August 2023 from the Arbitration Tribunal ('the Tribunal') as amended by orders dated 15 November 2023 and 08 December 2023 ("the Award"), dismissing the Government's contention of the additional Profit Petroleum in relation to allocation of common development costs across Development Areas and certain other matters in accordance with terms of the Production Sharing Contract for Rajasthan Block, while disallowing some matters. Further, Tribunal has decided that the Company is allowed to claim cost recovery of exploration cost for the purpose of computation of Profit Oil.

Pursuant to the award, the Company has recognised a benefit of US$ 578 million in revenue from operations.

The GoI had sought an additional award or interpretation/ clarification on certain matters decided by the Tribunal under the Indian Arbitration and Conciliation Act, 1996 ("the Act") ("GoI Applications"), The Tribunal vide its orders dated 15 November 2023 and 08 December 2023 has dismissed GoI Applications, in favour of the Company.

GoI had filed interim relief application on 03 February 2024 seeking stay on further recovery by Company and return of amounts already recovered. The matter was heard on 26 March 2024 and we await order of Tribunal's order in this regard.

GoI on 07 March 2024 filed application before Delhi High Court challenging the Final Partial Award and matter was heard on 14 March 2024. No stay was granted and the petition was not admitted. The next date of hearing is 22 April 2024. The Company is of the view that there is no merit in the challenge filed by GoI, as the Court cannot re-appreciate the evidence in Section 34 appeal. The interpretation by the Tribunal is plausible and therefore no challenge is merited.

The Group has adjusted the liability as on 31 March 2024 of US$ 233 million against the aforesaid benefits recognised per the Arbitration award.

Ravva block

The Ravva block produced at an average rate of 10.8 Kboepd, lower by 8% Y-O-Y, owing to natural field decline.

Cambay block

The Cambay block produced at an average rate of 8.9 Kboepd, lower by 17% Y-O-Y, owing to natural field decline.

Prices

Production	FY 2023-24	FY 2022-23	% Change
Average Brent prices –US$/barrel	83.1	96.2	(14%)

Crude oil price averaged US$ 83.1 per barrel in FY 2023-24 representing decrease from US$ 96.2 per barrel. The decline is largely attributed to ongoing geopolitical risk, concerns about demand in major economies like the US and China, monetary tightening by major banks and expectations of global oil production surpassing consumption in 2024. Previous period was influenced by Russia-Ukraine war which resulted in rally in prices.

Early in the year, prices fluctuated due to supply and demand factors. On the supply side, limited availability due to increase in U.S. crude and gasoline inventories, concerns about production cuts, sanctions on Russia contributed to volatility. Additionally, demand was influenced by structural uncertainties, such as looming possibility of U.S. debt default potential and a slowdown in China's economy.

However, in September and October optimism emerged as expectations grew that central banks were approaching the end of their tightening cycles. Additionally, the decline of US Dollar and anticipated economic stimulus in China added to the positive sentiments. Firm demand for crude in the spot market, rising global refinery intakes, stronger refining margins and a large draw in US crude stocks boosted the prices.

Despite these developments, the oil market remains shrouded in uncertainty and susceptible to ongoing fluctuations due geopolitical risk surrounding the Middle East and Russia, disruptions in maritime trade flows, persistent worries about the demand outlook in the US and China, compounded by global petroleum reserves and unexpected supply disruptions in several regions.

Financial performance

(₹ crore, unless stated)

Production	FY 2023-24	FY 2022-23	% Change
Revenue	17,837	15,038	19%
EBITDA	9,777	7,782	26%
EBITDA margin	55%	52%	-

Revenue for the year was ₹ 17,837 crore (after profit petroleum and royalty sharing with the Government of India), up 19% Y-O-Y, as a result of favourable order received in GoI Arbitration partially offset by fall in oil prices. EBITDA for FY 2023-24 was at ₹ 9,777 crore, up by 26% Y-O-Y in line with the higher revenues.

The Rajasthan operating cost for the year was US$ 14.5 per barrel compared to US$ 14.2 per barrel in previous year, primarily driven by lower production and increased well interventions to manage natural field decline.

Growth Projects Development

The Oil and Gas business has a robust portfolio of infill development and enhanced oil recovery projects to add volumes in the near term and manage natural field decline. Some of key projects are:

Infill Projects

Mangala

Based on the success of the infill drilling campaigns in Mangala field, opportunities to further accelerate production by drilling and hook up of 18 wells (15 producers and 3 injectors) in FM1 sands were identified. The project also entails conversion of 6 wells.

As of 31 March 2024, 8 wells have been drilled, of which 6 wells are online.

Bhagyam

To accelerate production and augment reserves from Bhagyam field, infill drilling opportunities in FB1 and FB3 layers were identified. The project entails drilling of 9 infill wells in FB3 layers and three horizontal wells in the bio-degraded zone.

As of 31 March 2024, project is completed, and all wells are online.

Aishwarya

Based on the success of the polymer injection in Lower Fatehgarh (LF) sands of Aishwarya field, additional production opportunities were identified in Upper Fatehgarh (UF) sands. The project entails drilling of 25 infill wells in Upper Fatehgarh (UF) sands and conversion of 7 existing wells to UF polymer injectors.

As of 31 March 2024, 24 wells have been drilled, of which 21 wells are online.

Tight Oil (ABH)

Aishwarya Barmer hill infill drilling programme established confidence in reservoir understanding of ABH. Based on its success, drilling of 14 additional wells were conceptualised.

As of 31 March 2024, 8 wells have been drilled of which all are online. The projects work on surface facilities are currently in progress.

Tight Gas (RDG)

In order to realise the full potential of the gas reservoir, an infill drilling campaign of 25 wells was executed. Project has been completed during second quarter of fiscal year 2024 and all wells are online.

To augment reserves and manage natural decline, we commenced additional 8 infill wells drilling campaign during fiscal year 2024. As of 31 March 2024, 6 well has been drilled of which 3 wells are online.

Satellite Fields

In order to monetise the satellite fields, 14 wells development campaign for 3 satellite fields (GSV, Tukaram, Raag Oil) was conceptualised. Drilling was completed during FY 2022-23 of which 9 wells are online as on date.

Exploration and Appraisal

Under the Open Acreage Licensing Policy (OALP), revenue-sharing contracts have been signed for 51 blocks located primarily in established basins, including some optimally close to existing infrastructure, of which 5 onshore blocks in the KG region have been relinquished.

During FY 2023-24, we drilled eight exploration/appraisal wells [4 wells in Cambay Onshore (YME-1 Jaya Appraisal and Jaya SW1, Jaya SW1-ST, and Jaya SW-3), 1 well in Western Offshore (Dwarka 1) and 3 wells in Rajasthan (Durga Lateral 1, and Durga Lateral 2 and Western Margin GH-1A)].

Through exploration and appraisal successes encountered in Cambay Onshore (Jaya) wells, we have got approval for Field Development Plan (FDP) to produce >3,000 boepd. This will be the first FDP in OALP regime, among 144 blocks awarded under 8 OALP rounds by the Government to various companies.

Seismic Acquisition activities are ongoing in the North-East and Cambay region.

Strategic Priorities and Outlook

Vedanta's Oil and Gas business has a robust portfolio mix comprising exploration prospects spread across basins in India, development projects in the prolific producing blocks and stable operations which generate robust cash flows.

The key priority ahead is to deliver our commitments from our world-class resources with 'zero harm, zero waste and zero discharge':

- Infill projects across producing fields to add volume in near term
- Define up to >20 potential new development projects to bring these Resources into production
- Unlock the potential of the exploration portfolio comprising of OALP and PSC blocks
- Continue to operate at a low cost-base and generate free cash flow post-capex

ALUMINIUM

The year in brief

With our continued focus on operational excellence, improving asset reliability across units and efficiency in procurement, we have achieved highest ever annual cast metal production of 2.37 million tonnes in FY 2023-24, up 3% Y-O-Y, and achieved hot metal cost of US$ 1796/T, 23% lower Y-O-Y. We also produced 1.81 mt of calcined alumina, up 1% Y-O-Y.

In addition, as the first milestone in our transformational capex programme, we produced the first alumina from Train 1 of the Lanjigarh refinery expansion project, as a step towards becoming a fully vertically integrated Aluminium producer.

2,370 kt

Highest-ever aluminium production

ESG Update

Occupational health and safety

We report with deep regret one fatality of business partner employees during the reporting period at Jharsuguda site. We have thoroughly investigated all the incidents and the lessons learned were shared across all our businesses to prevent such incidents in future.

This year, we experienced a total of 33 Lost Time Injuries (LTIs) resulting in an LTIFR of 0.41 at our operations.

To advance the goal of Zero Harm in Safety, all our units undertook a comprehensive programme of safety measures to improve workplace conditions in terms of site infrastructure, safety systems and safety culture. Noteworthy infrastructural improvements include safer access pathways for pedestrians to isolate them from vehicles across the sites. Safety systems like introduction of Driver Management Centre, monitoring of vehicle design and condition, and safe driving parameters through smart cameras, speed detectors and GPS-enabled Vehicle Tracking Systems. External third-party training has been provided to 4,000 workers in hazardous process training. Further, we have developed the Enablon portal for timely identification and reporting of safety hazards and rectification of the same.

All sites are committed to 'Refuse Work if it is Unsafe to Execute' and empowered all site personnel to reject any activity that posed a possible safety concern.

For Occupational Health, our units celebrate Sankalp Day every month with different themes. Various health awareness campaigns have also been conducted, such as the "Beat the Heat" campaign during summers, Pinkathon for breast cancer awareness, non-invasive anaemia detection camps, mass diabetic screening camps, and neglected tropical disease campaigns. Additionally, three mandatory trainings (Occupational Health and Industrial Hygiene, Ergonomics, and CPR) are provided each month.

Environment

During the reporting period, Jharsuguda recycled 17% of their water used, while BALCO and Lanjigarh recycled 13% and 50% respectively. Our specific water consumption at Jharsuguda was 0.20 m^3/t, BALCO was 0.53 m^3/t and Lanjigarh specific water consumption was 2.09 m^3/t.

In line with Vedanta's de-carbonisation plan, we have undertaken trials at Lanjigarh to co-fire biomass in the boiler, with all defined safety measures, to reduce GHG emissions of the power plant. Furthermore, Jharsuguda has deployed 27 Electric forklifts while BALCO and Lanjigarh have deployed 6 and 3 forklifts respectively, we have planned to shift to 100% EV light motor vehicles by FY 2029-30.

Under our Green product initiative, this year we produced 44 kt of Green Aluminium under the Restora brand name with an immediate potential to produce up to 100 KTPA. Further, our Restora Ultra brand, produced from Aluminium dross generated from the operations, has one of the lowest carbon footprints available on the market today.

In FY 2023-24, we reduced our GHG emission intensity by 2% compared to the FY 2022-23 baseline. We have purchased 1,013 MU of Green Power and co-fired 13,811 tonnes of Biomass.

Management of hazardous waste such as spent pot lining (SPL), aluminium dross, and high-volume low-toxicity waste such as fly ash and red mud are material waste management issues facing the aluminium industry. During the reporting period, our operations have utilised 103% of Ash and 98% of Dross.

Vedanta Aluminium has entered into a long-term partnership with Dalmia Cements for gainful utilisation of industrial by-products such as fly-ash and SPL waste to manufacture 'green' cement. This partnership demonstrates our commitment to promote the circular economy and create 'wealth from waste'. BALCO is engaged in back filling of fly ash into coal mines which further supports our efforts for sustainable management of ash from our operations and achieve our 'Zero Waste to Landfill' objective.

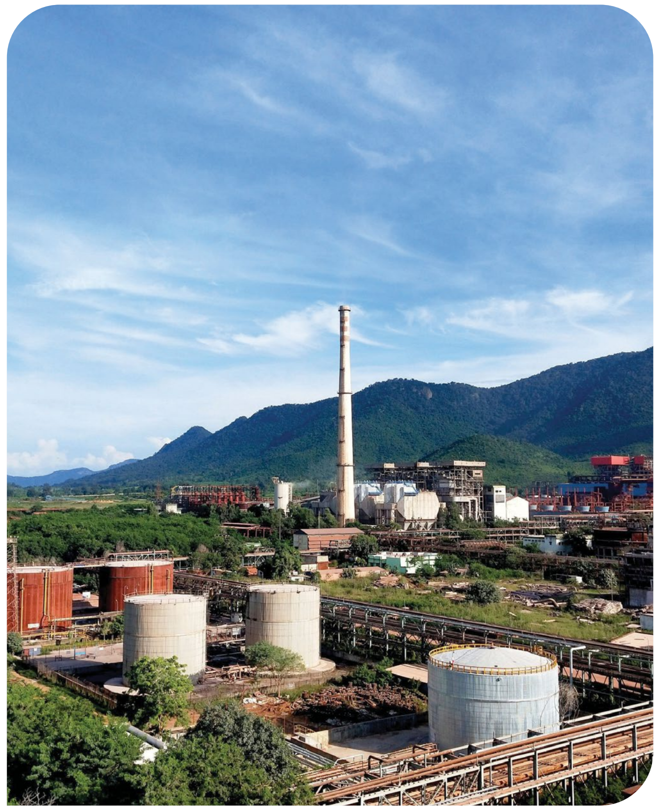
Our R&D team, in collaboration with IIT Kharagpur, has developed and patented a new technology for pre-processing of bauxite prior to introduction to the Beyer circuit, which will reduce red mud generation by about 30%. This will also further enhance alumina recovery and broaden range of acceptable bauxite specifications.

Production performance

Particulars	FY 2023-24	FY 2022-23	% change
Calcined Alumina Production (kt)			
Alumina – Lanjigarh	1,813	1,793	1%
Cast Aluminium Production (kt)	2,370	2,291	3%
Jharsuguda	1,784	1,721	4%
BALCO	586	570	3%

Alumina refinery: Lanjigarh

At Lanjigarh, calcined alumina production stands at 1.81 million tonnes, up 1% Y-O-Y.



Aluminium smelters

Achieved highest ever cast metal production of 2.37 million tonnes in FY 2023-24, up 3% Y-O-Y, primarily due to improved operational efficiency.

Coal Security

We continue to focus on the long-term security of coal supply to our thermal power plants at competitive prices. We have plans in place to operationalise our captive coal blocks of Radhikapur (West) (6 MTPA) and Kuraloi (A) North (8 MTPA) in FY 2024-25 and Ghogharpalli (20 mt) in FY 2025-26. The Barra coal block is currently under exploration. These captive mines along with 16.7 million tonnes of long-term linkage will ensure 100% coal security for our Aluminium business. We also intend to continue our participation in linkage coal auctions to secure additional coal at competitive rates.

Prices

Particulars	FY 2023-24	FY 2022-23	% change
Average LME cash settlement prices (US$ per tonne)	2,200	2,481	(11%)

In FY 2023-24, the aluminium market continued the downward trend experienced in the fourth quarter of FY 2022-23 with LME prices falling steadily to US$ 2,100/tonne at the end of June 2023. The market was significantly impacted by volatility in macroeconomic environment during the reporting period amidst the ongoing Russia-Ukraine war, European energy crisis, and high inflation in the key markets. Prices remained range-bound at these levels through until late in the calendar year where concerns about potential sanctions on Russian metal caused a short-lived spike in prices, before returning to US$ 2,200/tonne at the close.

Total global aluminium demand is expected to increase at a CAGR of ~3% for the rest of this decade. Higher growth rate is driven by the decarbonisation transition in transportation, deployment of renewable power generation, infrastructure development and growth in recyclable packaging. Specifically, aluminium consumption from the renewable energy and electric vehicle sectors is expected to increase to 16 million tonnes by CY 2030.

The transportation sector should support modest growth in domestic consumption, while the building & construction sector will continue a downtrend trend. For the Rest of World, CY 2024 is expected to witness modest demand improvements as inflation rates start to decline and monetary authorities around the world can start to reduce interest rates. Indian domestic aluminium demand will remain very robust driven by key consuming segments like electronics and appliances as well as anticipated boom in renewable, defence, and aerospace sectors.

Unit costs

(US$ per tonne)

Particulars	FY 2023-24	FY 2022-23	% change
Alumina cost - Lanjigarh	325	364	(11%)
Aluminium COP	1,796	2,324	(23%)
Jharsuguda COP	1,761	2,291	(23%)
BALCO COP	1,904	2,424	(21%)

Cost of production (COP) of alumina for the year was US$ 325 per tonne, down 11% Y-O-Y, majorly driven by softening of caustic soda and coal prices.

Cost of production (COP) of hot metal was US$ 1,796 per tonne down 23% Y-O-Y, primarily on account of improvement in asset reliability and reduction in coal and CP coke prices.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	48,371	52,662	(8%)
EBITDA	9,657	5,775	67%
EBITDA margin	20%	11%	

Revenue for the year was ₹ 48,371 crore, down by 8%, due to slip in LME prices partially offset by increase in volume. EBITDA for the year was ₹ 9,657 crore, up by 67% to majorly driven by softening of input commodity prices along with the improved operational performance partly offset by lower LME prices.

Strategic Priorities and Outlook

Our strategic priorities remain

- increasing production volume of aluminium
- reducing and delinking production cost from external volatility through achieving full backwards vertical integration
- maximising share of value-added products (VAP) in our mix

Aluminium Volume:

BALCO is poised to add smelter capacity of 0.4 MTPA (to achieve 1 MTPA total capacity) with first metal planned by end of third quarter of FY 2024-25. Efforts continue towards achieving higher operational performance along with increased volume delivery through debottlenecking and planning for future growth projects.

Backwards Vertical Integration:

The Lanjigarh expansion activities are in full swing, and we achieved our first alumina production from Train-1 in March 2024 and efforts are in place to get first alumina production from Train-2 by end of second quarter of FY 2024-25.

Activities are underway to finalise approvals, acquire land, and instal necessary processing and logistics infrastructure at Sijimali Bauxite Mines to enable us to secure first production by second quarter of FY 2024-25. The future ramp-up will be instrumental in enabling us to meet the requirement for 5 MTPA refinery operations from captive domestic sources. Operationalisation of our captive coal mines in the short to medium-term and improved linkage materialisation will ease our dependence on relatively higher-cost spot market coal.

Increased VAP

Jharsuguda and BALCO are currently expanding their VAP capacity from 1.1 MTPA to 1.6 MTPA and 0.4 MTPA to 1.0 MTPA respectively to secure enhanced product margins.

Other business priorities include:

Sustainability:

Safety and well-being of all our stakeholders, reduction of our carbon footprint and increased production of Low Carbon Green Aluminium (Restora, Restora Ultra), increased Diversity of our Workforce, and promoting the Circular Economy.

Operational Excellence:

Continual improvement in operational parameters.

Asset Optimisation:

Achieving >100% capacity utilisation of assets through implementation of our structured reliability and asset management programme.

Quality:

Zero product defects and customer complaints.

Product Portfolio:

Improve VAP portfolio with focus on anticipating and meeting the needs of sophisticated customers to enable better price realisation.

POWER

The year in brief

Vedanta Power is on the brink of significant expansion and operation of two new thermal power projects—Meenakshi (1,000 MW) in Andhra Pradesh and Athena (1,200 MW) in Chhattisgarh. These ventures are slated to commence operations in FY 2024-25 and FY 2025-26 respectively. This expansion will bolster Vedanta Power's total capacity to 4,780 MW, encompassing its existing operational plants-Talwandi Sabo Private Limited (1,980 MW) in Punjab and Jharsuguda IPP (600 MW) in Odisha.

This strategic initiative not only amplifies Vedanta Power's operational capabilities but also positions the Company for sustained growth. The integration of these capacities is expected to contribute to stable and substantial cash flows, ensuring a robust balance sheet and sustained margin stability for the business.

In FY 2023-24, TSPL's (Talwandi Sabo Power Limited) plant availability was 82% and Plant Load Factor (PLF) was 64%.

13,443 million units
Overall power sales

ESG Update

Occupational health and safety

In line with group philosophy, TSPL is also a part of "VIHAN-Every Step Safe Step" which is a unique safety initiative which focusses on developing Infra-matrix for each type of critical risk. In FY 2023-24, TSPL focussed on Category 5 Safety Incident elimination through Critical Risk Management, Catastrophic Risk Management, Horizontal Deployment of Safety Alert Learnings,, Vedanta Safety Standard Implementation and Engineering / Controls such as Hand Injury Prevention and Green hand policies.

We continue to strengthen 'Visible Felt Leadership' through on-ground presence of senior management, improvement in reporting across all risk and verification of on-ground critical controls. We also continue to build safety capability building assisting infrastructure and procedure development for fire-man endurance test, lifting tools and Tackles testing bench, apart from regular development through expansion of Bulker parking, finalisation of road map for ITMS etc.

Environment

TSPL focusses on environment protection measures such as maintaining green cover of over 800 acres, continue the expansion of green cover inside plant premises and nearby communities. TSPL ensures availability of environment protection system such as ESP, Fabric Filters, water treatment plant and RO Plant. In Tailing Dam Management, TSPL has implemented all the recommendations of M/s Golder associates for ash dyke. Additional GISTM Conformance Assessment of TSPL Ash Dyke Facility by ATC Williams, Australia and TATA Consultancy (TCE) as Engineer of Records (EOR) to ensure Ash Dyke stability to review dyke design, quality assurance during for ash dyke raising and quarterly audit of ash dyke facility. In FY 2023-24, TSPL achieved 100% Ash utilisation in Road Construction, in building sector for bricks, blocks, cements and low-lying area filling. TSPL has signed various MoUs with stakeholders to increase ash utilisation.

TSPL has recycled 19% of the water used and reduced fresh water consumption by various operation controls. TSPL continues its focus on energy saving projects such as CEP VFD rpm reduction, condenser vacuum improvement, HP heaters performance improvement, APH basket and seal replacement, high energy drain valve replacement and rectification, replacement of conventional lighting fixtures with LED lighting fixtures.

To stimulate efforts and reach towards new heights of sustainable business practices, TSPL continued with ESG transformation office. TSPL ESG Transformation Office was created which includes 13 communities of practice from each aspect of sustainability like Carbon, Water, Waste, Biodiversity, Supply chain, People, Communities (CSR), communication, Safety and Health, Acquisitions, Expansions and Finance. Each Community is led by a senior leader in the concerned department. Each community is driving sustainability initiatives in their community which is being reviewed by Senior management on regular basis through ESG-TO engagement.
In FY 2023-24, 124 new projects were identified, 53 initiatives were completed, and 71 improvement initiatives are in progress.

In FY 2023-24, TSPL has reduced Specific GHG emissions to 3% & has achieved a reduced Specific water consumption to 11%. In this year TSPL along with district administration has developed 3 Miyawaki forest covering 0.125 acres land in the district of Mansa.

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Total Power	13,443	14,187	(5%)
HZL wind power	394	395	-
Jharsuguda 600MW	2,771	3,048	(9%)
TSPL	10,278	10,744	(4%)
TSPL – Availability	82%	82%	

Note: Malco continues to be under care and maintenance since 26 May 2017 due to low demand in Southern India.

Operations

Power sales for the year was 13,443 million units, down by 5% Y-O-Y. Power sales at TSPL were 10,278 million units with 82% availability in FY 2023-24. At TSPL, the Power Purchase Agreement with the Punjab State Electricity Board compensates us based on the availability of the plant.

At Jharsuguda, the 600 MW power plant operated at a lower plant load factor (PLF) of 58% in FY 2023-24 due to temporary ash evacuation constraints.

Unit sales and costs

Production	FY 2023-24	FY 2022-23	% Change
Jharsuguda sales realisation (₹/kWh)1	2.66	2.75	(3%)
Jharsuguda cost of production (₹/kWh)1	2.77	2.50	11%
TSPL sales realisation (₹/kWh)2	4.10	4.50	(9%)
TSPL cost of production (₹/kWh)2	3.26	3.65	(11%)

(1) Power generation excluding TSPL
(2) TSPL sales realisation and cost of production is considered above, based on availability declared during the respective period

Average power sale price for the year was ₹ 2.82 per kWh excluding TSPL, down by 4% and the average generation cost was ₹ 2.57 per kWh, up by 9%.

TSPL's average sales price was ₹ per 4.10 kWh, down by 9% at, and power generation cost was ₹ 3.26 per kWh, down by 11% Y-O-Y.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	6,153	6,724	(8%)
EBITDA	971	913	6%
EBITDA margin	16%	12%	

Note: Excluding one-offs

Revenue for the year was ₹ 6,153 crore, down by 8%. EBITDA for the year was ₹ 971 crore, up by 6%.

Strategic Priorities and Outlook

During FY 2024-25, we will remain focussed on maintaining the plant availability of TSPL and achieving higher plant load factors at Jharsuguda IPPs.

Our focus and priorities will be to:

- Resolve pending legal issues and recover aged power debtors
- Improve power plant operating parameters to deliver higher PLFs/ availability and reduce the non-coal cost
- Ensuring safe operations, energy and carbon management

IRON ORE

The year in brief

Sesa Goa is one of the largest private sector exporters of iron ore in India. During FY 2023-24, Operationalised Bicholim mine in Goa (3 MTPA capacity), marking the commencement of first mining operation in the region after six years. Also, WCL made its first shipment in freight friendly market earning a higher margin.

In Coke business, Prime Hard coal consumption was reduced to 20% in FY 2023-24 from 35% in FY 2022-23 in overall coal blend.

5.6 million tonnes
Highest ever saleable ore production at Karnataka

ESG Update

Occupational health and safety

With our vision towards the aim of Zero Harm, we are committed to achieving zero fatal accident at Iron ore Business. Our Lost Time Injury Frequency Rate ("LTIFR") is 0.89 compared to 0.79 in previous year. Currently, we are focussing on bringing down the number of injuries by conducting a detailed review of critical risk controls through critical task audits, strengthening our work permit and isolation system through identification and closure of gaps, on-site audits, increasing awareness of both Company and business partner personnel by conducting trainings as per requirements considering the sustainability framework.

We have strived to enhance the health and safety performance by digitalisation initiatives such as usage of non-contact type voltage detectors, underground cable detectors. We have also implemented AI cameras (T-Pulse system) for reporting of unsafe acts/conditions. Our prime focus is on elimination, substitution, and Engineering Controls to reduce workplace-related hazards.

Vedanta has launched a HSE-based portal by name V-Unified (Enablon) for reporting, collating, and analysing the HSE related data across the Business which has become a way of life since its inception during the Financial Year.

At Sesa Goa, we have rolled out Critical Risk Management (CRM) modules to improve our safety culture and bringing down our injury rates. All the observations are being tracked, analysed, and rectified by preparing global action plans. We have achieved more than 95% actual verifications vs our planned verifications. We have implemented Monthly theme of the month campaigns for implementation of Vedanta Safety Standards at shop floor level and creating awareness among all the employees and business partners.

In Health function, we have also launched SEVAMOB digital platform for digitisation of Employee Medical Records which help us in tracking and giving health-related trend analysis of employees.

We have rolled out Safety Governance structure and Safety score card system for all SBUs of IOB. Through Safety Governance structure, senior line function leaders are driving safety management system for their SBUs.

In order to achieve highest levels of safety at site, we have identified key personnel from operation and maintenance to serve as Grid Owners in addition to their current roles and responsibilities. Specialised safety trainings like defensive driving, work at height, confined space, crane lifts, etc. are provided to concerned employees based on their job role.

Environment

At Sesa Goa, we strive towards zero harm to environment. We work on the principle of Reduce, Recycle and Reuse across business. We harvest rainwater at all our operational sites and are water positive. We also adopt best practices in mine reclamation and Sanquelim mine reclamation is a testament to the same. We have planted 66,000+ native species plants across SBUs in this year.

Value-Added Business also improved its air pollution control devices by replacing the old bag houses by new efficient baghouses.

At Iron ore Karnataka, continuing with its best practices, Company has constructed 38 check dams, 7 settling ponds. Additionally, Company has de-silted 2 nearby village ponds increasing their rainwater harvesting potential by 20,000 m³/annum.

To abide by our net zero target by 2050, Sesa Goa is the first Company to take the trial of EV wheel loaders in open cast mines at IOK and is determined to convert the existing fleet to EV. Vedanta SESA Goa has taken a step forward to promote sustainable transport by installing the first ever free EV fast charging station at Amona, VAB. This charging station will allow all the employees, business partners and people from the community to adopt sustainable transport. Vedanta Sesa Goa is actively advocating for the broader adoption of biodiesel, across its diverse business units.

Awards and accolades

- 'Vedanta - Value Added Business (VAB)' for "Platinum Award" and 'Pig Iron Division-I' for "Gold Award" in "15th EXCEED Safety and Security Award 2023" in Occupational Health and Safety category under 'Mining and Metallurgy Sector'
- VAB recognised as most energy-efficient Designated Consumer (DC) for its commitment to energy conservation measures in the Iron and Steel sector in Goa and received "Award of Excellence" from State Designated agency, Electricity department, Goa
- VAB has won "Energy efficient unit award" in "24th National Award for Excellence in Energy Management 2023"

IOK successfully hosted MEMC Week in FY 2023-24 and bagged 8 awards during the event

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Production (mn dmt)			
Saleable ore	5.6	5.3	5%
Goa	0.0	-	-
Karnataka	5.6	5.3	5%
Pig iron (kt)	831	696	19%
Sales (mn dmt)			
Iron ore	6.2	5.7	8%
Goa	0.3	0.7	(64%)
Karnataka	5.9	5.0	19%
Pig iron (kt)	836	682	23%

Operations

At Karnataka, highest ever annual saleable production of 5.6 million tonnes in FY 2023-24, up by 5% Y-O-Y due to operational efficiency and process improvement. We recorded highest ever annual sales of 5.9 million tonnes in FY 2023-24, up by 19% Y-O-Y due to improvement in logistics efficiency, which in turn helped to liquidate the inventory level. We achieved highest ever annual production of pig iron of 831 kt in FY 2023-24, up by 19% Y-O-Y driven by improvement in process efficiency and FY 2022-23 production was impacted due to shut down in one of the smaller blast furnaces. Also, we achieved highest ever annual sales of 836 kt, up by 23% Y-O-Y driven by improvement in operational & logistics efficiency.

At Goa, we bought iron ore in auctions held by Goa Government in FY 2023-24 which was then beneficiated. Around 0.3 million tonnes were exported and some ore were consumed to cater to requirement of our pig iron plant at Amona.

For Bicholim mines, EC for 3 MTPA was granted in January 2024 and operations were seamlessly restarted in end of March 2024 within 15 months of its acquisition.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	9,069	6,503	39%
EBITDA	1,676	988	70%
EBITDA margin	18%	15%	

Revenue for the year was ₹ 9,069 crore, up by 39% Y-O-Y mainly due to higher volume at Karnataka and VAB. EBITDA for the year was ₹ 1,676 crore, up by 70% Y-O-Y majorly due to increase in sales at Karnataka and VAB and softening of coking coal prices.

Strategic Priorities and Outlook

Our near-term priorities comprise:

- IOK - 7.2 MTPA MPAP Removal from Karnataka. Dry and wet beneficiation plant commissioning
- IOG - Commencement of Mining operations at Cudnem mines in Goa
- WCL - Ramp-up our operations and setting up magnetite concentrator plant, tailing processing unit and mini concentrator plant
- VAB – DIP project execution and debottlenecking projects completion
- Green Mining leveraging, digitalisation, and Renewable energy
- Ramp-up of our operations in Coke business at Gujarat and Vazare, Maharashtra

STEEL

The year in brief

ESL Steel Limited or ESL is an integrated steel plant situated in Bokaro, Jharkhand, with a design hot metal capacity of 3.5 MTPA. Its current operating hot metal capacity is 1.5 MTPA with a diversified product portfolio of Wire Rod, Rebar, DI Pipe and Pig Iron which are sold across key sectors such as construction, infrastructure, transportation and energy.

In line with debottlenecking and improved operational efficiency, ESL achieved highest ever hot metal production of 1.47 million tonnes up 8% Y-O-Y and highest ever saleable production of 1.4 million tonnes up 8% Y-O-Y.

1.4 million tonnes
Highest-ever crude steel production

ESG Update

Occupational health and safety

Safety is a paramount focus for ESL, ingrained in every facet of our operations. We prioritise the well-being of our employees, business partners, and the communities we serve primarily. Through rigorous training programmes, stringent safety protocols, and continuous monitoring, we ensure that safety remains at the forefront of every task, from the shop floor to the boardroom. Our commitment to safety extends beyond compliance with regulations; it is a core value that guides our decision-making and shapes our culture. By fostering a safety-conscious environment, we not only protect lives and assets but also cultivate trust, loyalty, and long-term success.

Few specific projects which have improved safety culture in our organisation:

- Leveraging Technology for enhancing safety deliverables such as V-Unified digital platform, digital and AI-based Camera surveillance, AI-based sleep detection cameras
- Infrastructural development with robust engineering controls such as interlocking of all 170+ conveyor guarding, vehicle parking infra facilities for LMV and HMV vehicles, SCADA system
- Identification of **60 Similar Exposure Group (SEG)** based on the activities performed and the associated occupational health hazards
- **Industrial Hygiene Study** has been conducted based on the identified SEGs covering the entire plant operations to identify the red, amber and the green zones with the required engineering controls to mitigate the health risks

Environment

Waste and circular economy

- We have achieved **100% utilisation of High-Volume Low Toxic** waste by re-using in cement plants, brick manufacturing and earth filling

Climate change

- Started to use **Dolachar** at Sinter plant which has led to reduction in Coke Fines consumption and the same has resulted in reduction of **more than 58,000 tCO$_2$** emission
- About **40+ Energy-saving projects** are completed in this year contributing significantly in carbon emission reduction as about **60,000 tCO$_2$**

Biodiversity/Plantation

- Greenbelt cover of **36.44%** with 3,76,246 trees and maintaining a density of **2,923 trees/ha** including Miyawaki afforestation of **2.66 acres** with **53,000 saplings** which is a first-of-its-kind initiative in Jharkhand

Water management

- **275 KL/day sewage treatment plant** has been commissioned which would reduce fresh water offtake by **275 KL/day**. This would ensure saving of fresh water **90,000 KL/annum**
- Reduced freshwater offtake from the reservoir by **1.5 Million m³** through the following water stewardship programme. This has resulted in achieving specific water consumption of **2.7 m³/tcs from 2.8 m³/tcs**

ESG

We have a robust transformation office and governance structure including 12 Community of Practices which is spearheaded by CEO and senior leadership. Identified 97 projects under various COPs and 27 projects have been completed and 30 project are in final stage.

Specific Energy and GHG Emissions:

- SEC has been reduced from 0.676 toe/tcs to 0.668 toe/tcs
- GHG emission intensity is reduced from **2.92** tCO_2/tcs to **2.83** tCO_2/tcs
- Various projects such as CML5 Motors optimisation, Caster exhaust fan automation, Commissioning of LT Capacitor banks, Thermal insulation work, VFD installation and other initiatives have led to power savings of **3,705 MWH** annually

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Production (kt)	1,386	1,285	8%
Pig iron	203	192	6%
Billet	30	26	15%
TMT bar	505	463	9%
Wire rod	436	407	7%
Ductile iron pipes	212	196	8%

Operations

Production of saleable product for the year was 1,386 kt, up by 8% Y-O-Y in line with increased hot metal due to debottlenecking of blast furnace and operational efficiencies.

Softening of costs in raw materials such as coking coal, coupled with various market dynamics, led to a decrease in the cost of sales while sales and market prices remained under pressure.

In FY 2023-24, our captive mines at Barbil produced 5.4 million tonnes and dispatches were 5 million tonnes, ensuring iron ore raw material security.

Our priority remains to enhance production of value-added products viz. Rebar, Wire Rod and DI Pipe and hence margins.

Regarding renewal of Consent to Operate (CTO) for the steel plant at Bokaro, Ministry of Environment, Forests and Climate Change (MoEF&CC) has issued a letter to forest department of Jharkhand to submit the complete compliance of the condition for further consideration. State has submitted the Compliance Report vide letter dated 17 November 2023 citing the progress and requesting to reconsider the FC Stage I revocation. Further updated letter is expected from the State by MOEF&CC with respect to the status.

For detailed information, please refer to 'Note 3(c) Significant accounting estimates and judgements' of the consolidated financial statements.

Prices

Production	FY 2023-24	FY 2022-23	% Change
Average steel price (US$ per tonne)	610	689	(11%)

Average sales realisation for the year was US$ 610 down by 11% Y-O-Y. Prices of iron and steel are influenced by several macro-economic factors. These include global economic scenarios, wars, duties on iron and steel products, supply chain destocking, Government expenditure on infrastructure, the emphasis on developmental projects, demand-supply dynamics, the Purchasing Managers' Index (PMI) in India and production and inventory levels across the globe especially China.

Unit costs

Production	FY 2023-24	FY 2022-23	% Change
Steel (US$ per tonne)	588	656	(10%)

Cost for the year was US$ 588 per tonne, down by 10% Y-O-Y primarily on account of decrease in coking coal prices during the reporting period, and other operational efficiencies which is partly offset higher bid premium paid on captive iron ore mines dispatches.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	8,300	7,852	6%
EBITDA	225	316	(29%)
EBITDA margin	3%	4%	-

Revenue for the year was ₹ 8,300 crore, up by 6% Y-O-Y, primarily due to higher volume which is getting offset due to lower realisation. EBITDA was ₹ 225 crore, down by 29% Y-O-Y.

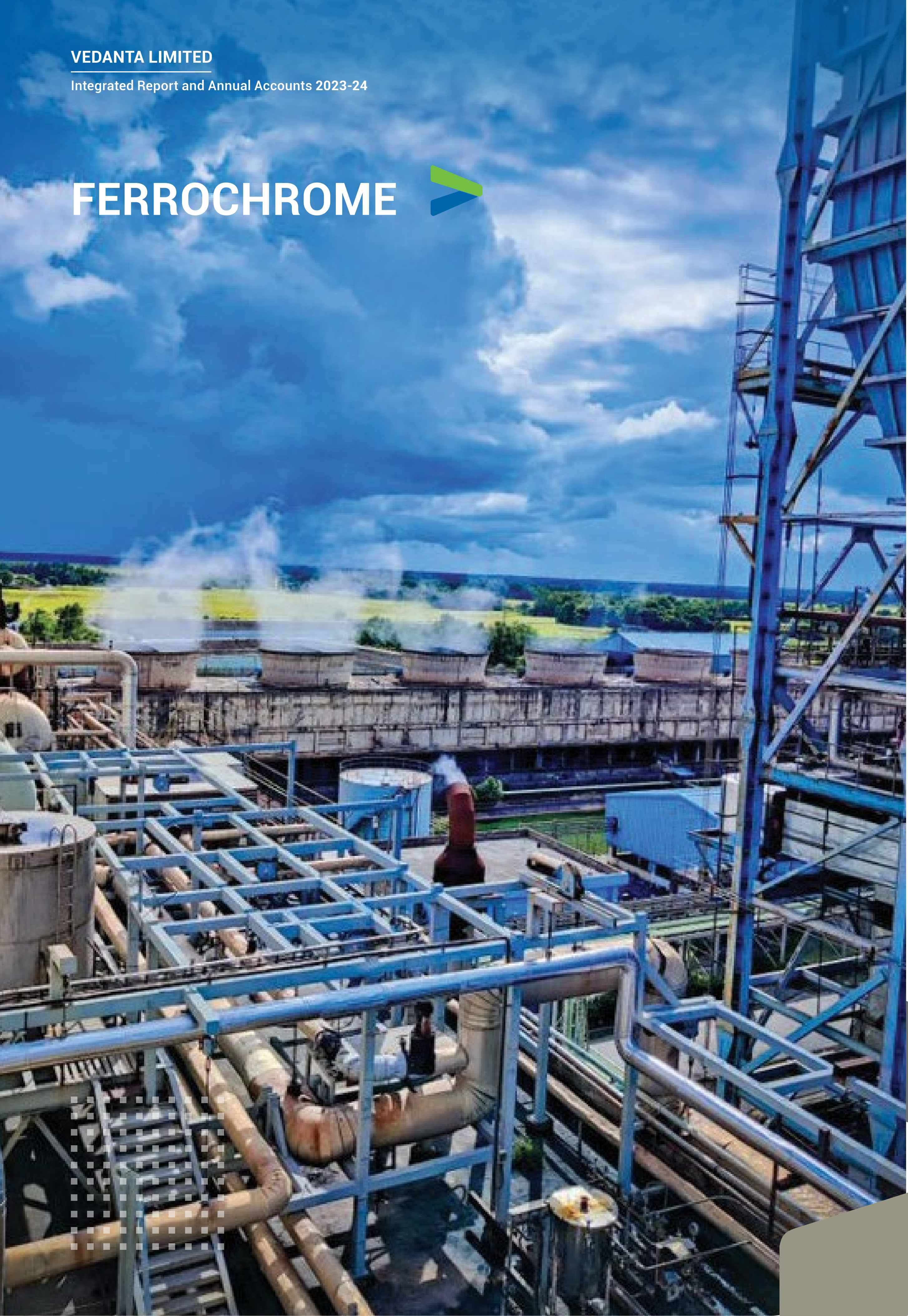
Strategic Priorities and Outlook

Steel demand is expected to be robust in India, buoyed by strong demand from key sectors (construction and housing, automobiles, power projects) and Government's push to ramp-up infrastructure spend in India. Hence, we prioritise to increase our hot metal production capacity from 1.7 MTPA to 3.5 MTPA by FY 2024-25 with a vision to become high-grade and low-cost steel producer with highest Environment, Health, and Safety standards.

The focus areas comprise:

- Innovation in Technology for sustainable operations/production
- Development of low-cost Capex products (Alloy Steel Segments, Flat Products, new DI plant) to capture market share
- Optimise and significantly reduce logistics cost over time
- Obtain clean 'Consent to Operate' and environmental clearances
- Ensure zero harm and zero discharge, fostering a culture of 24x7 safety culture

FERROCHROME



The year in brief

Ferro Alloys Corporation Limited or FACOR has a strong presence in the business of producing Ferro Alloys and owns a Ferro Chrome plant with capacity of 145 KTPA one operational Chrome mines and 100 MW of captive power plant.

In FY 2023-24, Ferrochrome ore production was 240 kt which is down by 17% Y-O-Y on account of statutory clearances for Kalarangiatta Mine. Ferro Chrome production was 80 kt up 18% up Y-O-Y being highest ever production since acquisition.

80 kt
Record saleable production

ESG Update

Occupational health and safety

- LTIFR for the year was 0.32 as compared to 0.13 in FY 2022-23. The total number of injuries reported in the year was significantly reduced by 35%. The reduction was driven by several safety awareness, investigation, and prevention initiatives. There has been greater management focus to bring a cultural change via felt leadership programmes, town halls and recognition for near-miss reporting
- Completion of Arc Flash assessment for all electrical panels at CCP and Power Plant
- AI-based Safety System "T-Pulse" which was already was installed in CCTV Cameras of 45 MVA Furnace was extended to 33 MVA Furnace at Charge Chrome Plant (CCP) to auto-detect Unsafe observations
- For Risk Management, EOT Cranes were provided with an Anti-Collison device and Audio-Visual Alarm
- Proximity sensors and Semi Fire Suppression System (SFSS) were installed at all Mines Dumpers and inhouse Machine Guarding work was done throughout all the Conveyors across all the units of mines
- We successfully eliminated a few critical jobs from line of fire by shifting the control levers of furnace charging, furnace door operations and furnace inspection by shifting the control levers and switches into the control room
- A safety training kiosk has been deployed inside the plant premises to provide standardised safety training to all stakeholders including drivers
- A lot of major initiatives and state-of-the-art technology implemented inside the mine premises in the areas of mine design, simulation, monitoring and data analysis. Live monitoring system have been implemented in slope monitoring, air quality monitoring and water quality monitoring. All the HEEMs are fully equipped with safety features suggested by the statutory body – Director General of Mines Safety (DGMS)

Environment

- Public Hearing has been conducted successfully for Patabali COB Plant for the capacity of 495 KTPA and for Ostapal Chromite Mine for Expansion of Opencast to Underground Mines with Enhanced Capacity of 1.5 million tonnes Chromite ROM from current Capacity of 0.24 million tonnes Chromite ROM Production. Public hearing has been conducted successfully at Charge Chrome Plant for expansion of Ferro Alloys Plant for High Carbon Ferro Chrome production from 140 KTPA (1 x 45 MVA, 1 x 33 MVA) to 440 KTPA (1x45 MVA, 1 x 33 MVA and 2 x 75 MVA) and 11,800 tonnes from Metal Recovery Plant along with new installation of Raw Material Handling Facility and 700 KTPA Pallet and Sinter Plant
- Environmental Clearance for Capacity 495 KTPA was obtained for Patabali COB Plant
- ETP (Effluent Treatment Plant) Sludge from Mines disposed timely to OSPCB authorised vendor
- Plastic waste disposal to authorised OSPCB Vendor for Ostapal and Kalarangiatta Chromite Mines and carried out Plastic waste collection drive to make single-use plastic-free plant premises
- Installation of IOT flowmeter in the intake well of Salandi River for Power Plant and Installation of IOT Flowmeter in the ETP (Effluent Treatment Plant) inlets of both Ostapal and Kalarangiatta Chromite Mines
- Installation of fugitive dust control system in Ground Hopper of the new furnace
- Installation of 7 KVA solar under progress at mines

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Ore Production (kt)	240	290	(17%)
Ferrochrome Production (kt)	80	67	18%
Ferrochrome Sales (kt)	78	67	16%
Power Generation (MU)	291	112	160%

At Mining division, ROM production from Ostapal Mine achieved 100% of EC limit, i.e. 240 kt and EC for enhanced production of 1.5 million tonnes per annum is in pipeline, and for that public hearing has been conducted successfully in December 2023. Production at Kalarangiatta mine has been temporarily halted due to statutory clearance issue, but full fledged production will commence again in FY 2024-25.

At Charge Chrome Plant (CCP), we recorded Ferrochrome metal volume of 80 kt in FY 2023-24. We have recorded highest ever monthly ferro chrome production of 8,907 mt in January 2024. We have reduced our specific ore consumption to 2.31 mt/mt against 2.40 mt/mt. Current year specific coke consumption is 560 Kg/mt against 591 Kg/mt last year.

At Power Plant, we recorded annual Power Generation of 291 MU in FY 2023-24.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	809	768	5%
EBITDA	115	149	(23%)
EBITDA margin	14%	19%	

Revenue for the year was ₹ 809 crore, up by 5% Y-O-Y, primarily due to higher sales volume partially offset by lower realisation. EBITDA for the year was ₹ 115 crore, down by 23% mainly due to higher cost of production because of purchase of ore from external sources and statutory clearance pending for Kalarangiatta Mines.

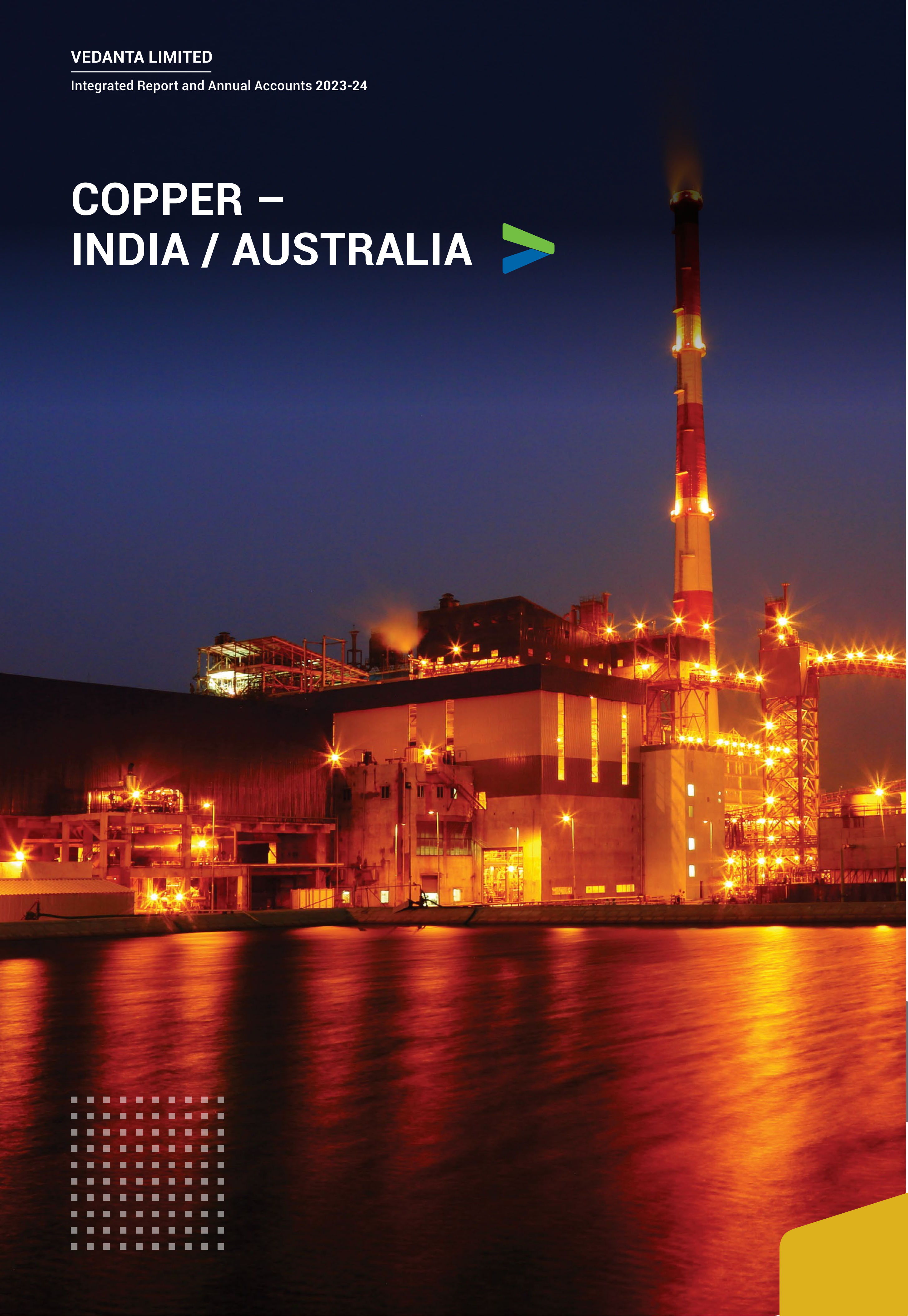
Awards and Accolades

- HR Association of India Awards 2023 in Employee Engagement and Experience Award
- CEE Power-gen ESG and Sustainability Award for water stewardship
- FAME Award in "Environment Management" in Diamond category
- 5 Awards in the category of Systematic Development, Environment Monitoring, Mineral Beneficiation, Resettlement and Rehabilitation and Overall Performance at MEMC Week Final Day Celebration

Strategic Priorities and Outlook

- Expansion of growth capex project of 300 KTPA Ferrochrome production
- Expansion of mines project of 1.5 MTPA
- Establishment of 600 KTPA concentrator plant
- Revival of Kalarangiatta and Kathpal mines
- 100 MW power generation and sale of additional power sale

COPPER – INDIA / AUSTRALIA



The year in brief

Silvassa operations continued to deliver 21% growth in sales volume on Y-O-Y basis and significant portion of which is catered to India's domestic copper market.

The copper smelter plant at Tuticorin was under shutdown for the whole of FY 2023-24. On 29 February 2024, the Supreme Court dismissed the Special Leave Petitions filed by the Company towards plant restart. The Company is evaluating legal remedies for sustainable restart of Tuticorin plant.

21%
Growth in sales volume

ESG Update

Occupational health and safety

The lost time injury frequency rate (LTIFR) was 0.39 in FY 2023-24 (FY 2023-23: 2.77). This year witnessed adoption of new technologies to enhance the workplace safety. Artificial Intelligence based camera system were installed for continuous monitoring of the workplace to detect any unsafe acts/conditions in the critical work areas. Initiated projects such as Air-Cooled helmets for employees working in hot work areas and fatigue monitoring devices for forklift drivers. Critical Risk Management (CRM). The safe work culture was promoted by the safety leadership with constant interaction with business partners and other stakeholders through trainings, campaigns, leadership walkthrough programmes, stand downs, committee meetings and R&R programmes.

The Silvassa copper operation was awarded with the British Safety Council – International Safety Award in the Merit Category as a testimony to our commitment of maintaining safe and healthy workplace.

Environment

Aligned with the Vedanta's vision to reach net zero emissions by 2050, Sterlite Copper has signed contract with M/s Serentica Renewable Power Limited for the supply of 16 MW with a potential to offset 64,535 tCO_2e per annum. Further, consumption of secondary copper in the process has seen significant reduction of approx. 39,000+ tCO_2e compared to primary sources. The Company has been constantly striving to achieve efficiency in terms of power consumption in process vis-à-vis – installation of IE4 motors phasing out lesser efficient motors. Emission reduction programmes in pipeline include implementation of E-Forklift and announcement of E-Vehicle Incentive programme for all eligible employees.

First-of-its-kind Digital Initiative

Copper business has launched "CuBert", the first AI chatbot in Base Metal Industry, to transform Customer Experience (CX) through digital innovation. CuBert enhances customer engagement with features like real-time order tracking, live LME & Forex rates, and access to booking details, quality certificates, ledger statements, and many more. By integrating real-time data and personalised interactions, CuBert has significantly improved user satisfaction and set a new industry standard in customer service.

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Production (kt)			
India – cathode	141	148	(5%)
Sales (kt)	198	164	21%

Operations

Copper production in Silvassa reduced by 5% to 141 kt owing to global copper blister shortage. However, sales have witnessed growth of 21% in terms of sales volume and realised highest sales after closure of the Tuticorin unit and improved operational efficiencies, debottlenecking and capability building initiatives carried across the plant, the year also marked remarkable growth in free cash flow.

In the matter of restart of Tuticorin operations, the Supreme Court has dismissed Special Leave Petitions filed by the Company and refused to grant it permission to reopen

Tuticorin smelting operations. The Company is evaluating legal remedies for sustainable restart of Tuticorin plant.

For detailed information, please refer to 'Note 3(c) Significant accounting estimates and judgements' of the consolidated financial statements.

Prices

Production	FY 2023-24	FY 2022-23	% Change
Average LME cash settlement prices (US$ per tonne)	8,353	8,530	(2%)

Average LME copper prices reduced by 2% compared with FY 2022-23 predominantly due to lower than expected demand in China & Higher US Fed Interest rates.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	19,730	17,491	13%
EBITDA	(69)	(4)	-
EBITDA margin	-	-	-

Revenue for the year was ₹ 19,730 crore, up by 13%. The increase in revenue was mainly due to higher volume, favourable exchange rate partially offset by lower Copper LME prices. EBITDA for the year was ₹ (69) crore, mainly on account of supply shocks from global blister shortage.

Strategic Priorities and Outlook

Over the following year, our focus and priorities will be to:

- Improving operating efficiencies, increasing Sales Margin, reducing our cost profile
- Upgrade technology and digitalisation to ensure high-quality products and services that sustain market leadership and surpass customer expectations
- Continuous debottlenecking and upgrading our processing capacities for increased throughput

NICOMET

The year in brief

Indian market for Nickel sulphate and Nickel metal is driven by sectors like stainless steel and electroplating. Further, nickel is also a key component of electric vehicles which is fuelling the growth.

Currently, there is total 44 KTPA domestic market of primary Nickel metal and 2 KTPA domestic market. Nickel market in India is expected to grow at the CAGR of 4.7%. Our metal production is mostly sold in the domestic market where our market share is currently close to 7.5%. We have also captured 35% of total Nickel sulphate domestic market. Further, Nickel sulphate is exported to the EV battery makers in South Korea, Japan and China. We have also signed export LTC with South Korean EV battery manufacturer.

ESG

Occupational health & safety

We believe every incident can be prevented.

The lost time injury frequency rate (LTIFR) is 6.92 in FY 2023-24 vis-à-vis 2.91 in FY 2022-23. To improve safety at workplace, we promote felt leadership culture with involvement of senior leaders for strengthening our safety system.

Safety stand-downs were conducted to communicate the learnings from safety incidents across the group. Our safety leadership regularly engages with the on-ground team to improve behaviour-based safety culture.

Production performance

Production	FY 2023-24	FY 2022-23	% Change
Production (mt)			
Nickel	2,702	681	-
Sales (mt)	2,911	194	-

Prices

(US$ per tonne)

Production	FY 2023-24	FY 2022-23	% Change
Average LME CSP	19,083	25,628	(26%)

Nickel CSP for the year was US$ 19,083 per tonne, down by 26% mainly on account of global market rebalancing.

Financial performance

(₹ crore, unless stated)

Particulars	FY 2023-24	FY 2022-23	% change
Revenue	455	42	-
EBITDA	(32)	(23)	
EBITDA margin	-	-	

Projects

With the view of rising Nickel demand due to upsurge in the EV battery markets, outlook of the global Nickel demand is very much positive. We have planned on enhancing the plant capacity production in following two phases:

- In the first phase, debottlenecking is under progress in the existing plant, to reach capacity of 10 KTPA. This will be supported with plant automation, modernisation and ensure optimum utilisation of assets
- The second phase of capacity enhancement will be setting up a new 'state-of-the-art' Nickel plant with the capacity of 50 KTPA to cater the Indian domestic demand in line with our Chairman's vision – "Desh Ki Zarooraton Ke Liye"

PORT BUSINESS

Vizag General Cargo Berth (VGCB)

The volumes handled increased by 9% Y-O-Y and the despatch volume increased by 9% Y-O-Y. 23% of the total volumes handled represents Multi-cargo (i.e., other than coal) under supplementary agreement signed with Visakhapatnam Port Authority (VPA).