KPMG

Time to act now

ESG in Metals and Mining

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Contents

Overview

Businesses engaged in the extraction and refinement of natural resources face a new dilemma. As developing countries modernise quickly and as some industries, such as solar photovoltaics (PV), electric cars, and batteries gain traction, there is a growing need for various metals and minerals globally. Given the quantum of supply of raw materials required to develop these emerging industries, the metals and mining sector will be essential for the energy transition. At the same time, this sector is highly carbon and energy intensive. Companies need to grow while reducing their emissions!

It's a challenging ask....

Addressing the threat posed by climate change will need significant effort from various sectors across the world, including metals and mining. Global CO_2 levels have increased from just 196 million tonnes in 1850 to 37 billion tonnes in 2022[1], now reaching dangerous levels. These rapidly increasing CO_2 emissions that are released into the atmosphere each year, need immediate action if we are to reach the objective of the Paris Agreement, which is to limit global warming to 2°C. In particular, the metals and mining sector needs to focus on finding solutions. Although a lot of businesses are moving in the right direction by declaring net zero roadmaps, the reduction of carbon emissions required to keep global warming below 2°C needs much more to move beyond strategising. This objective can be achieved by a variety of solutions, such as optimising operating regimes and utilising new technologies across mining, beneficiation and smelting of minerals, increased use of renewable energy sources, and building new business models based on circularity. Metals and mining companies have to act bold now, embrace both growth and decarbonisation and institutionalise ESG.

The report looks at the crucial juncture of the metals and mining sector in India and lays out the fundamentals that would help build the roadmap ahead.

01

Metals and mining sector has never been more relevant

The relevance of the metals and mining sector has never been greater

As per the Paris agreement of 2015, 196 countries committed to limit global warming to 1.5°C and to restrict the rise in global average temperature 'well below 2°C'. These targets of 1.5°C and 2°C are now the benchmarks by which our global efforts are evaluated. In 2022, the global CO_2 emissions were 37 billion tonnes[1] and so we can only emit 250 billion tonnes[2] of CO_2 if we want to have a 50 per cent probability of remaining below 1.5°C. That just accounts for the six years of our current emissions. Currently, the world is not on course to accomplish this.

India has a different set of challenges as it is one of the world's fastest growing carbon emitting countries in the world[1]. According to IMF's projections, India is likely to become a USD5 trillion economy by 2027[3]. To meet its development goals, the Indian economy must continue to advance. In the short run, it is expected that India's energy requirements and thereby emissions are likely to rise before they start tapering off. Yet, India has made a firm commitment at the Glasgow Summit to be net zero by 2070[4].

Think of the metals and mining and it is easy to picture the sector as a mainstay of the economy. Traditionally ferrous and non-ferrous metals have been consumed in sectors like construction, infrastructure, railways, automobiles and process plants – ones that are drivers of an economy like India and contribute to growth across manufacturing, services and agriculture. As shown in figure 1, there is a high correlation between the sector and overall economic growth.

Within the sector iron and steel, aluminium, and coal value chains are the key contributors of emissions in India because of the high production volumes and associated high emission intensities. Considering this, these value chains are essentially of prime focus in this document for articulating the ESG imperatives for the sector.

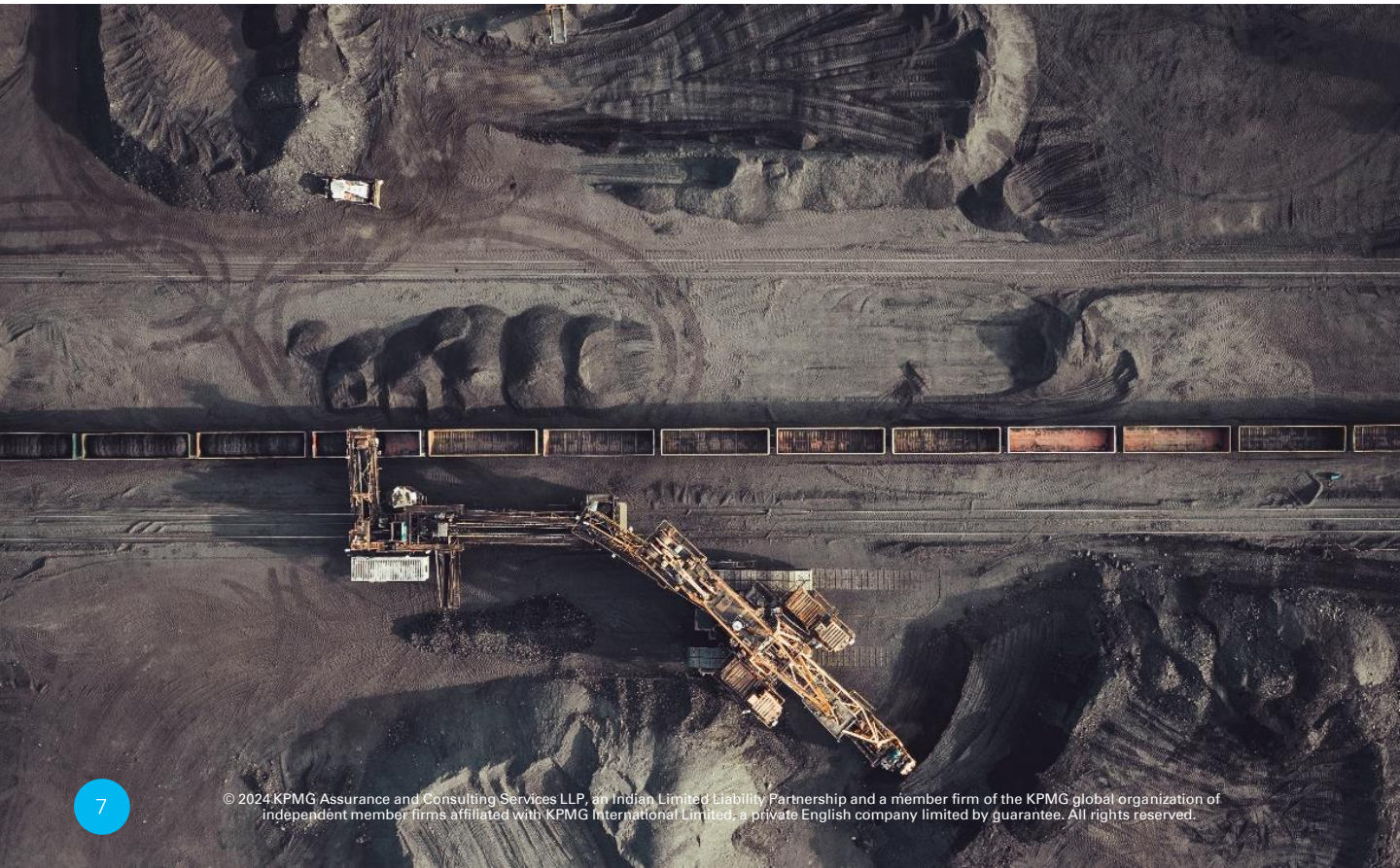
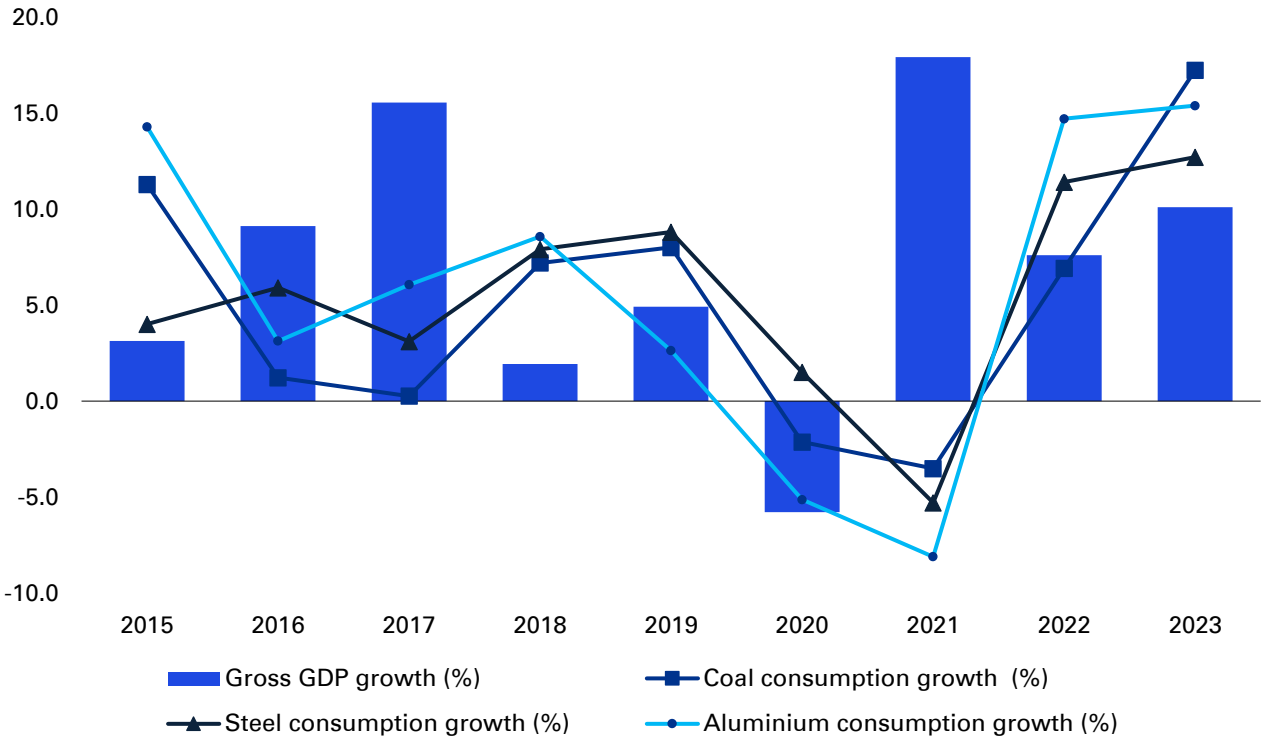


Figure 1: India's gross GDP growth vs growth of coal, steel, aluminium consumption in India[5,6,7,8,9,10,11]



The net zero transition propelled by increased mineral intensity

In addition to the conventional growth drivers, the metals and mineral consumption is also going to be driven by net zero regime transitions. The world's greenhouse gas emissions must be reduced by half by 2030 and reach net zero by 2050, to prevent the worst effects of climate change. Sustainable business plans that are compatible with a 1.5°C future are being adopted as decision-makers realise that climate risks are here to stay. This transition, however, will need six times more mineral inputs than today as many of the new technologies enabling the transition are material intensive.

The requirement of several metal will intensify, such as copper for electrification, nickel, lithium and cobalt for batteries, tellurium for solar panels, and neodymium for the permanent magnets that are used both in wind power generation and EVs. Some commodities, steel in particular, will also play an enabling role across technologies requiring additional infrastructure. We have shown below, select examples that illustrate how efforts towards net zero transitions are triggering technological changes requiring higher metal intensity.

Example 1: Automobile

As the world is rapidly moving towards electric vehicles, the requirement of metals like Copper, Nickel, Lithium, Manganese, Cobalt and Graphite to produce these vehicles will also increase rapidly as shown in figure 2.

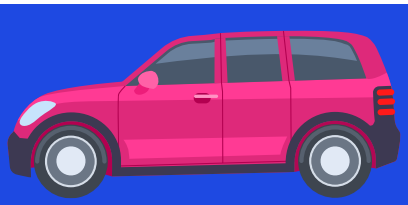
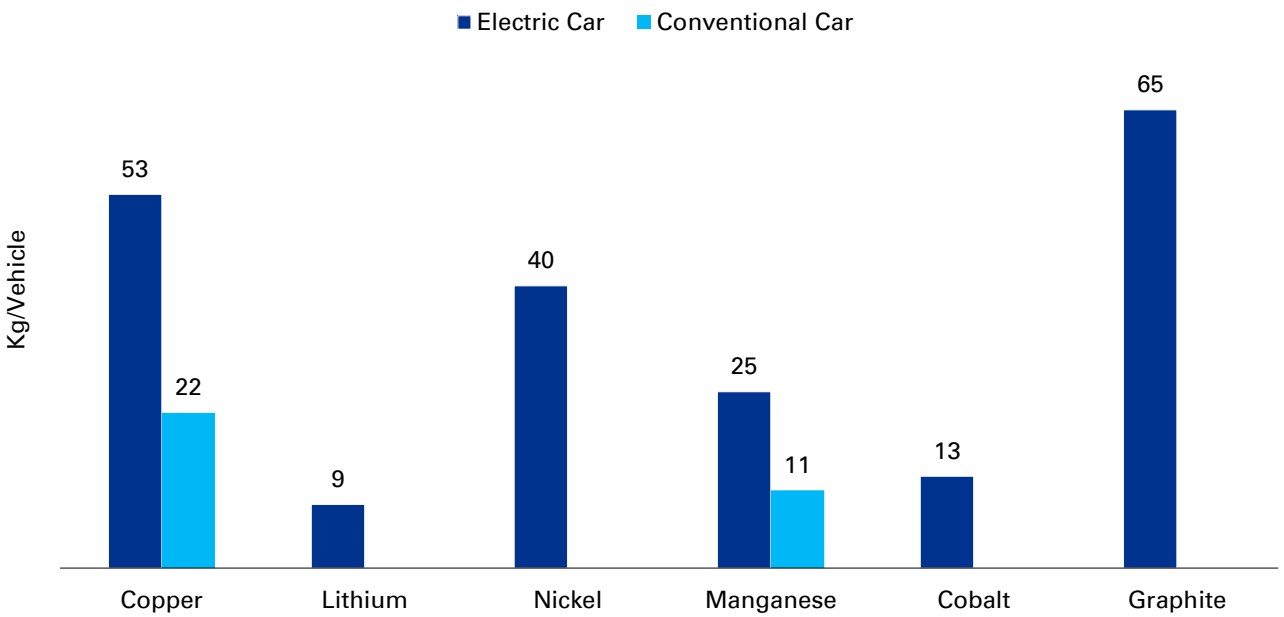


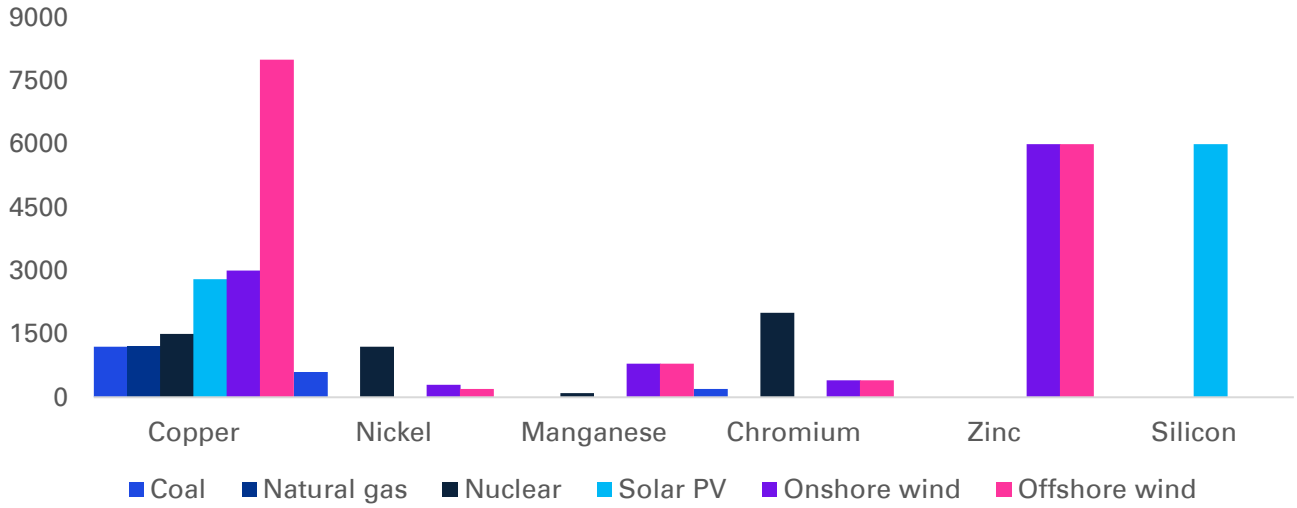
Figure 2: Metal quantity required in vehicles[12]



Example 2: Power Generation

Emissions generated from wind and solar energy are low as compared to energy generated from coal and gas-fired plants. As India is moving towards more clean energy, the quantity of minerals required to produce this will also increase as shown in figure 3.

Figure 3: Minerals used in the generation of clean energy[12]



The derived demand of a high growth economy (as is the case with India) and the need for energy transition are ushering in an era of high growth for metals and mining, manifested in the large capacity expansions being witnessed in the country.

The metals and mining sector expects significant capacity expansion to meet growing demand

India is poised to witness a significant expansion of capacity for all major metals and minerals producers in sync with the rising demand fueled by sectors like infrastructure, automotive, consumer durables, etc. Zinc is expected to outpace global demand growth (2 per cent Compound annual growth rate (CAGR)) with a growth rate of 3-5 per cent[13]. Similarly, 20 per cent of global copper demand growth is projected to emanate from India and Southeast Asian countries between 2023 and 2028[14]. Major metals and minerals, such as Iron, steel, aluminum, and coal are all set to see rapid growth as is highlighted below.

Steel

The demand of automobiles and construction is expected to increase in India in the coming years which will increase the demand of steel required. The national steel policy envisages increased crude steel capacity to be 300 million tonnes by 2030 as shown in figure 4.

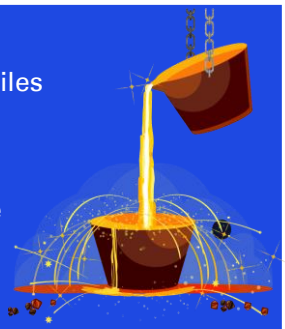


Figure 4: India's steel capacity expansion (million tonnes)[15]

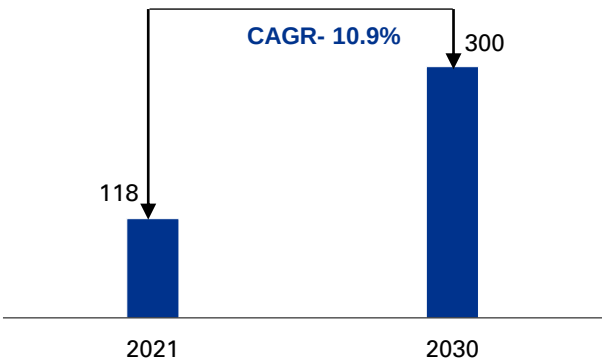
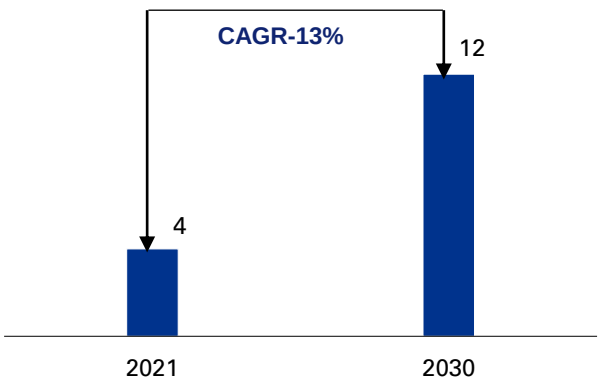


Figure 5: India's aluminium capacity expansion (million tonnes)[16]



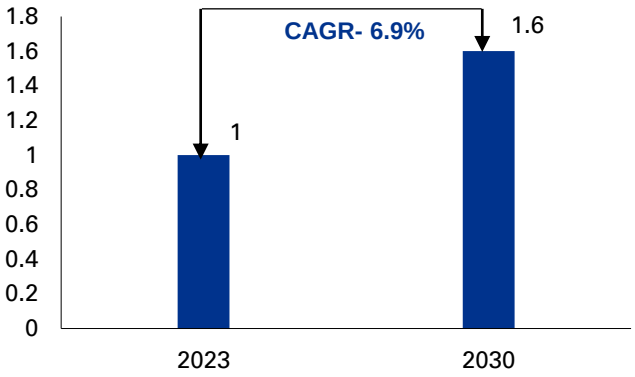
Aluminium

With the expected growth of automotive, construction, and machinery industries along with recent increasing applications in electrical, consumer goods industries in India, aluminium capacity is expected to rapidly increase to 12 million tonnes by 2030 as shown in figure 5.

Coal

To keep up with the demand in electricity, use of coal as a source of energy is expected to keep on increasing for next 10-15 years till renewable capacity additions ramp up sufficiently. Accordingly, driven by recent policy initiatives like commercial mining in captive blocks, auction of increasing number of coal blocks, the coal production is expected to increase to 1.6 billion tonnes by 2030 as shown in figure 6.

Figure 6: India's coal production expansion (billion tonnes)[17]



02

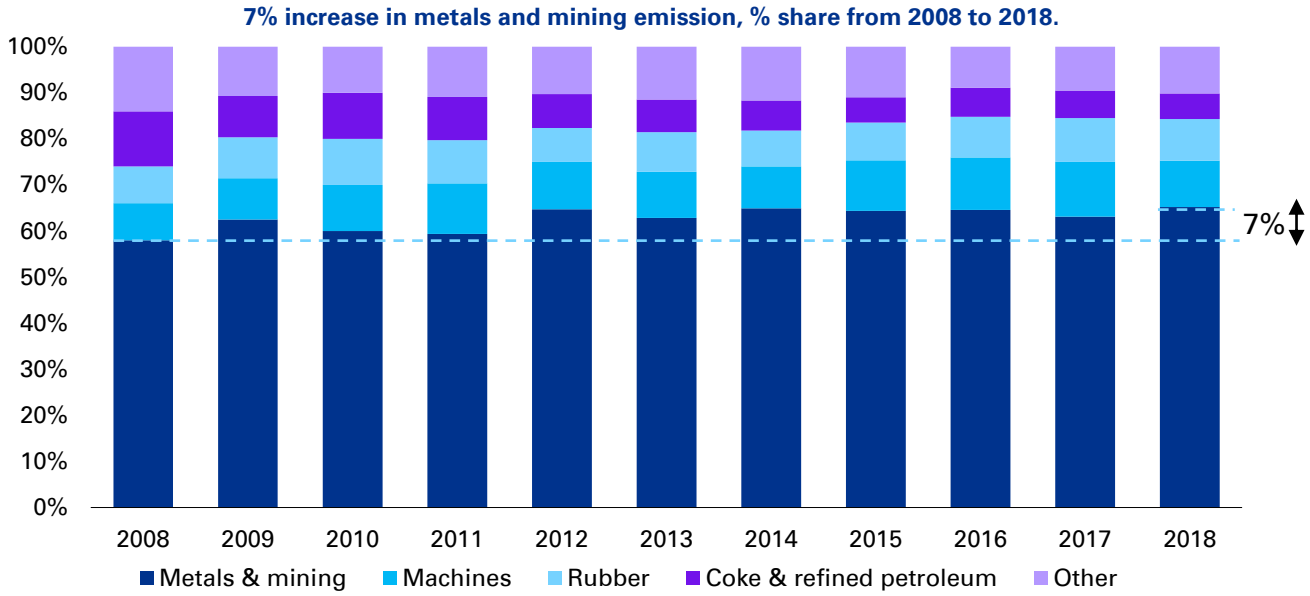
Bold actions required for net zero aspirations

Given the greater relevance, the decarbonisation plan for the sector is more critical than ever. It also underlines the need for India's mining and metal players to be bold in ensuring that the sector is a positive contributor and not a drag to the country's net zero ambitions.

01 Large carbon emitter

The metals and mining sector contributes the maximum emissions across sectors in India and its share of emissions has grown over the last years. Please refer to figure 7.

Figure 7: Industrial sector emissions by sub-sector[18]



02 High carbon intensity vs global peers

Indian majors lag behind their global peers in reducing emission intensity (see figures 8 and 9).

Figure 8: Crude steel carbon intensity (FY 2023)[19]

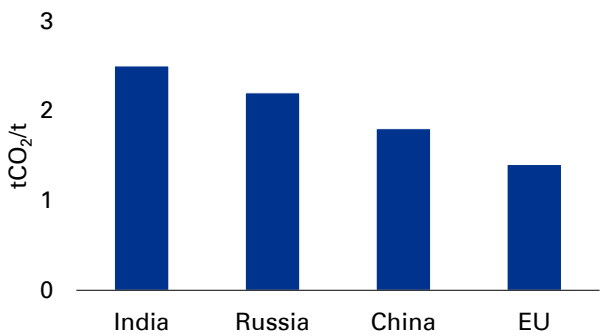
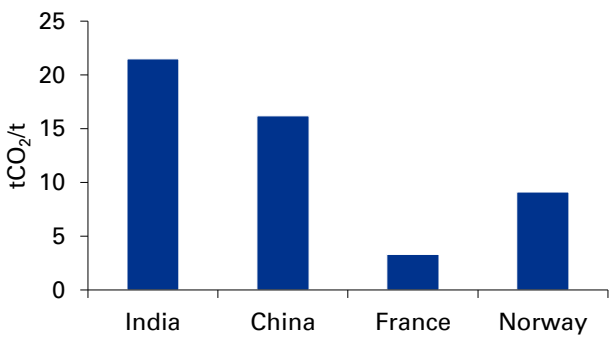


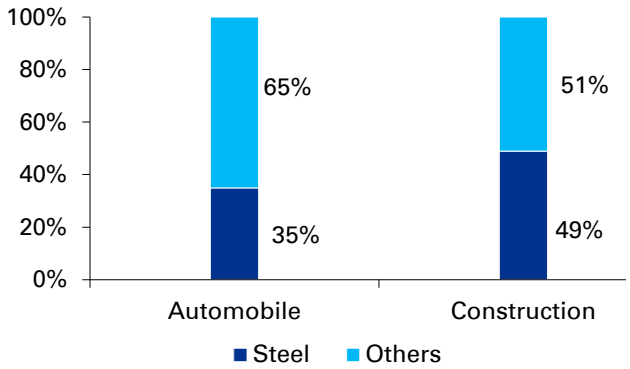
Figure 9: Aluminum carbon intensity (CY 2022)[20]



03 High scope 3 emissions for end-use sectors

Higher emission intensity of the steel industry translates to higher embodied scope 3 emissions for the end-use sectors such as automobile and construction, as presented in figure 10.

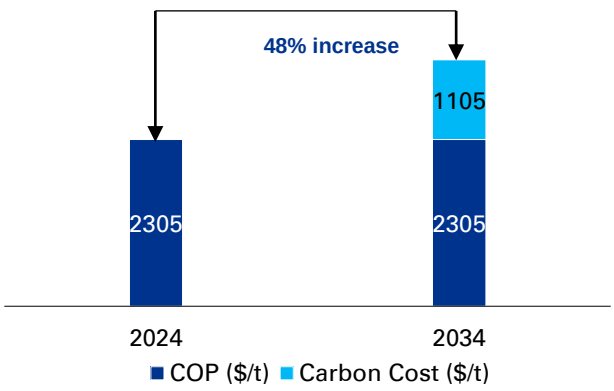
Figure 10: Globally key end-use sectors; emission % from steel[21]



04 Stricter regulations demand urgent action

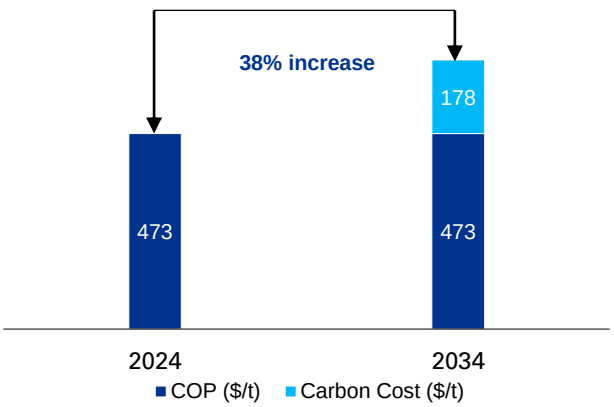
The policy and regulatory regime is getting stricter with the likes of CBAM being enforceable, making it tougher to access international markets as shown in figures 11 and 12.

Figure 11: Impact of CBAM in India: Cost increase in aluminium for export to EU[22]



Note- Constant EU ETS prices

Figure 12: Impact of CBAM in India: Cost increase in steel for export to EU[22]



Note- Constant EU ETS prices

05 Disruptive future trajectory required

In the last 10 years, very less improvement has happened. As per the analysis of select metals and mining majors, as shown in figures 13 and 14, in order to attain net zero commitments, Indian majors will need to drastically reduce their emission intensity over the next 20 to 25 years compared to what has been done in the last three years.

Figure 13: Indian steel producers[23]

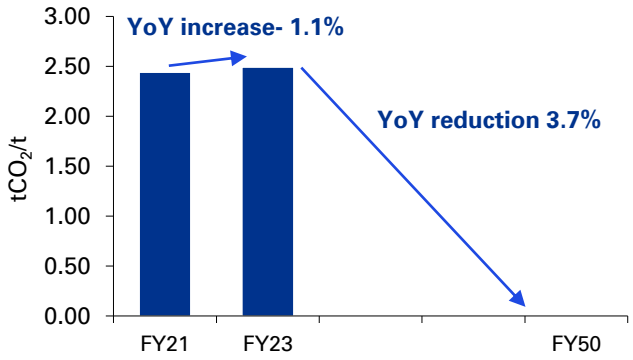
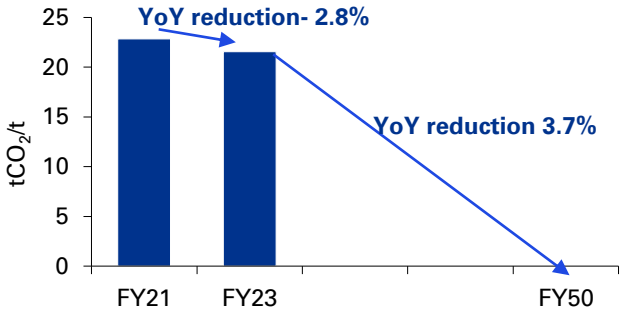


Figure 14: Indian aluminium producers[23]



ESG initiatives by top Indian metal and mining companies

The sector's direct impact on the environment includes large energy consumption and associated GHG emissions, land erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water. Indirectly it impacts the environment through transportation and other supply chain processes. Further, the construction of infrastructure for extraction and processing has its own environmental impacts, including the production of greenhouse gases; these potential impacts will only increase as the sector looks to expand.

Regulators, investors, and consumers are putting more and more pressure on the sector to decarbonise operations. Due to very real financial consequences, the metals and mining sector has seen a progressive hardening of environmental regulations. Tighter licensing regulations have the potential to (and they frequently do) cause feasible ventures to be postponed or cancelled.

Given the vast spectrum of operations, creating an ESG roadmap can look complicated. India's top metals and mining companies are prioritising six areas for immediate impact and scale.

Top ESG issues for the metals and mining sector

Environment	Social	Governance
Ecosystem services, biodiversity, air, noise, energy, mine waste and tailings, water management climate change (carbon footprint, greenhouse gas), hazardous materials, mine closure	Human rights, land use, resettling, labour practices, vulnerable groups, gender, health and safety of workers and the community, artisanal miners, mine closure/ after usage	Legal compliance, ethics, anti-bribery and corruption (ABC), transparency

1 ESG baseline

Creating an ESG baseline helps companies determine where their biggest impact levers are in social and environmental areas. As the first step, targeting these areas that are under direct control helps build operational efficiencies and reduce costs.

Example: A major steel player successfully recycled 12,000 tonnes of used refractories and has been able to reduce 200 metric tonnes of CO_2 equivalent in FY23 through the refurbishment of critical imported spares in India.

2 Energy

A significant part of mining operations is energy. Indian companies in metals and mining are increasing focus on energy efficiency and switching to renewable energy.

Example: A major company became India's largest industrial consumer of renewable energy, with over 2 billion units of renewable energy.

3 Mine reclamation

While there is only a small portion of the land resources that are directly mined, land is used at every stage of the mining lifecycle. As soil and plants are lost during mining, the destruction of natural ecosystems cannot be averted. However, with planning and methodically outlining goals and objectives, restoration of mine lands can aid in the remodeling of ecosystems.

Example: Over the past 20 years, a steel manufacturer has transformed 56 acres of waste land into a lush spread of mangroves. These mangroves wetlands have stored more than 2,000 tonnes of carbon and sequestered nearly 7,500 TCO_2e of greenhouse gases from the atmosphere.

4 Reducing pollutants and recycling waste

An important step lies in reducing pollutants and recycling waste generated during mining. Pollutants includes solid, liquid, and air particles, which can vary significantly in their composition and potential for environmental contamination. Most companies recycle both in-process waste and by-products generated during processing.

Example: A major steel company is setting up a 0.75 million tonnes Per Annum Electric Arc Furnace (TPA EAF) based plant at an investment of INR2,600 crore to make steel by recycling scrap.

5 Water management

Companies are making efforts in reducing overall water usage and restricting use of underground water by reducing consumption per unit of metal production.

Example: A major steel company has all its steel plants operating under the Zero Liquid Discharge (ZLD) policy, wherein it recycles and reuses all wastewater within the plant.

6 Positive social impact

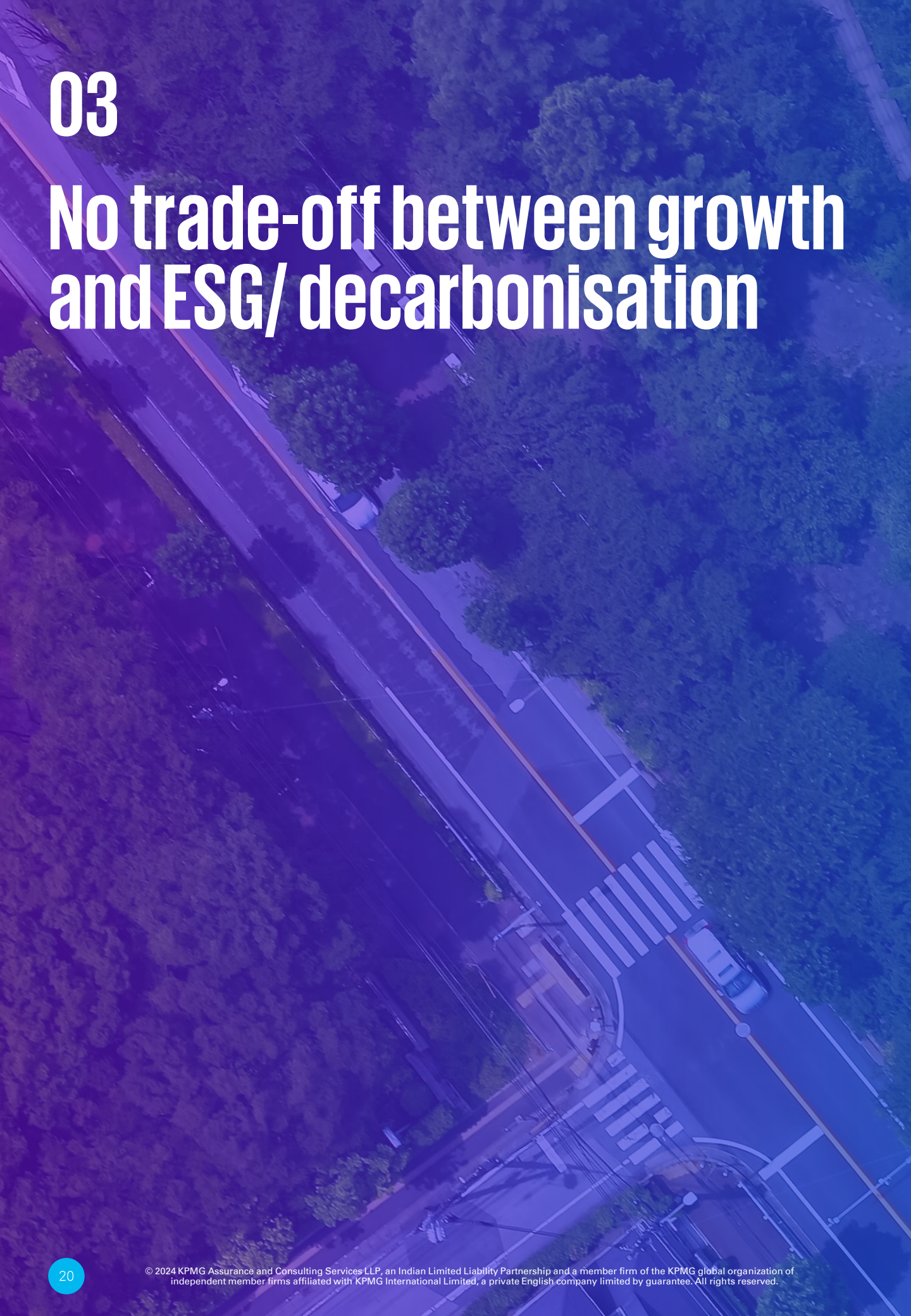
Companies realise that positive social impact is essential in ensuring their licence to operate. Hence most of them give significant importance to health, safety, and education in communities near mined lands.

Example: A company enhanced its workplace safety by introducing an Extended Reality Zone, which helps to fill the gap of virtual reality-based training for employees in high-risk activities. This aids them in sharpening their skills and reflexes within safe and controlled settings.

1. The metals and mining sector acts as a key contributor to overall emissions in India.
2. Indian companies in the sector lag their peers from other countries.
3. Stricter regulations to access foreign markets and stated net zero goals of Indian producers require immediate aggressive actions and a disruptive future trajectory for emissions reduction.
4. While few initiatives have started the journey towards a green future over the years, a lot more needs to be done to meet the industry level goals.

03

No trade-off between growth and ESG/ decarbonisation



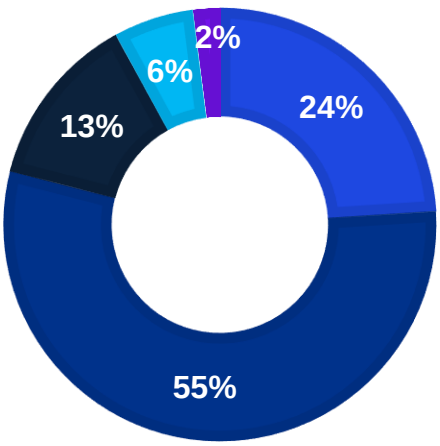
A large majority of global C-Suite executives think that demand growth can be addressed along with ESG responsibility

As industries across sectors are trying to pivot towards net zero, we believe that such ESG and decarbonisation drive can coexist with growth, without any necessary trade-offs. This was amply illustrated in a survey conducted by KPMG International among more than 400 C-Suite executives and board members across the globe, as a part of the published report titled, "Global Mining and Metal Outlook 2023".

The responses received throw numerous insights on prospects and challenges as perceived by global executives, ranging from overwhelming optimism that net zero can be realistically achieved in the metal and mining sector, to expressing concerns on immediate impact on operations arising out of tougher government scrutiny of ESG and net zero performance.

The critical takeaway from this survey is that nearly 80 per cent were confident that there is no trade-off between growth and decarbonisation. A majority of responders also agree that the introduction of new technology and innovations will be the cornerstone drivers of changes that will characterise this new phase in the metal and mining sector.

How confident are you that metals and mining industry can meet growing global demand without compromising its own ESG and net zero objectives?[24]



79%
High Confidence

8%
Low Confidence

13%
Neutral View

Very Confident | Confident | Neutral | Not Confident | Not at All Confident

What are the key factors affecting your level of confidence that the metals and mining industry can meet growing global demand without compromising its own ESG and net zero objectives?[24]

Our ESG and net zero objectives take into account fully our company's forecasts of the future growth in supply

45%

My company has deliberately set ESG and net zero objectives that are less stringent than our peers so that we won't have to compromise hitting production targets

41%

My company has only just begun to integrate its ESG and net zero objectives into the long-term enterprise strategy

34%

My company has integrated its ESG and net zero objectives into long-term enterprise strategy

28%

It is difficult to measure the progress my company is making towards ESG and net zero objectives

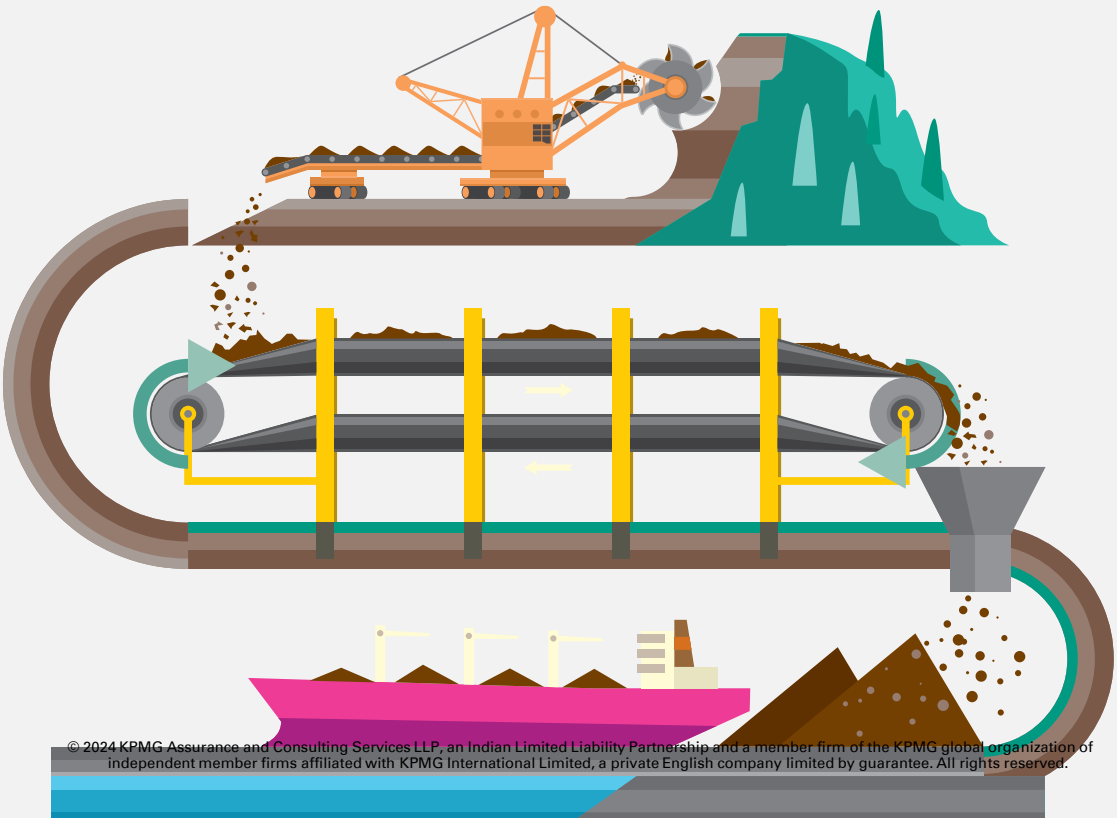
26%

My company lacks the labour and money to implement ESG and net zero goals

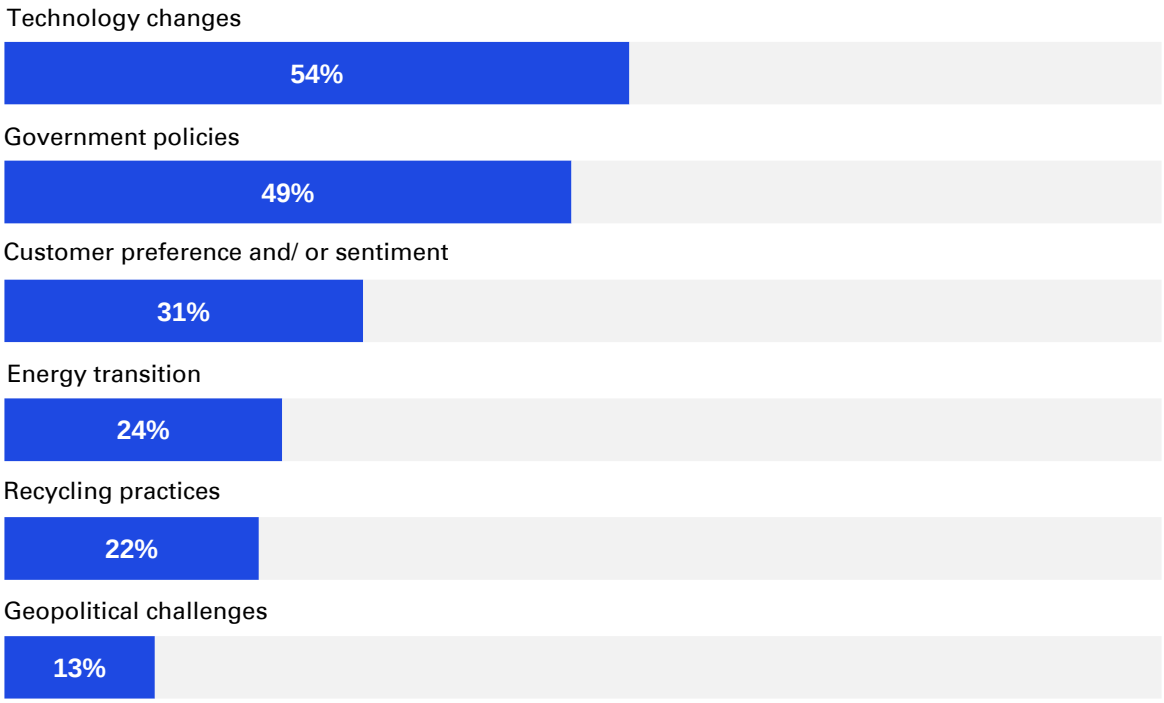
9%

We are not using appropriate technology tools to reach our goals

4%



What are the important factors affecting your company's range of demand projections over the next five years?[24]



04

Embracing disruption is the way forward

Every significant company that is a member of the International Council on Mining and Metals (ICMM) has pledged to achieve net zero carbon emissions by 2050 or before. Majority of them also include progress goals, such as 30 per cent reduction by 2030. However, compared to what has been accomplished till now, the industry needs to accomplish far more.

Organisations can achieve their net zero targets through two fundamental dimensions – 1) Achieve best operating regime and 2) Disruptive technology changes. While achieving best operating regime is possible through continuous incremental improvements in efficiencies and clean energy substitutions, drastic reduction in emissions and net zero achievement, can only be brought about by disruptive changes in technology adoption and business models. Hence, greater focus is necessary for conceptualisation and concretisation of disruptive ideas and initiatives for decarbonisation.

The figure below illustrates the above explained framework.

A

Achieve Best Operating Regime

Achieve energy efficiency in operations

- Improve heating efficiency by use of loopers, sensible heat metallurgical slabs, golden regime of operating parameters etc.
- Minimize heat loss through measures like waste gas recycling, direct casting and rolling etc.

Clean energy substitution

- Use of natural gas/H2 rich carbon cycle in blast furnaces for reduction of oxide ores
- Use of green electricity in operations like pre-heating, vehicles and equipment etc.
- Use of Natural Gas (NG), repurposed bio-fuel etc. as alternates to carbon

B

Disruptive Changes

Technology disruptions

- Use of fuel-efficient technologies like COURSE 50, BRIDGE, FINEX etc. for enhanced use of Hydrogen (H2), coke oven gas, CO_2 separation etc.
- Use of advanced furnace & carbon capture technologies like Hydrogen Direct Reduction (H-DRI), Carbon Capture Utilisation & Storage (CCUS), smelting reduction with Carbon Capture And Storage (CCS), etc.

Operating model disruptions

- Use of greener inputs: Use of green certified scraps, procurement from vendors with higher ESG ratings, etc.
- Adopt circularity in outputs: Re-use/recycle byproducts like slag & process gases, collect, segregate & reuse process scraps & wastes

A. Achieve best operating regime

This is a state where the emissions are reduced to the minimum possible as defined by the hard constraints of operations in metals and by-products production processes, mining operations and logistics operations. This includes reducing scope 1 and 2 emissions and energy substitution for both power and heating options.

Below are select initiatives across the metals and mining production value chain that organisations are adopting to improve operating regime to reduce emission intensity:

1. Coal mining value chain:

- Fuel consumption optimisation of Heavy Earth Moving Machinery (HEMMs) in loading and hauling operations through real time monitoring of performance, optimised planning and scheduling, operator training to enable efficient operation of equipment and timely maintenance.
- Increased utilisation of conveyors for material movement at mine pit and slurry pipelines for long distances wherever possible to minimize road-based material movement. These options also provide lower Total Cost of Ownership (TCO) for large, long-life mines.
- Real-time monitoring and optimisation of operator setting during crushing and grinding operations can significantly reduce specific energy consumption.
- Switching to liquid sustainable fuels (biofuels or synfuels) and electrification of mining haulage and transportation.

2. Steel value chain:

- Optimisation of reductant and energy consumption like coke, coal, natural gas in blast furnace, Direct Reduced Iron (DRI) Furnace and preheating/reheating operations in rolling mills through near real time operator recommendation capability for improved operational control and optimisation of process cycle times across Blast Furnace – Basic Oxygen Furnace (BF-BOF) and Direct Reduced Iron Electric Arc Furnace (DRI-EAF) routes of production. Likewise, reduction of specific consumption of coal through optimised coal blending for boiler feed at thermal power plant is a key focus area.
- Cleaner energy alternatives like wind, solar and use of coke oven gases, H2, natural gases, etc., as partial substitutes for reduction processes.
- Focused refurbishment and reuse initiatives across various product categories in association with Original Equipment Manufacturer (OEMs), for example for conveyors, bearings, motors, gearboxes, tyres, valves to name a few have helped increase life span, and reduce cost and associated emissions.

While organisations continue to adopt initiatives around improved operating regimes to reduce carbon emissions to achieve the net zero aspirations, there is an evident need to develop disruptive technologies and operating models by the ecosystem participants.

B. Disruptive changes

Disruptive changes can further reduce the carbon emission intensity through changes in operating model or adopting disruptive technologies.

1. Technology disruptions can aid in reducing emission levels related to core operations across the value chain. Here are some initiatives:
    - **Coal mining value chain:** Possible long-term options in changing drivetrains are being explored for mining haulage with both hydrogen fuel cells and electric vehicles. Compressed natural gas (CNG) based trucks have found adoption for on-road applications and can be considered by the ecosystem for short to medium term considering an established supply chain for the fuel in certain parts of the country.
    - **Steel value chain:** Companies have started using CCUS plants to address hard to abate or unavoidable emissions of their plant. Significant investments into R&D for efficiency improvement of CCUS is underway with the objective to enable cost-effective adoption at scale.
2. Operating model disruptions would entail usage of recycled metals and recovering metals from residues thereby improving efficiency and reducing carbon emissions. Here are some initiatives:
    - **Coal mining value chain:** Adopting measures like recycling water and reusing waste materials, beneficiation of tailings, recovery of mineral from low grade / rejected ore are key focus areas for mining companies and technology OEMs.
    - **Steel value chain:** There has been an increased focus on initiatives by steel players to increase scrap ratio in BOF, upcoming capacity additions seeing increasing focus on DRI-EAF route and steel circularity through formalisation of scrap collection supply chain and establishing processing centers for scrap suitable for use for steel production. In a circular metal economy usage of scraps and recycle/ reuse of By-products and Wastes is greatly enhanced along with procurement of green certified inputs from vendor partners.

For organisations to achieve their net zero targets they need to start focusing on decarbonisation initiatives and a potential roadmap as mentioned below:

1. **Achieving best operating regime: These techniques can help reduce emissions in the existing setup to a certain threshold.**
2. **Disruptive changes: New disruptive technologies and operating models to be adopted to achieve net zero.**

While incremental improvements are possible through Best Operating Regime (BAT), drastic reductions to achieve net zero targets is only possible through conceptualisation and concretisation of disruptive ideas and initiatives.

An illustration for steel is shown below to further explain

Change in operating regime and adoption of disruptive technologies is necessary for reducing carbon emission intensity. Illustration for Steel for the two key production routes is below:[25,26]

Steel: By production via BF-BOF route, emission intensity is ~1.9-2.5 tCO_2/tcs while Direct Reduced Iron (DRI) based Electric Arc Furnace (EAF) has emission intensity is ~1.4 tCO_2/tcs. Various operating initiatives and disruptive technologies are deployed in both routes to reduce emission intensity.

BF-BOF production route

Illustrative

Operating regime Improvement → **Disruptive technology**

Blast Furnace – Basic Oxygen Furnace (BF-BOF)	BF-BOF with Best Available Technology (BAT)	BF-BOF with Biomass	BF-BOF with Carbon Capture and Storage (CCS)
~1.9 tCO_2/tcs	**~1.6 tCO_2/tcs**	**~1.4 tCO_2/tcs**	**~0.9 tCO_2/tcs**
60 per cent of integrated steelworks use coal & coke to reduce iron ore for steel making	Process efficiency can improve by 15-25 per cent, within the current BF-BOF setup	Replacing fossil fuel injection with biofuels can reduce GHG emissions of steelmaking by up to 25-40 per cent	Adopts CCS in (Best Availabe Technology BF-BOF to further reduce emissions intensity by capturing carbon. The capture efficiency for CCS is 90 per cent.

DRI based EAF production route

Illustrative

Operating regime improvement → **Disruptive technology**

DRI based Electric Arc Furnace (EAF)	DRI EAF/ NG based reduction	HYBRIT DRI-EAF	DRI-EAF with Carbon Capture Utilisation and Storage (CCUS)
>1.4 tCO_2/tcs	**~1.35 tCO_2/tcs**	**~0.67 tCO_2/tcs**	**~0.41 tCO_2/tcs**
~36 MT or ~23 per cent of the steel production capacity of India, comprise of Electric Arc Furnaces (EAF)	With some equipment changes such as shaft etc., Natural Gas (NG) is used for reduction	Replacing coal/NG with Hydrogen (H2) for reduction reaction by leading European steel producers	DRI-EAF running on Natural Gas is equipped with CCUS, with 90 per cent efficiency, successfully deployed by leading middle east steel producers

Global average in tonne CO_2/tonne of crude steel produced

05

Institutionalising ESG is a must

Institutionalising ESG is a must in the metals and mining sector corporate strategy

The metals and mining sector is of significant relevance to India's growth

For net zero to be a reality, value chain participants need to act boldly

ESG is a value driver- growth and decarbonisation can go together

Aiming to be the best in class will not be sufficient; hence disruptive changes would be key

Is your business ready and prepared to report on the newly launched GRI Mining Standards?[27]

A **first global standard** to comprehensively address the sustainability impacts of the **mining sector has been launched by GRI** in February 2024. This new standard enables any mining company to use a common set of metrics to report their impacts. This standard applies to all organisations engaged in mining and quarrying, including exploration and extraction, primary processing, and related support services (except for coal, oil and gas).

25 topics that are likely material for companies in the sector, GRI 14:

- Sets expectations for site-level transparency, which reflect local impacts, to help stakeholders assess **impacts and risks by location and specific minerals**.
- Covers critical themes that range **from emissions to waste, human rights to land and resource rights, climate change to biodiversity, anti-corruption to community engagement**.
- Introduces three new topics: **tailings management, artisanal and small-scale mining, and operating in conflict zones**.

Companies that walk the talk and perform both on the environmental front and social context, are likely to get themselves better prices for end products as well as capital. Future consumers and investors will not partner with a company that does not share their value system and purpose. The focus on ESG metrics is set to continue in 2024, with companies prioritising ESG considerations, such as reducing carbon emissions, conserving water and implementing community engagement initiatives. Companies will need to demonstrate their commitment to ethical practices and sustainability to maintain their social license to operate. As a result, investors are now more likely to invest in firms with strong ESG credentials. As ESG considerations become increasingly important for many industry stakeholders, demonstrating concrete and measurable ESG commitments on the road to net zero will be a vital factor to enable continued growth and ensure social license to operate at mining sites.

Possible impacts of sustainability on company performance

Impact on financial performance

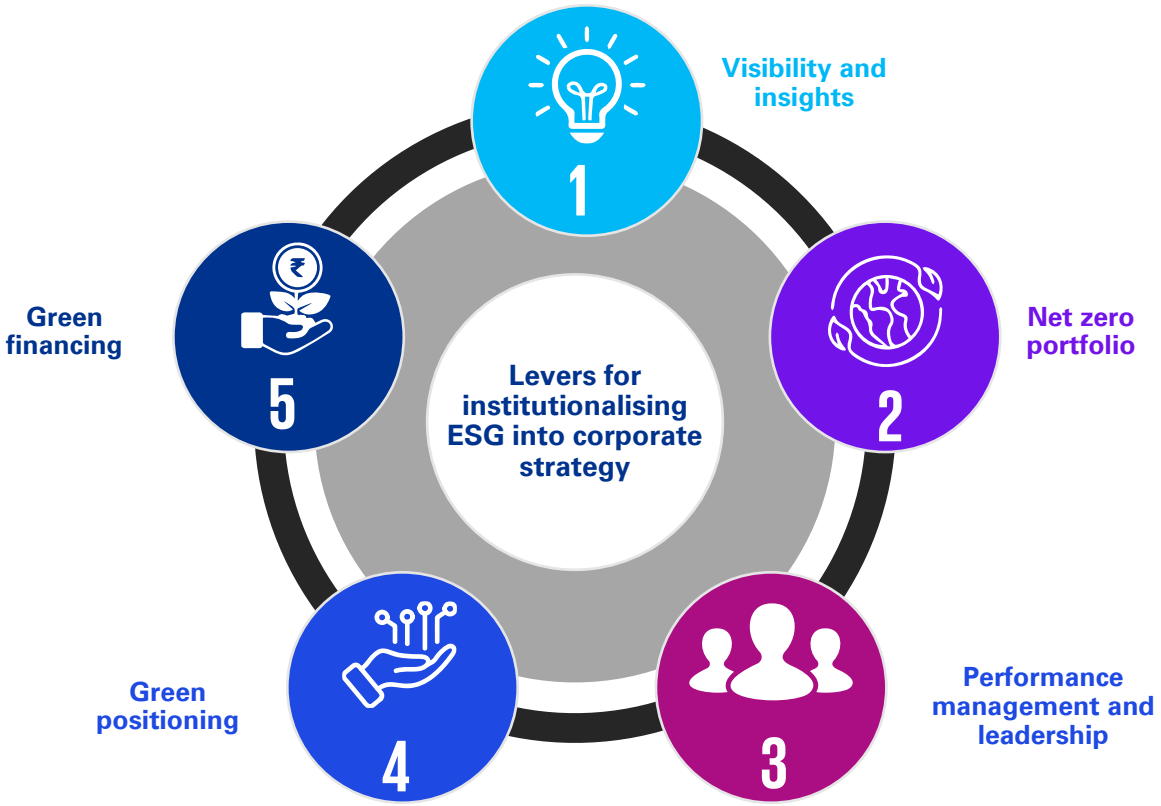
- Gain competitive edge by addressing social and environmental concerns
- Resource conservation led productivity gains

Impact on business excellence

- Gain greater financial access by reducing supply chain, operational and strategic risks
- Reduce regulatory risks

Impact on stakeholder relationships

- Improvement in employee morale through increased safety
- Building better reputation and relations with the community



Following is a list of 10 Questions C-Executives should address to have an effective ESG strategy

1	Visibility and insights	a) Do you have an effective measurement and reporting mechanism to keep a track of sustainability data?
		b) Have you examined the potential consequences and risks for your business of insufficient action on ESG?
2	Net zero portfolio	a) Does the organisation have a net zero portfolio planned to complement the business?
		b) Are you building sustainable products and services as part of long-term transformation?
		b) To what extent has the adoption of a circular economy been incorporated into operations?
		d) Have you integrated carbon price into investment decisions framework?
3	Performance management and leadership	a) Have you identified leaders, team members and governance process for developing, implementing and monitoring the ESG strategy?
4	Green positioning	a) How do you communicate our ESG strategy and performance to stakeholders?
		b) How is the company's positioning being influenced by the progress in ESG initiatives?
5	Green financing	a) Have you accessed green financing options for your decarbonisation initiatives and roadmap?

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