vedanta
transforming for good

HINDUSTAN ZINC
Zinc & Silver of India

Galvanizing Today for a Sustainable Tomorrow

Task Force on Climate Related Financial Disclosure

(TCFD REPORT)

FY2022-23

SAFE SMART SUSTAINABLE

HINDUSTAN ZINC
Zinc & Silver of India

About this Report

Task Force on Climate-Related Financial Disclosures ("TCFD") report (this "Report") is for Hindustan Zinc Limited. All data in this Report is as of March 31, 2023.

The TCFD recommendations, first launched in 2017, are designed for consistent and comparable reporting on climate-related risks and opportunities by organisations to their stakeholders. The TCFD recommendations have four content pillars: (i) Governance; (ii) Strategy; (iii) Risk Management; and (iv) Metrics & Targets; eleven recommendations to support effective disclosure under each pillar. Throughout this Report, Hindustan Zinc Limited has sought to provide information on all four pillars and eleven recommendations.

Perspective included in this report

This is our third Climate Change report aligned with the recommendations of the Financial Services Board's Task Force on Climate-related Financial Disclosures (TCFD). We at HZL have adopted TCFD framework for climate change risk and opportunity management to ensure our sustainability commitment.

This report contains our disclosures against the four core elements recommended by the TCFD, for all our operations including five mining, three smelters, and one refinery plant. It is our firm belief that this TCFD aligned report enables our stakeholders to evaluate our climate change-related performances for present & future.The report sets out our current understanding of the strength and resilience of our strategy and business model under different climate scenarios.

This report focuses on climate related risks and opportunities, Hindustan Zinc has also published Sustainability Review Report for disclosures related to other Environmental, Social and Governance (ESG) parameters following the GRI, UNGC, FIMI, SASB frameworks.

External Assurance

We safeguard the quality of information contained in this report through a robust assurance process. The content & data disclosed in this report have been externally assured by Ernst & Young Associates LLP in accordance with the requirement of the ISAE3000 Assurance Standard.

What's Inside

~75%
Market share in India's primary zinc industry

India's Largest
Integrated producer of zinc, lead and silver

5th Largest
Silver producer globally

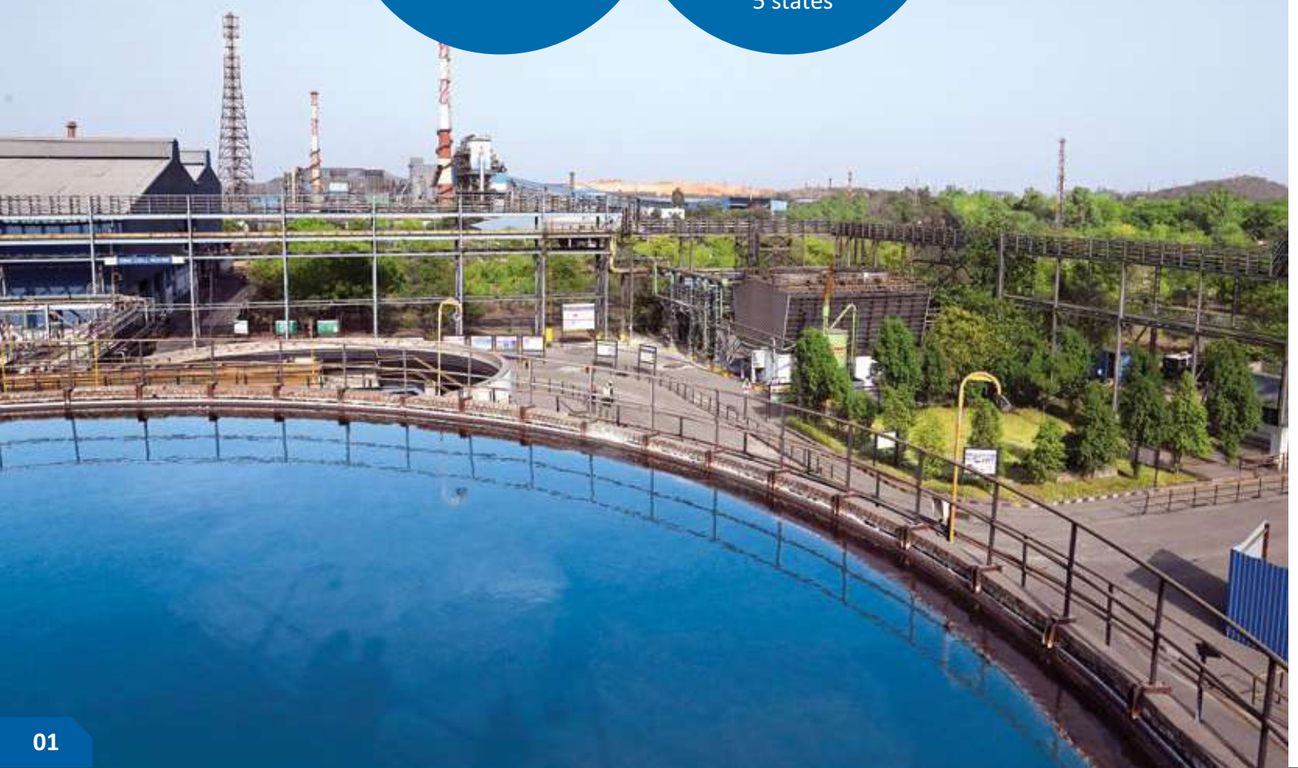
2nd Largest
Integrated zinc producer globally

#3 Globally and #1 in Asia-Pacific
Ranked at S&P Global Corporate Sustainability Assessment in the metals and mining sector

25+ Years
Mine Life

World's Largest
Underground zinc mining operations at Rampura Agucha

Among India's Largest
Wind power producers with a generation capacity of 273.5 MW across 5 states



Message from the Chairperson

Innovation remains at the heart of our journey,as exemplified by the deployment of India's First Underground Battery Electric Vehicle at Hindustan Zinc

Dear All,

Today, we stand at an essential juncture in our pursuit of a sustainable future. Climate action is no longer a choice but an imperative, and at Hindustan Zinc, we have embedded sustainable practices in every aspect of our operations to create a greener future for all.

I am thrilled to present Hindustan Zinc's 3rd Taskforce on Climate-Related Financial Disclosures (TCFD) report. This document is a testament to our unwavering commitment towards sustainable growth. Last year, we witnessed significant milestones that brought us closer to achieving our ambitious sustainability goals by 2025.

At Hindustan Zinc, we are driven by our bold targets to reduce our Scope 1 & Scope 2 emissions by 50%, and Scope 3 emissions by 25% by 2030. As a group, Vedanta's larger vision is to achieve Net Zero emissions by 2050, and at HZL we have taken significant steps towards goal by signing a Power Delivery Agreement for 450 MW of renewable energy. A cleaner, better world can only be realised with positive action and scientific progress grounded in affirmative change. Innovation remains at the heart of our journey, as exemplified by the deployment of India's First Underground Battery Electric Vehicle (BEV) at Hindustan Zinc's Sindesar Khurd Mine.

Our efforts have been recognised across multiple platforms, with Hindustan Zinc ranking among the top three sustainable companies in S&P Global Corporate Sustainable Assessment, and achieving an impressive 'A' rating in the climate change category by CDP. Under our ESG vision we are committed to driving sustainable economic development and value creation for our stakeholders.

Together, let us harness the power of sustained collective action and undertake this transformative journey towards a greener future.

Priya Agarwal Hebbar
Chairperson, Hindustan Zinc Limited

Message from the CEO

I strongly believe that sustainability is not just a choice but an imperative for our long-term success and the well-being of the planet

TO OUR STAKEHOLDERS,

Hindustan Zinc is pleased to present the third report aligned to the recommendations of the Task Force on Climate-Related Financial Disclosures ("TCFD"). The report is aimed at fostering future dialogue and action towards climate change mitigation plans, besides showcasing company's resilience towards climate related risks & opportunities as we transition to a clean energy future.

I strongly believe that sustainability is a way of life for our long-term success and the well-being of our planet. The greatest risk humanity is currently facing is climate change and extreme weather trends. We are making strides to address the climate catastrophe because we believe it is the right thing to do for our stakeholders and our own business. With this shared objective, both the board and management are committed to lead the climate change mitigation and adaptation efforts.

Low-carbon transition is the core of our business strategy and is further helping us in setting a clear pathway to deliver long-term value as well as ambitious targets to decarbonize our business.

To deliberate & mitigate the impact and inform our stakeholders about our disclosure procedures for financial risks related to climate change, we released our first TCFD report in August 2021. The report provided a comprehensive understanding of our approach to identifying, measuring, managing, monitoring, and reporting opportunities and risks related to climate change. Our second report that was released following year included analysis for each impact and transition risk in accordance with IEA steps and NDCs while this year in our third report, we analyzed our transitional risk basis IEA STEPS, APS & NZE 2050 scenarios and for physical risks we have considered Intergovernmental Panel on Climate Change's (IPCC) global scenarios, i.e., Representative Concentration Pathways (RCPs) as per the Fifth Assessment Report (Ar5).

I am delighted to share that strengthening our efforts towards decarbonization journey, we have signed power delivery agreement of 450 MW Renewable Energy- Round the Clock (RE-RTC), and our Pantnagar Metal plant has started sourcing 100% green power. The move is in line with our strategic purpose of reducing dependence on thermal power by scaling up our renewable energy to cover 50% of our energy requirement by 2030 and reduce the GHG emissions from our operations. During FY 2022-23, we became the 1st company in India to introduce underground battery electric vehicle (BEV) in our operations. We have already launched passenger EVs to reduce our carbon footprint and our business partners have also introduced electric vehicles in our smelting operations. Since joining TCFD in February 2021, our company has continued to support the guidelines and are reporting the progress annually.

We are determined to play a significant role in shaping a sustainable future for our organization by spearheading innovative initiatives, collaborating with key stakeholders, and adopting cutting edge technologies. We believe our activities will help reducing our environmental impact across our operations, from energy consumption and waste management to water usage and emissions which is in-line with our commitment towards achieving Net Zero emission by 2050. We at Hindustan Zinc have set an ambitious target of 50% reduction in Scope 1 & Scope 2 GHG emissions, 25% reduction in Scope 3 GHG emissions by 2030 and achieving carbon neutrality by 2050.

In addition to our tangible efforts, we have taken steps to reduce the impacts of climate change by lowering emissions, advocating for low carbon strategies, and are focused on managing the potential physical risks and their impact. We are conscious of the fact that we are majorly operating in the state of Rajasthan which is water scarce area as per physical risk assessment modeling, so it is even more imperative for us to conserve this precious and valuable resource for our business continuation and for nearby communities. To address this risk, we have been practicing Rainwater Harvesting, installed Zero Liquid Discharge Plant at our smelting locations and utilizing treated sewage water and other initiatives. Currently, we are 2.41 times water positive, and we further aim to become 5 times water positive by 2025.

Furthermore, we will continue to update climate risks since we recognize that the information and understanding about the climate are uncertain and need to be updated. We have structured this report in accordance with the guidelines and advice of the TCFD enabling high-value stakeholder engagement while providing comprehensive information at one place.

We are hopeful that this report will accelerate further action towards climate change mitigation, encourage dialogue, and enhance opportunities for collaboration with our stakeholders and communities, as we continue to build a Safe, Smart & Sustainable future.

I am pleased to deliver our 3rd TCFD report.

Arun Misra
CEO, Hindustan Zinc Limited

Executive Summary

Hindustan Zinc has set an ambitious target of Net Zero GHG emissions by 2050 in-line with our commitment of a greener future. We are India's largest and only Integrated producers of Zinc Lead & Silver. We consistently strive to reduce our environmental footprint by increasing our dependency on renewable energy in line with our vision of **Zero Harm - Zero Waste - Zero** Discharge. We have committed to Science Based Target Initiatives (SBTi) and are proactively working to reduce direct and indirect GHG emissions. We have integrated TCFD recommendations in our business strategy.

Since we are an energy intensive industry, we have taken series of energy efficiency and emission reduction initiatives like signed Power Delivery Agreement (PDA) for 450 MW Renewable Energy- Round the Clock (RE-RTC) which will cater to more than 50% of electricity needs by 2030. As a pathbreaking initiative Hindustan Zinc is the 1st company in India to introduce Underground Battery Electric Vehicle amongst its peers.

We believe that a robust governance structure will help manage climate related risks and opportunities. Our overall Board has clear oversight on climate-related issues as they are quarterly updated with recent developments. They also provide guidance on regular basis. We have a unique three tier structure to drive sustainability practices from highest decision-making body in the organisation to shopfloor at sites.

We have implemented robust Enterprise Risk Management framework across all our locations. The identified climate related risks are also integrated in our risk management framework and are closely monitored. This is part of our strategy to proactively manage and mitigate any upcoming potential climate related risks.

We continuously monitor and transparently disclose our climate related metrics such as GHG emissions against Scope 1, Scope 2 & Scope 3, renewable energy consumption, water withdrawal etc. This helps us to strategize and measure our impact. Disclosures related to climate change can be found in annual Sustainability review report, Integrated annual report and CDP Climate change response.

As a responsible corporate, we intend to do more to increase the use of renewable energy in our operations. We are committed to a long-term vision that protects environmental, social, and business values for our people, communities, and nature.

Moving towards a low carbon business can pose challenging, however we have already started our transition to a low carbon business and plan to develop it further.

Key Highlights - FY2023

- Setting ambitious SBTi targets aligned with **1.5°C scenario**
- PDA signed for **450 MW Renewable Energy** Round the Clock (RE-RTC)
- **4.8%** reduction in Scope 1 + Scope 2 from previous year
- **GHG Emission**
  Scope 1: 3.44 million tCO_2e
  Scope 2: 1.14 million tCO_2e
  Scope 3: 4.16 million tCO_2e
- 100% green power sourcing for Pantnagar Metal Plant
- 89,896 tCO2e emission reduced by biomass use
- **1st Indian company** to introduce **Underground Battery Electric Vehicle**
- Introduction of Group EV purchase policy for employees
- CDP Climate Change Rating **A**
  CDP Water Security A-
- **Green company (GreenCo)** certifications for all our smelters and two mining locations CII

Climate Change Risk Assessment

Our climate change risk assessment was led by the ESG and Corporate Energy & Carbon community. The potential impacts on Hindustan Zinc for both transitional & physical risks were evaluated. The risk categorisation is aligned with TCFD recommendations.

	Transitional Risk	Physical Risk
Definition	Risks related to shifts in the policy, regulatory, technology & socio-economic conditions that are likely to happen in the transition to a low carbon economy: • Policy & Legal • Technology • Market • Reputation	Risks related to physical impacts of climate change: • Acute weather events, such as water stress, drought, heat waves, extreme precipitation, and floods • Chronic climate-related changes, such as sea level rise and sustained temperature increases
Potential Impacts	Depending on the form and speed of the change, many types of financial and reputational risks arise, which includes: • Decrease in revenue as consumer preference shifts • Increased cost of production • Impacts on asset values • Obsolescence of tangible and intangible assets	Impact due to physical risk can be defined as • Damage to direct assets. • Indirect impacts including: • Disruption in operations, e.g., heavy rainfall affecting production, supply chain disruption, health, and safety of employees
Timing	• Timing and speed of the occurrence of event are uncertain, with the transition more likely to happen in short- to medium-term • The likelihood of a more chaotic, disruptive, and abrupt transition increases with delay	• We anticipate an increase in the severity and frequency of acute risks • Long-term chronic risks are more likely to emerge, particularly after the middle of the century

Climate Scenarios

We considered various climate scenarios covering a broad spectrum of outcomes to help provide insight into some of the risks and opportunities that may arise and can impact Hindustan Zinc Limited.

Modelling Assumptions

Our current portfolio and value chain were modelled using historical data. While considering the risks and opportunities, the modelling did not consider any upcoming climate-related initiatives or actions.

However, the initiatives are part of our strategy to take advantage of opportunities and mitigate risks.

The model incorporated Hindustan Zinc's physical & financial inputs.

- Physical data included:
  - Business unit locations
  - Raw material use
  - Sourcing location of raw materials
  - Revenue associated with production volumes
- Financial data - sales and profit related to our finished goods.
- Scenarios were built using data available in public domain, reports by International Energy Agency (IEA), Network for Greening the Financial System (NGFS) & Policy documents.
- Scenarios considered from IEA were Stated Policies Scenarios (STEPS), Announced Pledges Scenario (APS) & Net Zero Emission Scenario (NZE) for transitional risk assessment
- Each risk was considered in isolation/ independently and trade-offs between risks were not considered.
- Time horizon used was Medium Term 2030 and long term 2050.

Scenario analysis outcomes

The Strategy section of this report explains outcomes of scenario analysis for physical and transitional risks on Hindustan Zinc's current portfolio and value chain in medium and long term.

Timeline	Years	Description
Short Term	0 – 10	The climate related risks and opportunities identified to have an immediate impact on the company's business i.e., within 10 years, are categorized under short-term horizon. At HZL, the business risk assessment is aligned with the climate related risks and opportunities, hence the timeline remains the same for both.
Medium Term	10 – 20	Potential climate related risks and opportunities that may impact company's business in the future (10-20 years) are categorized into medium term.
Long Term	20 – 30	Long term business risks and opportunities are usually anticipated and identified based on scenario analysis, IEA guidelines and market predictions, etc. Therefore, the climate risks and opportunities identified to have an impact beyond 20 years duration are termed as long term. Our definition for long term coincides with our Net-Zero Goal 2050

HINDUSTAN ZINC
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Journey Towards Net Zero

2007
123.2 MW Wind Power

2012
Total 273.5 MW Wind Power

2013
Initiated reporting on CDP

Launched Energy & Carbon Policy, Standard on Energy Managment

2017
16 MW Solar Power

Initiate reporting on Scope 3 emissions

2018
SBTi targets approved 14% reduction in Scope 1 & 2 and 20% reduction in scope 3 by FY26-27

2019
22 MW Solar Power- RAM

2020
Sustainability goals 2025

CDP Score A

2021
Signatory to TCFD & 1st TCFD report launched

Committed to SBTi Net Zero targetand 1 Bn$ investment in Green initiatives

Signed MoU for BEVs (Normet, Sandvik , Epiroc)

2023
Deployment of 1st UG Mining Electric Vehicle

5% Biomass utilization in CPP

Turbine Revamping

200 MW & 250 MW RE RTC (PDA signed)

PMP- 100% Green energy sourcing

Submitted to SBTi NET ZERO target for validation

CDP scoring A for Climate change, A- for water & leadership for supply chain.

2025
200 MW RE RTC
Emission reduction by 1.2 Million TCO2e

2026
450 MW RE RTC & total emission reduction by 2.7 Million tCO_2e

2030
Reduce emission by 50% (Scope 1 & Scope 2) from baseline 2020 and Scope 3 by 25%

100% electrification of surface equipment

2040
100% Green Power

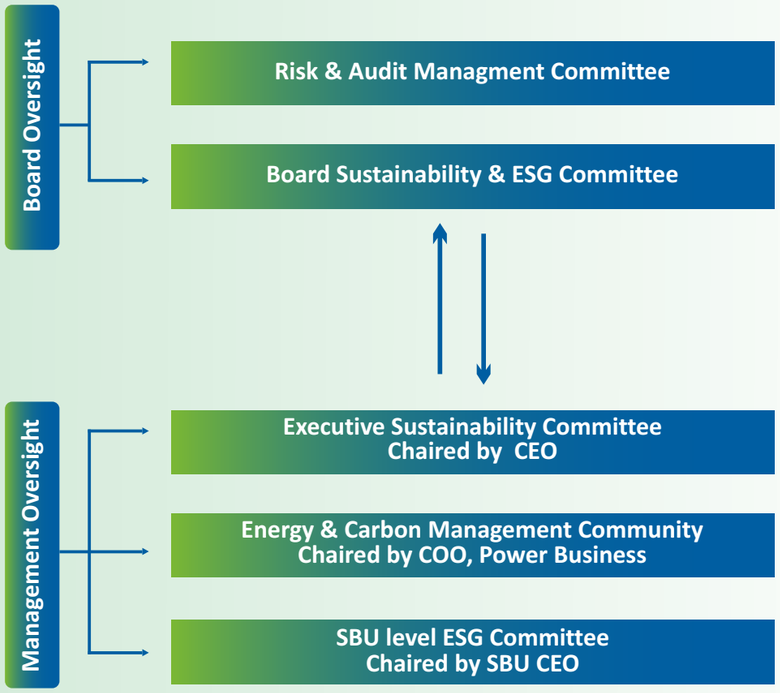
2050
NET ZERO

Governance

Alignment with TCFD Recommendations	
Describe the board's oversight of climate -related risks and opportunities.	Describe management's role in assessing and managing climate related risks and opportunities.

Climate Change Governance

Governance is the most vital component of our company's climate risk structure. It covers the framework, roles & responsibilities, and decision-making procedures by which our company adheres to its goals and targets related to climate change. This helps our key stakeholders understand the Board and Management's role in assessing and managing climate-related risks and opportunities.



Board Oversight

Our board is responsible for all aspects of sustainability across the company. Climate change has become an important aspect on long term business strategy and hence board is discussing on climate change in various context such as business decisions, investment decisions, long term targets and company's resilience.

Audit and Risk Management Committee (ARC) of the board oversees the climate-related risks and opportunities. As climate risks is integrated as key risk in our enterprise risk management and financial planning, it is the primary responsibility of ARC Committee to provide oversight on climate related risks & opportunities, and report progress on risk mitigation efforts to the Board on a quarterly basis.

The Committee also reviews potential impacts to production disruptions due to climate-related physical and transition risks that may impact HZL's core business. The members of this committee are,

Position	Name
Chairperson	Mr. Anjani K Agrawal
Member	Mr. Akhilesh Joshi
Member	Ms. Nirupama Kotru

The Sustainability and ESG committee is responsible for overseeing the strategy, climate action, implementation of policies & processes, setting & reviewing long-term goals & targets to achieve net-zero by 2050 and enhancing a commitment towards stakeholders.

Our CEO is one of the members of the committee. To ensure that all have a common approach that is also consistent with the HZL's strategy and policy on climate change. The members of this committee are,

Position	Name
Chairperson	Mr. Akhilesh Joshi
Member	Mr. Arun Misra
Member	Dr. Veena Kumari Dermal
Member	Ms. Nirupama Kotru

The role of the Sustainability and ESG Committee is to assist the Board in meeting its responsibilities in relation to the Environmental, Social and Governance (ESG) matters and ensuring strong governance for sustainability.

The committee is responsible for the following.

- Providing guidance to ensure continual improvement in sustainability performance and implementation of appropriate processes and policies across the company.
- Laying out Sustainability Strategy and long- term objectives.

Our ESG & Sustainability committee of board meets semi annually to discuss climate-related strategies and reviews progress against the targets and goals.

Key discussions during FY 2023

The CEO quarterly briefs the board on climate-related matters, including yearly targets and site wise performance, and oversees budget allocation for climate adaptation and mitigation efforts. Our CEO is also a member of Board level Sustainability & ESG committee that meets on a half-yearly basis, where the board has been appraised on the progress of decarbonization roadmap.

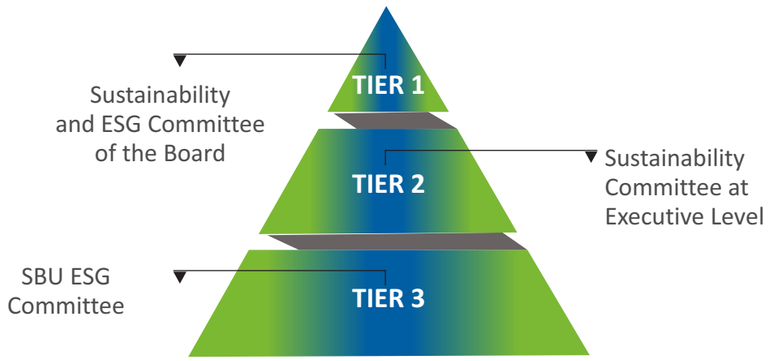
Board resolutions / discussion during FY 2023

- Board approved a proposal for entering a long-term group captive renewable power up to a capacity of 450 MW RE-RTC
- Pantnagar Metal Plant, Uttarakhand adopted 100% green power for its operations leading to emission reduction
- Published Environment Product Declaration (EPD) for Zinc Product
- Working with International Zinc Association (IZA) on standardization of scope 3 reporting of the Zinc sector
- SBTi target re-validation for more ambitious targets
- Working with ICMM on Task Force on Nature related Financial Disclosure (TNFD) piloting
- India's first underground battery electric vehicle was introduced in Sindesar Khurd Mines and electric vehicles introduced in our smelting operations by business partners
- Supplier risk assessment conducted to identify supplier impact on water, biodiversity & Climate using available tools like Water Risk filter, Biodiversity Risk filter, etc.

Management Oversight

Our Management is responsible for the operational assessment of climate management across the Company and the subsequent implementation of HZL's climate change strategy. CEO is the highest management position, who is responsible for taking decisions related to climate change. Our CEO is also authorized to sanction CAPEX & OPEX budgets and other necessary resources for the implementation of climate adaptation and mitigation actions.

Hindustan Zinc has established a three-tiered sustainable governance framework for governing the risks and opportunities related to climate change.



Sustainability Communities

We have set up 10 sustainability communities to drive our eight Sustainability Goals 2025. Comprising champions from all units, the communities regularly review progress against their respective goals. hey meet on a monthly basis.

Executive Level Sustainability Committee

Executive sustainability committee at Hindustan Zinc is responsible for formulating sustainability strategy and long-term goals and targets. The committee plays a strategic role in all business decisions to ensure workplace safety, eliminating any potential damage to the environment, enhancing a commitment towards stakeholders, and maintaining our reputation etc. The committee consisting of CEO, CFO, functional heads, community chairmen and SBU Directors meets monthly to discuss the status of sustainability goals including long term goals for climate change.

The performance against the sustainability goals and way forward are being presented by management representative of executive sustainability committee to the Board level sustainability and ESG committee on six monthly `basis. There are ten sustainability communities have been formed under executive sustainability committee to monitor progress towards Sustainability Goals 2025. Each of these communities are made up of the unit champions and meet once a month.

Key decisions taken by Executive Level Sustainability Committee

- Zero Liquid Discharge Commitment
- Internal Carbon Price (Shadow Price) 15$/TCO2e
- 100% Renewable Energy at Pant Nagar Metal Plant, Uttarakhand
- Commitment to Electric mobility at Smelters and Underground mining
- Commitment for installation of Tail Gas Treatment (TGT) plant across all roasters
- Committed to Dry Tailing Stacks at all three Tailing storage facility
- Utilization of Jarofix to Road construction & Jarosite to cement Industry
- Commitment to Fumer plant for waste generation reduction
- Engaged IUCN to execute Biodiversity Risk Assessment
- Setting ambitious SBTi targets in alignment with 1.5°C
- Materiality assessment conducted in 2022
- Reporting on BRSR

Energy and Carbon Management Community

Energy and Carbon Management Community, a part of the Executive Sustainability Committee, is established to ensure strong governance for working towards climate resilience for our host communities & operations, climate change modelling including risk assessment, Carbon pricing and financial implications, identifying strategies for Energy conservation, identify innovative solutions, equipment's and processes that consume less energy and results in significant GHG emissions. It is a taskforce under the Executive Sustainability Committee, chaired by a senior leader at the corporate level and Energy and carbon representatives from each site.

Responsibilities of the community:

- Drive the agenda for achieving Net Zero by 2050 or sooner.
- Carrying out audits and energy & carbon risk assessments and implementing recommendations.
- Providing guidance to ensure continual improvement in Energy and Carbon management by implementation of appropriate processes and policies across the company.
- Implementation of TCFD recommendations including scenario analysis and stress testing.

The community is tracking the performance against Energy conservation, Clean Development Mechanism (CDM) projects, targets and report its progress to Senior Management. The community is meets on monthly basis and appraise the chairman on the various Energy and Carbon Management projects progress and seek guidance.

SBU ESG Committees

These committees continuously evaluate, identify, and reduce risks from both internal and external causes. To manage risks with a suitable mitigation strategy and to advance the ESG agenda including climate change, more than 100-line managers are aligned within a structural governance set-up across all SBUs.

New risks are identified, categorised as per impact and likelihood, and mapped to key responsibilities of certain managers for ensuring an internal formal monitoring process at the Company level.
Energy & carbon representatives nominated by the SBU are responsible for coordinating audits, energy, and carbon risk assessments and implementing the mitigation measures at site level.

They update on the progress of the energy conservation projects, CDM projects, energy & emissions

Alignment of Remuneration Policy with Climate Goals

Annual Performance Bonus

Our annual performance bonus of management is based on balanced scorecard of financial, operational, sustainability and strategic matrix. All employees including business heads and CEO are eligible for short-term incentive plan and are held accountable for the Company's health, safety, and sustainability (VSAP scores) performance through HZL's performance- based compensation structure. The aligned ESG measures in the performance KPIs of CEO are cascaded to the Executive committee and then to boarder workforce. The Individual performance criteria of the Business Heads considers KPIs related to performance on Sustainability Goals 2025. For example - Energy & Carbon Community Head, is a leader of implementing processes and initiatives to advance climate action across the company.

The annual performance bonus of Energy and Carbon Community head is based on the achievement of climate targets & KPIs (e.g., Increased energy efficiency, Reduction in Scope 1 & Scope 2 GHG emissions, Increased use of Renewable Energy).

Additional Incentive and Recognition

Furthermore, as part of the yearly competitions, such as Kaizen, HZL acknowledges and rewards employees who actively contribute to HZL's sustainability objectives, thereby minimizing our impact on the environment. The champions who present the most inventive ideas resulting in notable reductions in emissions and energy consumption are duly recognized and rewarded. Furthermore, individual employees or teams who undertake innovative initiatives are also acknowledged and nominated for the prestigious 'Star of the Month' and 'Star Team of the Month' awards. These exceptional individuals and teams are then rewarded by the CEO during a monthly townhall meeting "Sampark".

Long-term Incentive Pay out

Vedanta's Stock-based long-term performance incentives (ESOS) represent the largest component of executive pay to encourage sustained performance for 3 years aligned with shareholder interests.
Currently, HSE/ESG performance constitutes 15% of employees' performance pay. Climate change considerations are now a part of our employees' stock option scheme (ESOS).

Internal Carbon Pricing

Hindustan Zinc has defined an internal carbon pricing mechanism, applicable to all units, to bring in organizational change by influencing internal behaviour and to drive energy efficiency. We have introduced carbon pricing as a component in all our capital expenditures. The internal carbon pricing helps us implement energy conservation/ efficiency projects in our operations, facilitate decision-making for low carbon transition, direct investment towards renewable portfolio addition, mitigate carbon compliance risk, and meet SBTi targets for emission reduction.

We are using the **shadow carbon pricing of 15$/tCO$_2$e** as a method of assessing procurement decisions that adds a notional surcharge to the cost of procurement commensurate to the degree of carbon emissions. This will support procurement decision making that are more emissions efficient, rather than being price competitive.

We are using the internal carbon price to help achieve our sustainability goals. By 2025, the company aims to reduce both scope 1 & Scope 2 emissions. Setting a price on carbon enables teams to test and assess the profitability of projects in different scenarios to make better decisions to future-proof our business. This can also serve to stimulate innovative ideas on how to best allocate capital to deliver higher returns in a low-carbon economy.

To combat climate change, we prioritize sustainability in all aspects of our operations and strategies. We are committed to significantly reducing emissions and developing innovative solutions to adapt and mitigate climate-related risks.

Our initiatives demonstrate our dedication to a healthier planet and our long-term success and positive impact on society.

Pradeep Singh
(Chief Health Safety Environment & Sustainability)

Climate Change is one of the most pressing challenges of our time. Hindustan Zinc is committed, passionate & dedicated to tackling climate change, which is embedded in our company's culture, strategies & practices. Seizing opportunities like 100% green power for Pantnagar Metal plant, signing Power Delivery Agreement for 450 MW RE-RTC & introduction of Electric vehicles is witness to our journey of transformation & to build a brighter & greener future for all.

Binu Raphael
(Chief Operating Officer, Power Business & Chairman Energy & Carbon Community)

Our Policies
Energy and Climate Change Management Policy
Health Safety & Environment Policy

Sustainability Goals 2025

Climate Change
0.5 mn tCO2e greenhouse gas (GHG) emission savings in our operations from base year 2017

- Use of renewable energy
- Electrification of vehicles
- Efficiency improvements
- Reduction in non-GHG emission (SOx and NOx emission) by 17% by 2025

Water Stewardship
Become 5x water positive company and achieve 25% reduction in freshwater consumption

- Exploring alternative water sources
- Reduction in freshwater consumption through technological interventions
- Rainwater harvesting
- Transition from wet tailings disposal to dry tailings disposal by 2025

Circular Economy
3x Increase in gainful utilisation of smelting process waste

- Eliminate generation of landfill waste
- Gainful utilisation of waste in other industries
- Metal recovery from residue

Social Impact
Positively impact one million lives through social, economic and environmental initiatives

- Strengthen the local economy
- Promote skilling and education in the region
- Improve quality of life of communities around us

Biodiversity Conservatio
Protect and enhance biodiversity throughout the life cycle

- Reassessment of biodiversity and development of biodiversity management plan
- Implementation of critical/endangered species conservation plan
- Achieve one million plantations by 2025
- Achieve 'no net deforestation' through compensatory afforestation whenever applicable,throughout the life cycle

Diversity in Workforce
Inclusive and diverse workplace with 30% diversity

- Improve diversity in the organisation
- Review current policies and frame new conducive policies
- Developing/grooming high potential diversity employees through various programmes

Ensuring Zero Harm
Zero work-related fatalities and 50% reduction in total recordable injury frequency rate (TRIFR)

- Safety culture transformation
- Visible felt leadership
- Critical risk management
- Process safety management
- Business partner engagement
- Technology and innovation

Responsible Sourcing
100% responsible sourcing in the supply chain

- Implementation of responsible sourcing guidelines of London Metal Exchange (LME) and Organisation for Economic Cooperation and Development (OECD) framework
- Supplier sustainability assessment
- Human rights training and awareness
- Ensuring local procurement

Strategy

TCFD Recommendations		
Describe the board's oversight of climate- related risks and opportunities.	Describe the impact of climate related risks and opportunities on the organisation's businesses, strategy, and financial planning.	Describe the resilience of the organisation's strategy, taking into consideration different climate related scenarios, including a 2°C or lower scenario

HZL has identified and categorized climate-related risks and opportunities over the short, medium, and long term with respect to both physical risks (Increase in temperature, drought, flood, extreme weather, wind speed etc.) and transitions risks (risks due to change in policy, technological change, market change, reputational etc.) According to the TCFD guidelines, we have identified our climate related risks using scenario analysis. In developing our strategy, we have considered a wide range of opportunities and risks across two discrete-time horizons 2030 and 2050 for mapping physical and transition risks.

- Physical risks, we used Advanced Climate Modelling and Representative Concentration Pathway (RCP) 2.6, 4.5, 6.0 and 8.5.
- Transition risks, we used IEA's Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS) & Net Zero Emissions by 2050 Scenario (NZE) scenarios.

Physical Risk Assessment

We conducted baseline assessment of our business units by using various tools and databases such as WRI's Aqueduct Water Risk Atlas and ThinkHazard tool to assess potential baseline water stress, drought, riverine flood, heatwave, and seasonal variability risks.

Physical risks resulting from climate change are considered for its increase accumulation and intensity for

- Acute extreme weather events (e.g., heat waves, storms, floods)
- Longer-term chronic changes in mean values and ranges of fluctuation of various climate variables (e.g., temperature, precipitation, sea levels)

WRI Aqueduct

Business Unit Locations	Basin Water Stress	Drought Risk	Riverine Flood Risk	Seasonal Variability
Zawar Mines (ZM)	Extremely High	High	Low-Medium	High
Kayad Mines (KM)	Extremely High	High	Low	Extremely High
Rampura Agucha Mines (RAM)	Extremely High	High	Low-Medium	High
Rajpura Dariba Mine (RDM)	Extremely High	High	Low-Medium	High
Sindesar Khurd Mine (SKM)	Extremely High	High	Low-Medium	High
Chanderia Lead Zinc Smelter (CLZS)	Extremely High	High	Low-Medium	High
Dariba Smelting Complex (DSC)	Extremely High	High	Low-Medium	High
Zinc Smelter Debari (ZSD)	Extremely High	High	Low-Medium	High
Pantnagar Metal Plant (PMP)	Extremely High	Medium	High	Extremely High

ThinkHazard

Business Unit Locations	Extreme Heat	Wildfire	Urban Flood	Landslide	Cyclone
Zawar Mines (ZM)	High	High	Low	Low	Low
Kayad Mines (KM)	High	High	Low	Very Low	Low
Rampura Agucha Mines (RAM)	High	High	Low	Very Low	Very Low
Rajpura Dariba Mine (RDM)	High	High	Low	Low	Very Low
Sindesar Khurd Mine (SKM)	High	High	Low	Low	Very Low
Dariba Smelting Complex (DSC)	High	High	Low	Low	Very Low
Chanderia Lead Zinc Smelter (CLZS)	High	High	Low	Very Low	Very Low
Zinc Smelter Debari (ZSD)	High	High	Low	Low	Low
Pantnagar Metal Plant (PMP)	High	High	Low	Very Low	Very Low

Climate-related Physical Risks

As part of the physical risk assessment, acute risks arising out of increasing severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns were studied for all our business units. We studied the historical trends and future projections of various climate hazards such as change in temperature, change in precipitation, floods, droughts, and cyclones to understand how the changing climate may impact our different business locations. For future hazard trends, four future climate change scenarios based on IPCC Representative Concentration Pathways (RCPs) were used for medium term 2030 & long term 2050. We used Network for Greening the Financial System (NGFS) for physical risk such as wind speed, mean air temperature, employee productivity & precipitation related to the state of Rajasthan & Uttarakhand in India where our operations are based. The baseline scenario in case of NGFS scenario analysis was 1986-2006.

Representative Concentration Pathway	Global Emission Summary	Temperature anomaly (°C): Baseline considered (1850)	Rate of change in radiative forcing
RCP 2.6	This scenario represents a future with lower radiative forcing. It assumes strong mitigation efforts like usage of renewable energy and carbon capture from atmosphere. Aims to limit Global warming below 2°C above pre-industrial levels by the end of 21st century.	1.5	Declining
RCP 4.5	This scenario assumes moderate mitigation efforts. It projects stabilisation of GHG concentrations by mid-21st century and a subsequent decline.	2.4	Stabilising
RCP 6.0	This scenario represents a future with intermediate levels of radiative forcing. This scenario assumes emissions peak in early 2060s and then subsequently decline.	3.0	Stabilising
RCP 8.5	The scenario represents future with the highest radiative forcing. It assumes no climate mitigation policies or efforts to reduce emission. GHG emissions continue to rise throughout 21st century. Also referred to as "Business-as-usual" scenario.	4.9	Rising

A summary of how the regions where our business units are located will face the risk to climate change under four RCP scenarios are presented in the table below:

Region	Physical Risk	RCP 2.6		RCP 4.5		RCP 6.0		RCP 8.5	
		2030	2050	2030	2050	2030	2050	2030	2050
Absolute change in mean air temperature									
Rajasthan	Increase/decrease from baseline	↑	↑	↑	↑	↑	↑	↑	↑
Uttarakhand	Increase/decrease from baseline	↑	↑	↑	↑	↑	↑	↑	↑
Relative change in labour productivity due to heat stress									
Rajasthan	Percentage points Increase/decrease from baseline	↓	↓	↓	↓	↓	↓	↓	↓
Uttarakhand	Percentage points Increase/decrease from baseline	↓	↓	↓	↓	↓	↓	↓	↓
Relative change in wind speed									
Rajasthan	Percentage points Increase/decrease from baseline	↑	↑	↑	↑	↑	↑	↑	↑
Uttarakhand	Percentage points Increase/decrease from baseline	↑	↑	↑	↓	↑	↓	↑	↓
Relative change in precipitation*									
Rajasthan	Percentage points Increase/decrease from baseline	↑	↑	↑	↑	↑	↑	↑	↑
Uttarakhand	Percentage points Increase/decrease from baseline	↑	↑	↑	↑	↑	↑	↑	↑

⇧ Increase from Baseline

⇩ Decrease from Baseline

Low Risk | Medium Risk | High Risk

* The increase in precipitation is not an indication of flood and is dependent on seasonal variability.

A summary of how our various business locations will face the risk to climate hazards under **RCP4.5** scenario is presented in the table below:

Asset Locations	Timeline	Average Temperature (Projected Change in Hot Day; max>40^c), Ensemble Median Range	Heat Wave (Heat Index 35, Ensemble Median Range)	Drought (Ensemble Median Range (Projected change in Annual Mean Drought Index; SPEI))	Severe Drought (Ensemble Median Range (Probability)	Annual Flooding (Projected Change in Days with Rainfall> 50mm)
ZM	2020-2039	Medium	Very High	Medium	Low	Low
	2040-2059	Very High	Very High	Very High	Medium	Low
KM	2020-2039	Low	Very High	Low	Low	Low
	2040-2059	Very High	Very High	High	Medium	Low
RAM	2020-2039	Low	Very High	Low	Low	Low
	2040-2059	Very High	Very High	High	Medium	Low
RDM	2020-2039	Low	Very High	Low	Low	Low
	2040-2059	Very High	Very High	Very High	Medium	Low
SKM	2020-2039	Low	Very High	Low	Low	Low
	2040-2059	Very High	Very High	Very High	Medium	Low
CLZS	2020-2039	Low	Very High	Low	Low	Low
	2040-2059	Very High	Very High	High	Medium	Low
DSC	2020-2039	Low	Very High	Low	Low	Low
	2040-2059	Very High	Very High	Very High	Medium	Low
ZSD	2020-2039	Medium	Very High	Low	Low	Low
	2040-2059	Very High	Very High	Medium	Low	Low
PMP	2020-2039	Low	Low	Low	Low	Low
	2040-2059	Very High	Medium	Medium	Low	Medium

A summary of how our various business locations will face the risk to climate hazards under **RCP6.0** scenario is presented in the table below:

Asset Locations	Time Period	Temperature Increase		Water Availability	Flooding	Extreme Events
		Average Temperature (Projected Change in Hot Day; max>40^c), Ensemble Median Range	Heat Wave (Heat Index 35, Ensemble Median Range)	Drought (Ensemble Median Range (Projected change in Annual Mean Drought Index; SPEI))	Annual Flooding (Projected Change in Days with Rainfall> 50mm)	Cyclone
Rajasthan	Period (2020-2039)	High	Very High	Medium	Medium	No direct impact of Cyclones
	Period (2040-2059)	Very High	Very High	Medium	Medium	No direct impact of Cyclones
Uttarakhand	Period (2020-2039)	Very High	Very High	Low	Medium	No direct impact of Cyclones
	Period (2040-2059)	Very High	Very High	Medium	Medium	No direct impact of Cyclones

Overall Result from the Physical Risk Assessment

We have compiled potential risks our businesses could encounter due to physical risks, we have examined the impacts of different climate change scenarios namely RCP2.6, RCP4.5, RCP6.0, RCP8.5 and the impacts are as follows,

- Basin Water stress is extremely high for all our locations
- Drought Risk is high for all our locations except Pantnagar
- Riverine flood risk is low for Kayad & high for Pantnagar whereas Low to Medium for all other locations
- Seasonal variability which measures the average within year and variability of available water supply is extremely high for Kayad & Pantnagar whereas High for all the other locations.
- Urban Floods, Landslides and Cyclones are very low to low for all our locations.

The table below presents how each of our businesses will be impacted by climate change, this considers the risk level based on hazard, sensitivity, and adaptive capacity of the unit. This table elaborates the impacts of climate change on the organization's businesses, strategy, and financial planning:

Risks	Reason	Expected Impacts
Raw Material Supply	• Increased Temperature • Heat Waves • Water Stress	**High Impact** • High temperatures, water shortage and extreme weather variability possibly causing lower production and revenue generation & business continuity.
Operation Disruption	• Water Stress • Increased Temperature • Extreme Rainfall	**High Impact** • Disruption of operations or downsizing of the same & scarce water resources (Higher operating costs & plant shutdown) • Increased cost due to installations of cooling devices (Increased operating costs) • Supply chain disruptions due to extreme weather-related events. • Increased damage to infrastructure/ Structural stability due to flooding/ wind speed (Physical damage to asset, increased operating costs) Tailing dam breach.
Market Disruption	• Set back in upstream and downstream supply	**Low to Medium Impact** • Consumer demand impacted by physical events • Revenue levels and demand forecasting disrupted by extreme weather events • Trends in consumption pattern impacted in short-term because of extreme weather events
Impact on Workforce	• Direct Impact on productivity	**High Impact** • Employee heat exhaustion and dehydration leading to lower productivity • Increased electricity cost due to installations of air conditioning devices (Increased operating costs) • Attrition rate shall go up due to increase in temperature in Rajasthan will lead to skill talent reduction and high cost of production due to increase in expectation of salary of workforce

Managing Physical Risks: The table below depicts the strategy to mitigate the risk and related impact in short term, medium term and long term.

Strategy To Mitigate Risk and Impact	Short Term (0-10 Years)	Medium Term (10-20 Year)	Long Term (20-30 Years)
Raw Material Supply	• Implement heat stress management programmes • Zero Liquid Discharge plants at all our locations to reduce freshwater demand, • Increased use of recycled water like treated municipal wastewater (sewage)	• 450 MW Renewable Energy Round the Clock (RE-RTC) • Harnessing potential of RE in line with Indian commitment 500 GW NDC • Dual sourcing & safety stock to ensure no operation disruption	• Increased use of renewable energy in operations thus reducing freshwater demand in Captive Thermal Power plants
Operation Disruption	• Site-based freshwater reduction programmes. • Exploring alternate sources of water and ensuring more recycling of water. • Storm Water Drains are upgraded to cater to torrential rains. • Monsoon preparedness plans developed across all locations. • Ground water recharge systems near our operating locations to cater to water security needs to local community	• Ensuring climate resilient infrastructure/ Green buildings are built for all new infrastructure. • Continuous monitoring of flood management and storage capacity (Ponds, Dams etc.) Further improvement in dewatering/ pumping facilities keeping excessive rainfall event (changing rainfall patterns).	
Market Disruption	• Public Advocacy to improve infrastructure (Informational actions) • Continuous interactions with supply-chain partners both Upstream Downstream for supply chain resilience		
Impact on Workforce	• Heat stress awareness campaigns and monitoring • Water coolers provided for all the employees. ORS & hydrants are provided to the employees. Deployment of chiller units • Health care facilities present for employee well-being & periodic health check-up. • Monsoon preparedness plan along with safety management plans coupled with mock-drills • Alerts to employees to avoid work during any extreme climate event. Employees are provided with alert notifications based on the severity of weather event		

Transitional Risks Assessment

To assess medium- and long-term transitional risk relevant external variables like regulatory impacts, energy mix, consumer behavior shift, mineral requirement for renewable energy were considered to simulate the climate scenario.

Recognizing the uncertainties, we used scenario planning to explore energy transitions in the next 20-30 years, considering changes in regulations, technology, markets, and impact on reputation. This process also considered a wide range of pertinent transition risks, such as changes in carbon pricing, energy efficiency, and water management regulations, renewable energy law, insurance premium changes, technology obsolescence or financial viability, changes in the supply and demand for Zinc, Lead & Silver, shifts in public perception, and community perceptions. For transitional risks IEA scenarios-Stated Policies Scenario (STEPS), Announced Pledges Scenarios (APS) and NZE 2050 were used.

Managing Transitional Risks

The table below depicts the strategy to mitigate the risk and related impact in short term, medium term and long term

- We have identified transitional risk, financial impact, and vulnerability for scenarios with global warming exceeding 2°C and below 1.5°C for two-time periods 2030 & 2050
- Scenarios were built using data available in the public domain, reports by International Energy Agency (IEA).
- Each risk was considered in isolation/independently and trade-offs between risks were not considered.
- Assessed transition risks, i.e., policy and legal, technology, market.

A variety of transition risk factors (as defined by the TCFD) were reviewed for our scenario analysis and following Transitional risk and impact were identified:

Risk Map	STEPS		APS		NZE 2050	
	2030	2050	2030	2050	2030	2050
Policy: Action to constrain emission-intensive activities & Legal: increase in climate related litigation claims.	No foreseeable Carbon price in India. India has no plans to pull out completely from coal will take a couple of decades through "a phase down". No foreseeable Carbon price in India.	No foreseeable Carbon price in India.	No foreseeable carbon price in India however as per IEA APS Scenario emerging market and developing economies with net zero pledges to have high Carbon Price.	No foreseeable carbon price in India however as per IEA APS Scenario emerging market and developing economies with net zero pledges to have high Carbon Price.	No foreseeable carbon price in India however as per IEA NZE Scenario emerging market and developing economies with net zero pledges to have high Carbon Price.	No foreseeable carbon price in India however as per IEA NZE Scenario emerging market and developing economies with net zero pledges to have high Carbon Price.

Risk Map	STEPS		APS		NZE 2050	
	2030	2050	2030	2050	2030	2050
	India Specific Regulations: • Renewable Purchase Obligations (RPO) • National Carbon Market • Perform achieve and Trade (PAT) Scheme • Energy Conservation Act. The above can increase indirect (operating) cost.		India Specific Regulations: • Renewable Purchase Obligations (RPO) • National Carbon Market • Perform achieve and Trade (PAT) Scheme • Energy Conservation Act. The above can increase indirect (operating) cost.		India Specific Regulations: • Renewable Purchase Obligations (RPO) • National Carbon Market • Perform achieve and Trade (PAT) Scheme • Energy Conservation Act. The above can increase indirect (operating) cost.	
Technology: Development of emerging technology to support a lower-carbon economy	Regulatory authority mandating use of more energy efficient systems.	Investments required in storage systems as flexibility needs arise	Decline in unabated coal use for electricity generation. Rise in flexibility requirements for reliable source of renewable energy.	Phasing out of unabated coal use for electricity generation by 2040. Rise in flexibility requirements for reliable source of renewable energy.	End of unabated coal use for electricity generation worldwide by 2040	Costs to adopt / deploy new practices and processes by changing the current processes such as phasing out Pyro metallurgical processes. Increased cost due to investment in carbon capture technology.
	Costs to adopt/ deploy new practices and processes will experience such as high per unit cost of utility-scale stationary batteries & Hydrogen electrolysers.		Increased research and development (R&D) expenditures in new and alternative technologies & physical modifications. Costs to adopt/ deploy new practices and processes will incur high per unit Cost. (Utility-scale stationary batteries & Hydrogen electrolysers etc.)		Increased research and development (R&D) expenditures in new and alternative technologies & physical modifications. Costs to adopt/ deploy new practices and processes will incur high per unit Cost. (Utility-scale stationary batteries & Hydrogen electrolysers etc.)	

RISK MAP	STEPS 2030	STEPS 2050	APS 2030	APS 2050	NZE 2050 2030	NZE 2050 2050
Market: Shifts in supply and demand as consumers prefer sustainable alternatives	EVs account for over 10% of the road vehicle fleet by 2030 reducing Lead demand. Carbon Border adjustment mechanism to directly impact any EU related expansion plans. High Levelized cost of electricity (LCOE) from Coal. Low Value Added Levelized cost of electricity from Solar PV & Offshore Wind.	Loss of market share to competitors producing cleaner products.	Total EV sales represent over 35% of total car sales & 8% of total heavy truck sales. Carbon Border adjustment mechanism to directly impact any EU related expansion plans. High Levelized cost of electricity (LCOE) from Coal. Loss of market share to competitors producing more cleaner products. Low Value Added Levelized cost of electricity from Solar PV & Offshore Wind.	Global coal supply to decline between 2030 and 2050. Loss of market share to competitors producing cleaner products.	Total EV sales represent over 60% of all vehicle sales. Carbon Border adjustment mechanism to directly impact any EU related expansion plans. High Levelized cost of electricity (LCOE) from Coal. Loss of market share to competitors producing more cleaner products. Low Value Added Levelized cost of electricity from Solar PV & Offshore Wind.	Global coal supply declines significantly between 2030-2050. High cost for running Coal based CPP's. Loss of market share to competitors producing cleaner products.
Reputation: Perception of an organization's contribution to a lower-carbon economy	Increasing consumer awareness leading to isolating companies with significant emissions.		Consumer activism will lead to loss of revenue and missed growth opportunities. Disruption in social license to operate. Decrease in revenue due to demand for green products. Increased competition for natural resources and tensions between mine operators and local communities.		Consumer activism will lead to loss of revenue and missed growth opportunities. Increased R&D expenditures in new and alternative technologies & physical modifications. Costs to adopt/ deploy new practices and processes will incur high per unit Cost. (Utility-scale stationary batteries & Hydrogen electrolysers etc.)	

Low Risk Medium Risk High Risks

Result from the Transitional Risk Assessment

In IEA STEPS scenario we find that there is no Carbon tax is foreseeable future in India, however Carbon price under APS & NZE 2050 scenario to have a high impact in 2030 & 2050. However local regulations and policies such as Renewable Purchase Obligation to have impact on our business strategy.

As the share of renewable energy in energy mix rises, requirement for flexibility system will see an increase too, and non-availability of desired technology at a desired cost will directly impact the business. Though our metals, Zinc and Silver are slated to play a pivotal role in energy transition we expect a decrease in demand for lead because of lead-acid batteries becoming obsolete in electric vehicles. However, lead will play a frontal role in being cheap & easily available component of energy storage systems.

High cost of electricity generation from coal due to decrease in supply from international suppliers to increase our cost of operations. Market regulations such as CBAM, will directly have an impact on expansion plans. Consumer activism will lead to loss of revenue and impact the social license to operate. With increase in consumer demand for low-carbon products there can be loss of market share to competitors producing cleaner and greener products.

Capitalizing Climate Change Opportunities:

Strategy	Short-Term	Medium-Term	Long-Term
Policy & Legal	**Energy & Climate Change** • Policies and Infrastructure to increase use of Renewables • Actions to achieve commitment to Science Based target initiative **Circular Economy** • Creating Policies and accordingly set up of infrastructure for waste management schemes, increase recycling rates, facilitate circular economies & gainful utilisation of waste **Commitment to Biodiversity** • Commitment to No Net Loss (NNL) • Adopting Taskforce on Nature related Financial Disclosures guidelines		
Technology	**Research & Development** Investment in new technologies to increase energy efficiency & maximizing output while reducing emissions. • Use of Biomass (5-8%) as a substitute of coal • Technology improvement in phased manner • Deployment of Battery Electric vehicle in underground operations **Adoption of best available technology to reduce freshwater consumption.** • Zero Liquid Discharge at all our locations • Use of treated municipal wastewater (Sewage)	**Logistics** • 100% LMVs by 2030 • Electric vehicle/ Alternate fuel (LNG) vehicles for Inter Unit Transport • Electric vehicle/ Alternate fuel (LNG) vehicle for transport of finished goods **Energy Storage System** • Introduction of battery/ pump storage system to meet flexibility requirements **Manufacturing** • Adoption of best available technology to increase our use of renewable electricity signed Power Delivery Agreement • 100% Green Power at Pant Nagar Metal Plant, Uttarakhand **Logistics** • 75% Underground battery electric vehicles in Mining Location by 2035 **Harness on Renewable Energy commitment by India** • India's NDC of 500 GW commitment by 2030 **Flexible Power System** • Storage Systems will be used to increase the reliability of renewable energy	**Commitment towards harnessing Green Hydrogen** • Rajasthan has huge potential for Solar power & HZL plans to harness it for green hydrogen generation for mobility, smelter operations & energy storage **Abate residual emissions** • Carbon Capture Utilisation & Storage (CCUS) • Hydrogen use as a replacement of coke

Strategy	Short-Term	Medium-Term	Long-Term
Market	**Carbon Neutrality** Individual commodity achieving carbon neutrality in-line with customer preference for sustainable finished goods. Changing consumer preferences for low-carbon products and decarbonized upstream mining commodities will have a direct short-term impact on our revenue as the requirement of recycled input materials increases. • Our product Continuous Galvanizing Grade (CGG) zinc alloy can be used directly by the customer without the need to convert it into alloy, thereby saving resource use- water, energy, and cost by up to 5-10%. Target to increase- Value added low emissions product to 24% by FY 2024-25 • Use of high-quality, verified GHG offsets • Increase in demand for Green Zinc & Silver for energy transition. • Use of by-products such as Fly Ash & Jarosite for cement production & road construction and contributes to reduction in GHG emission for production of virgin material.		
Reputation	**Transparent Disclosures** • Transparent disclosure of our GHG emissions by scope • Our Net Zero Roadmap targets in-line with SBTi • Introduced Internal Carbon Price. (Shadow Price) • 5X water positive. 25% reduction in freshwater consumption.		

Tackling Transitional Risk

- Improvement in energy efficiency and clean energy
- Application of circular economics
- Reducing exposure to climate related risks will reduce costs, preserve, or enhance revenues
- Increased opportunities in collecting freshwater through rainwater harvesting
- Reduced exposure to climate-related risks leading to improved community relationships
- Reduced freshwater usage and consumption at operational units
- First mover advantage: present extent of electrification and cost-effective RE resources availability
- Participation in renewable energy programs and adoption of energy efficiency measures
- Low carbon emission: Use of lower-emission sources of energy, supportive policy incentives, and new technologies
- Increase in demand for Decarbonised metals like Silver and Zinc providing access to new markets
- Use of new technologies and Resource substitutes/ diversification
- Opportunities in developing solutions for sequestration in the mines

Impact of Identified Climate related issues on HZL Strategy and Financial Planning

Our products, Zinc & Silver will play a pivotal role in transition towards a low-carbon future in line with the same we have identified opportunities arising from a change in consumer preferences towards low carbon metals, this has led us to direct our efforts towards production of low carbon metals.

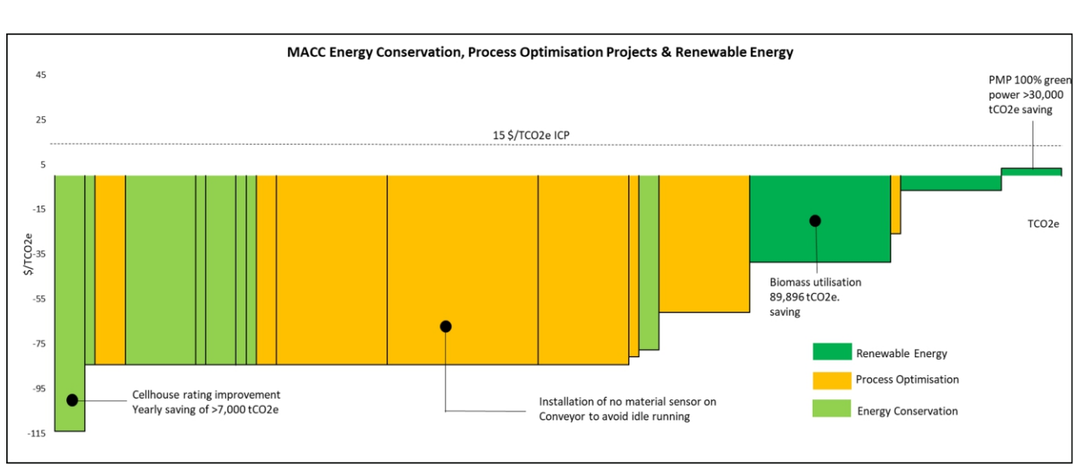
In FY22-23 our Pantnagar metal plant sourced 100% green power and we have already signed PDA for 450 MW RE-RTC, which will help us source more than 50% of our electricity from renewable energy. We have also motivated our business partners to introduce EV's in operations. We have started working with our top 50 suppliers on their emission reduction targets.

Marginal Abatement Cost Curve (MACC)

Our MACC enables an assessment abatement opportunity, these opportunities are driven by Energy and Carbon committees as a part of energy saving projects. The projects are identified basis its energy efficiency potential. These include energy efficiency, process optimisation & small-scale renewable energy projects. The viability of the project depends upon the financial savings basis the reduction in use of electricity, diesel & other fuels which help reduce our emission footprints. These are generally small-scale projects identified by annual competitions such as Kaizen in which employees come up with their best innovative ideas leading to significant reductions of energy & emissions.

The marginal abatement cost curve includes the energy efficiency & process optimisation projects that were identified at Hindustan Zinc Limited and shall provide savings throughout the year, however minimum life considered is 3 years for energy conservation projects and 1 year for renewable energy projects. We see that most of our projects were having positive NPV. For example, the project of installing no load sensor in one of our mines will help save > 32,000 tCO_2e in a year with a negative cost of abatement, i.e., a positive NPV. A lot of positive NPV projects are zero operational cost projects which are process optimisation projects to increase energy efficiency of systems have been identified as-well.

These projects showcase the immense potential towards contributing to reducing of our environmental footprint.



* Please note that the MAC curve shown does not contain the 450 MW RE-RTC

Our Transitioning Pathway to a Low-carbon Economy

2030	2050
Scope 1 & Scope 2 – Reduction by 50% **Scope 3 – Reduction by 25%**	**Net Zero GHG emissions**
• >50% electricity from renewable energy. This will significantly reduce our freshwater consumption and non-GHG (SO_x & NO_x) emissions • Energy efficiency measures to reduce energy consumption • 100% electrification of smelter fleet 50% electrification of mining fleet • Plantation of 3 million trees (cumulative) • Innovation in product development to achieve recyclability and other emission reductions in downstream while usage of final products • Rigorous supply chain engagement to reduce emissions in upstream purchased goods & services • Preferring supply chain partners with Net Zero Commitments • Deploy electric vehicles for transportation of Finished goods • Increasing dependency on renewable energy will significantly reduce emissions related to Category 3. (11% of Scope 3 emissions).	• 100% Firm 24x7 renewable electricity at all sites • 100% shift towards Electric or hydrogen driven vehicles • 100% hydrogen use to substitute Coke as reducing agent • Recycled scrap in production • Plantation of 5 million trees (cumulative) • Offsetting of the remaining GHG emission • Direct Air capture (DAC) & CCUS technology use to capture residue emissions • Engage value chain partner with Net Zero commitment

Climate Resilience in The Community

We are focused on interventions through our CSR activities to enhance community resiliency to address susceptibility and increase adaptation to risks brought on by climate change, in addition to lowering our emissions and taking efforts to lessen the impact of climate change on our company and operations. Through a variety of programmes and related activities, we use CSR projects as a tool to reduce the negative effects of climate change on our communities. To achieve dual outcomes in terms of climate action, environmental, and social sustainability, the mitigation & adaptation measures are linked with the community development goals.

Hindustan Zinc's primary CSR initiative, Samadhan, uses agricultural interventions to reach 30,000+ farmers. To help the agricultural community become resilient to climate-related problems including water shortages and drought, HZL implemented the following measures as part of this project.

Bunding: The activity of restricting the runoff of rainwater in hilly terrains. This allows the land to absorb more moisture and increases the water percolation. With improved moisture content of soil, the farmers are able to cultivate more crops during winter season.

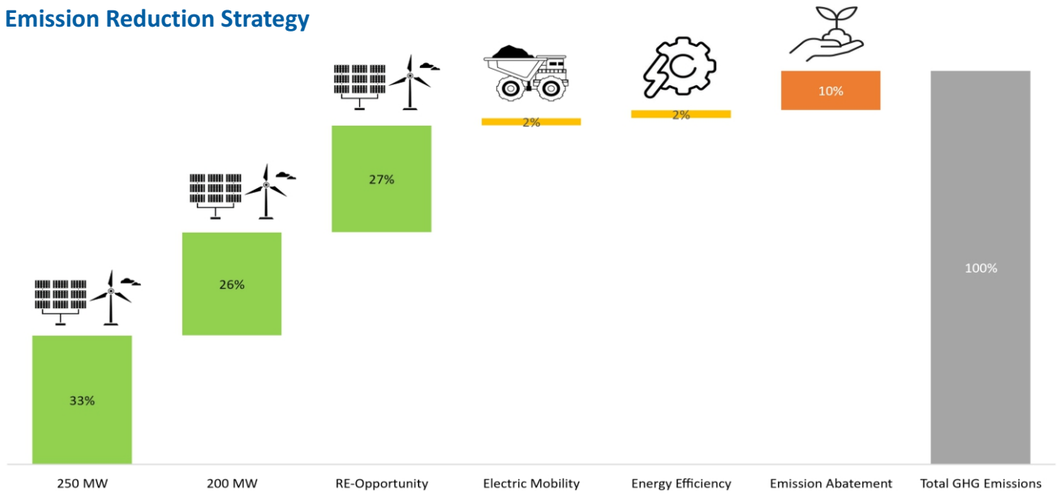
WADI: It is the approach of the tree-based farming system focused on a family as a unit of development.

Ultra-high-density plantation: In this method, high tree density is combined with drip irrigation and specialized pruning process. This technique conserves land and water resources. Gestation period is also less compared to conventional method. In addition to helping farmers to manage water related challenges, these measures are also understood to help minimise the risk of floods, soil erosion and provide livelihood to community.

Water Augmentation & Rejuvenation of Water bodies

The project helped in creating additional storage capacity through revival of traditional water bodies and construction of ground water recharge structures. Rainwater harvesting project and Rampura Agucha led to total ground water recharge 8.70 million cum per annum- by using of artificial recharge shafts in 84 ponds in four blocks of Bhilwara district of Rajasthan. It also included desilting of more than 80 village ponds with catchment area treatment.

Emission Reduction Strategy



Advocacy Strategy

Hindustan Zinc is a member of several National and International industry associations, and plays an active role in propagating good practices, sharing knowledge, and taking opportunities to contribute to the development of relevant industry standards. We proactively engage with government, regulators, industry forums, and conservation community for capacity building and to influence policy and promote good practices on matters related to climate change and sustainable development.

We are a member of FIMI-Sustainable Mining Initiative (SMI), which promotes tangible and measurable concepts of sustainable mining, and assists the mining sector in inculcating sustainable practices in mining operations and tackling industry-wide challenges of environmental management and socio-economic development. We annually submit communication on progress against the 10 sustainable mining principles.

We are currently piloting targets for nature with SBTN and working on Assess and Prioritize steps (Steps 1 & 2) to assess our impacts on nature and define where action is most needed. We are amongst the only 17 companies in Initial Target Validation Pilot participants. We have joined the Taskforce on Nature related Financial Disclosures (TNFD), which is committed to facilitate action and reporting on evolving nature-related risks.

HZL actively participated in COP28 Business Leader Working Group. We are also member of CII Working Group on Driving Accelerated Climate Action by Indian Businesses.

HZL joined the International Zinc Association (IZA) Climate change Taskforce, actively participating in characterizing the carbon footprint of recycled content in SHG zinc production, and the societal benefits of increased resource recovery in a circular economy. This included decarbonization roadmap, Carbon footprint calculations and reporting guidance for SHG Zinc, Life Cycle Assessment (LCA) & Scope 3 GHG emissions.

We have partnered with some government agencies like NCCBM, NEERI and CRRI for the utilisation of jarosite in cement and road construction, thus promoting circular economy through 100% waste utilization.

Risk Management

TCFD Recommendations Risk Management		
Describe the organisation's processes for identifying and assessing climate-related risks.	Describe the organisation's processes for managing climate-related risks.	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.

Assessing climate change-related challenges has become crucial for our both internal and external stakeholders and climate related financial disclosure has become key to support informed and efficient decisions. The risk management section of TCFD aims at disclosing how the organization identifies, assesses, and manages climate-related risks and how these are integrated into enterprises risk management frameworks.

HZL leverages Enterprise Risk Management (ERM) framework to identify, assess, monitor, and respond to climate-related risks. The risk management framework is built on Vedanta Risk Management Standard, SEBI, ISO 31000 & COSO guidelines that delineates process of risk assessment, compilation of risk registers and associated action plans, mapping of events and its mitigation. Our risk management framework is well-structured and allows us to identify, assess, categorise, address, and mitigate both positive opportunities and negative consequences associated with our business. These are regularly monitored, tracked, and reviewed through a robust governance and process architecture, with roles and responsibilities clearly defined for each stage. **Hindustan Zinc's risk management system is certified as per ISO 31000:2018.**

At HZL, we identify and categorise emerging/present company-specific climate-related Physical or Transitional risk and opportunities. These risks are prioritized based on the frequency of its occurrence or recurrence and on the degree of its impact on revenue & cost including its velocity to disrupt.

HZL defines substantive financial or strategic impact on the business when either of the following point is observed:

- Reduction of targeted EBIDTA by >7.5% and <=10%
- Reduction of targeted production volume by >7.5% and <=10%
- Major pollutants released into the environment around the local area (reversible yet long term impact) with possibility of prosecution, litigations and financial damage and fines/penalties imposed.
- Serious impairment of ecosystem; recovery takes between 1 month and 3 months
- Category IV/V environmental incidents such as:
  - Breach of ash dyke/waste disposal site without immediate impact to communities/ water bodies
  - Unauthorized hazardous waste disposal on land (unlined) outside the plant boundary/to unauthorized agencies
  - Continuous emissions beyond norms but no immediate impact on health of communities
- Material loss in brand value and perception and major loss of customer confidence
- Critical and hostile coverage by the national media which persists for a period of< 3 days
- Decline in stock prices of <15% over a sustained period of 2 weeks due to negative media coverage/publicity
- Reduction of targeted IRR by > 15% and <=20%
- Substantial increase from budgeted costs i.e., >10 and <= 20% of Project Value
- Project delay: >9 and <= 12 Months

HZL calculates substantive financial or strategic impact on its business by computing the number of production days lost or the economic cost the said risk has on our organization during the impact period.

Our Climate Risk Identification and Assessment Process

Quantifying a risk as business risk
Quarterly structured risk meetings are convened at site level wherein risks are reviewed for impact and likelihood along with its mitigation plan. HZL has an established Enterprise Risk Management (ERM) framework to help identify the strategic, financial and operational risks. Climate risks have been integrated as key risks in our ERM and financial planning.

We follow the '5*5' Risk Matrix for risk assessment. The impact, likelihood, and velocity of each risk is calculated based on potential future impact and historical occurrence of similar incidents and rated on a 5-point scale. Based on the scores defined, the risk score is calculated to identify the criticality of the risk and ensure prioritisation of the risks, based on which mitigation plans are prepared.

For each of the risk identified, a 'risk owner' is assigned at the corporate level who is accountable for the progress on the actions taken for mitigating risk. Risk management targets and indicators are clearly defined as part of the risk scorecard, while performance evaluation is regularly done at the management level.

Processes for Identifying and Assessing Climate-related Risks
Risk Governance Structure has three levels of responsibilities i.e., Risk Governance and Oversight, Risk Infrastructure and Management and Risk Ownership. This structure has been proposed bearing in mind the existing risk organization structure to maintain the existing reporting and communication lines around risk management.

Risk Governance and Oversight
- The Board of Directors are responsible for oversight on Risk Management for the entire organization. They are also responsible for approving policies that address high-risk areas.
- The Audit and Risk Management Committee shall be responsible for the semi-annual review of risk management practices and shall apprise the Board on risk management in the Company.

Risk Infrastructure and Management
- The MANCOM shall include risk management matters in its agenda on a quarterly basis. The MANCOM may invite members from the EXCO and IBUs/SBUs for the quarterly meetings.
- The Chief Risk Officer (CRO) shall act as the coordinator to collate and present risk management matters to the MANCOM on a quarterly basis and shall present key enterprise risks reviewed by the MANCOM to the Audit and Risk Management Committee on a semi-annual basis.

Risk Ownership

- Each unit of HZL shall have a Unit Risk Officer who will be responsible for overseeing the reporting of risks to the Central Risk Team
- The Unit Risk Officer shall convene the Unit Risk Council that will be held to review Unit level risks and response plans every quarter.
- Unit Risk Officers shall be responsible for monitoring risks and response plans reported by the risk owners and response owners of the respective Unit functions.

Process for Climate-related Risk Identification	
Internal Sources	**External Sources**
• Interviews with Site Teams • Workshops • Internal Audits • Internal Surveys	• External Auditors • Industry Peer Benchmarking • Consultants • Reports by International Agencies
Process Assessment & Analysis	**Assessment & Analysis**
• Risk Identification at Site Level • Risk Review by Risk Officer & Senior Management • Risk Management process coordination by Management Assurance function • Quarterly Risk Review by Company's Audit Committee	• Site Level Risk Assessment • Operation Process Analysis • Value chain risk assessment

We deployed analytical tools that employ a bottom-up approach to generate climate change forecast ranges, explore divergent hypotheses, and consider various scenarios. These tools helped us assess the potential impact of policy changes, regulations, technological advancements, market dynamics, and societal shifts on our business.
Furthermore, we continuously monitor a wide range of data sources to stay informed about climate-related developments. This enables us to identify significant changes that may require us to re-evaluate our business strategy and take appropriate action.

We next evaluated vulnerabilities, possible effects of these vulnerabilities (i.e., risk characterisation), and the prognosis under each of the four climate RCP scenarios (RCP2.6, RCP4.5, RCP6.0, RCP8.5). The likelihood, relative impact severity, implications, and any existing or necessary risk management procedures were then used to characterise the risks to determine their scale and scope. The most suitable risk mitigation measures for adaptation that have been or will be implemented and monitored by our operations were identified during this last stage. We used Network for Greening Financial System (NGFS) to identify the changes in mean air temperature, precipitation, wind speed & impact on labour productivity for RCP scenarios and time periods of 2030 & 2050.

This process also considered a wide range of pertinent transition risks, such as changes in carbon pricing, energy efficiency and water management regulations, renewable energy law, insurance premium changes, technology obsolescence or financial viability, changes in the supply and demand for Zinc, Lead & Silver, shifts in public perception, and community perceptions. For transitional risks IEA scenarios Stated Policies Scenario (STEPS) & Announced Pledges Scenario (APS) & Net Zero Emissions (NZE) 2050 were used.

Each of our sites has a particular committee and significant risk management group that, via discussion at regular meetings, pinpoints the risks and possibilities existing there. Our activities evaluate environmental effects, health and safety risks and hazards, incident analysis, and significant risks that have been recognised. These factors consider both the physical dangers brought on by a changing climate and the risks posed by the move to a low-carbon future. To assist with decision-making and action prioritisation, the risks are identified and assessed. The process of identifying and evaluating risks is ongoing as well as it is being identified during specific risk assessments.

To establish adequate accountability with decision-makers, we inform the Board of Directors as well as senior management of substantial risks. Also, to ensure that we prepare for and communicate impending and/ or possible regulations throughout the organisation, we have delegated responsibility for detecting and managing forthcoming climate regulation changes to both the corporate and regional levels.

Risk Prioritization Criteria

The following risks shall be considered for as Key or Principal Risks:

- Risks Categorized as Critical or High as per the Severity Matrix at residual level.
- Risks with High Impact and High Velocity ratings i.e., individual rating > 4 as per the Impact and Velocity scales
- Risks identified by the Units and Corporate Functions as key to running operations

Risks identified must be assessed to classify and prioritize them as per the severity of the risks to decide the right risk management strategies appropriate for the different class of risks; as tabulated in the Risk Severity Matrix. The risk management strategies are discussed in the Risk Response step shall be followed for the treatment of risks across the Company.

The risks so rated shall be mapped on a two-dimensional matrix called “Risk Heat Map” based on likelihood and impact ratings. Risk Velocity is represented by the size of the bubble in the heat map. The larger the bubble size the higher is the risk velocity.

The risks identified and assessed shall thereafter be classified basis the associated risk rating (Critical/ High/ Moderate/ Acceptable) as per the Risk Severity Matrix.

Risk Severity Matrix

Risk Rating	Criteria (rating out of 50)
Critical	Risk Score>=40
Severe	RiskScore>=24 and <=39
Moderate	Risk Score >=9and <=23
Acceptable	Risk score <8

In order to identify risks that require focused attention, it is important to prioritize risks to arrive at risks key to the business or identified as Principal Risks. Such principal risks shall be identified as per the Risk Prioritization Criteria.
Key or Principal risks shall be those identified by the Units and Corporate Functions as key to running operations and include Critical and High risks at a residual level, High Impact – High Velocity risks or any other risk identified as key.

Integrating Climate Change into Enterprise Risk Management Systems

HZL will adapt the measures laid out by parent company Vedanta for strengthening the risk management system by integrating climate related issues. Following are the measures laid out by Vedanta

Short-Term	Medium-Term	Long-Term
• Adapt existing enterprise-level and other risk management processes to take account of loss and damages incurred/ projected from cyclone events or heat waves • Plan to use the same quality assurance and compliance approaches for climate-related information as for finance, management, and governance disclosures • Embed Internal Carbon Pricing into the business decision-making process	• Develop BU-level adaptation plans based on identified climate risks and the techno-feasibility assessments • Engage with external key stakeholders (along the supply chain) to manage risks. • Identify/validate business-critical suppliers of goods and services who are exposed to high physical and transition risks. • Assess and quantify the impact of the loss of the critical suppliers in the event of climate disasters, or in case of low carbon transitions.	• Consider insurance or additional climate fund (enhanced ICP) for emergency purpose • Install measures to reduce exposure to physical climate risks identified

Our Risk Management Process

Our Chief Risk officer manages the overall risk management process, provides ongoing guidance, tools, and analytical support to the site teams, and facilitates ongoing communication between the parties, as well as with HZL's Board Committee.

The risk management process is coordinated by the Management Assurance function and is regularly reviewed by the Company's Audit Committee. The Audit Committee is aided by the Risk Management Committee, which meets regularly to examine risks and the progress against the planned actions. The primary function of the Risk Management Committee is to review the significant risks identified by the Management, along with its mitigation plan, to monitor and review the Company's risk management plan, and to appraise the Board on risk assessment and minimization procedures. The overall internal control environment and risk management program, including financial risk management, is reviewed by the Audit Committee.

Addressing Risks and Harnessing Opportunities

Climate-related Risk

Risk Type: Acute Physical | | Drought
Impact: Increased direct cost
Time-frame: Medium-term & Long-term

Risk

As per the WRI Aqueduct tool we identified that all our location ins Rajasthan are in Extremely high-water stress area & high seasonal variability across locations, and as per climate-related physical risk assessment under RCP2.6, RCP4.5, RCP6.0 & RCP8.5 scenario (World Bank Knowledge portal), drought is identified as the top acute physical risk in medium-term and long-term. Since water is a critical input for our mining and smelting operations, non-availability of water has the potential to disrupt our operations, by impacting our direct costs. For instance, non-availability of water due to drought will cause disruption in operations of Captive Power Plant (CPP).

Mitigation Strategy

To address this risk, we are consistently maximising water recycling and reuse across all our operations to minimize the need for freshwater extraction. Additionally, we are actively involved in the development of rainwater harvesting structure to replenish groundwater resources. Our company has set a target to become a 5 times water positive company by 2025, aiming to reduce freshwater consumption by 25% compared to the base year of 2020. Currently, we are operating as a 2.41 times water positive company.

We have also signed a Power Delivery Agreement (PDA) for 450 MW RE-RTC and will start receiving renewable energy in phased manner from 2024. These efforts together will help us reduce our dependency on freshwater and reduce our carbon footprint.

Climate-related Risk

Risk Type: Carbon Tax
Impact: Increased cost of production
Time-frame: Medium-term & Long-term

Risk

Increasing focus on climate change abatement regulations globally such as the EU carbon border adjustment mechanism (CBAM) that proposes a tax of 25%-30% w.e.f. 2026 on steel and aluminium imports from foreign suppliers with high carbon intensive production processes. The EU CBAM means that many EU importers will be charged a carbon price on their Scope 3 emissions resulting from the activity of a downstream and upstream business partners. The export of Indian steel to Europe may be majorly impacted and as zinc is a key raw material in steel manufacturing (used for galvanization), which may directly impact the demand for zinc, driving the cost per unit as well as premiums for zinc downwards, and thereby impacting zinc revenue and EBITDA from zinc exports to the EU. As zinc is a carbon-intensive industry, these tax mechanisms could be extended to zinc too.

Mitigation Strategy

- Transitioning towards renewable energy in our operations- producing more green products like green zinc- will help Hindustan Zinc meet the growing emissions targets set by different countries.
- Hindustan Zinc has defined an internal carbon pricing mechanism, applicable to all units, to bring in organisational change by influencing internal behaviour, and to drive decarbonisation across operations. The internal carbon price for FY2022-23 is 15$ USD/TCO2e.
- As a part of our initiative to reduce emissions our unit Pantnagar metal plant started sourcing 100% green power for its operations thus abating >30,000 tCO_2e.
- We are also working with our value chain partners in decreasing their carbon footprint and in line with the same they have introduced electric forklifts & tow trucks in our smelting operations thus reducing scope 1 emissions.

The above initiatives apart from 450 MW RE-RTC will help us achieve our short-term target of 50% reduction of Scope 1 emissions by 2030.

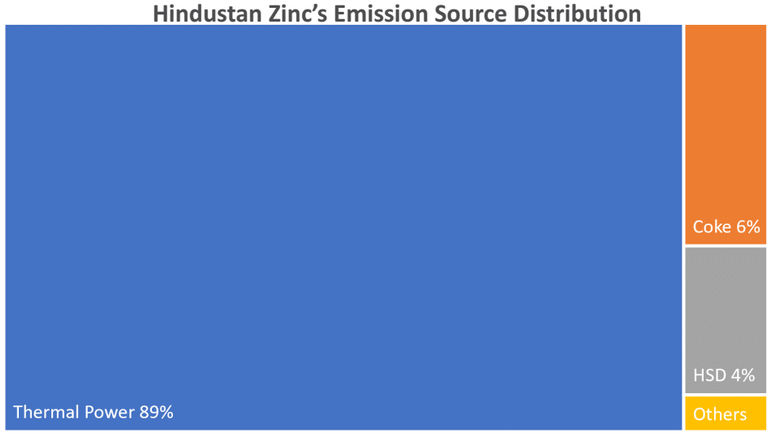
Climate-related Opportunity
Opportunity Type: Lower emission sources of energy || Renewable Energy
Impact: Reduced Direct Cost
Time-frame: Medium-term & Long-term

Opportunity
Hindustan Zinc as a part of its net-zero ambition, has committed to increase its dependency on lower-emission energy sources. Increasing dependency on renewable energy will also help us to abate current regulations, Renewable Purchase Obligation (RPO) of 10.2%. In future, we also expect these obligations to increase, with Perform, Achieve, Trade (PAT) Scheme, and Carbon Markets & Energy Conservation Act being implemented.

Actions taken to realise Opportunity
~90% of our energy needs are dependent on electricity with is also central to our decarbonisation strategy. In pursuing HZL's commitment to renewable energy, we have already signed Power Delivery Agreement (PDA) for supply of 450 MW Renewable Energy Round the Clock (RE-RTC) power under group captive scheme.

This would substitute thermal power requirement for Dariba Smelting Complex and Chanderiya Lead Zinc Smelter. Thereby, reducing our dependency on coal and reduce our direct operating costs of these two smelting operations. We will start consuming RE power in phased manner from 2024. It will help reduce Scope 1 & Scope 2 emissions by 2.7 million tCO_2e.

Hindustan Zinc's Emission Source Distribution



Climate-related Opportunity
Opportunity Type: Resource Efficiency
Impact: Reduced direct cost
Time-frame: Short-Term

Opportunity
Our commitment to delivering positive outcomes for nature drives us to continuously review and update our approach.

We believe that sustainable business practices will create opportunities for enhancing resource efficiency, minimising negative environmental impacts. Our manufacturing operations demand high energy consumption, and hence increasing energy efficiency, and adopting renewable and clean energy to the extent possible, is a high priority for us. We have taken multiple concrete steps to reduce our emission footprint.
For our business, water is a very important resource, and is extremely critical for our mining and smelting process. We also engage with our communities for enhanced water security via initiatives such as watershed management.

Actions taken to realise Opportunity
Initiatives such as cell house rating improvement, installation of no load sensor on conveyor & other energy-saving initiatives across Hindustan Zinc have led to cumulative savings of 581,915 GJ in FY2023.

Our approach to water management includes, increasing water efficiency, and exploring new technologies which are less water intensive like, Installation of ZLD across our operational sites, and augmenting water recycling across the operations & Rainwater harvesting via localised water shed management. We have strengthened Zero Liquid Discharge (ZLD) plants at Dariba, Debari and Chanderiya smelting locations, with additional capacities of 3,200 KLD, 3,000 KLD and 600 KLD respectively, to steer our water stewardship journey. We also have upcoming ZLD plants at Zawar Mines & Rampura Agucha mines.

Case Study - Opportunities
Zinc & Silver Demand
As per India's NDC to achieve about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030, we believe that our products will be in the forefront.

In addition to being present in the solar cells themselves, zinc is also used as a protectant against corrosion in solar panel structures. For Wind power zinc is important for wind turbine structure, i.e., for the steel galvanizing. Life cycle of Solar & Wind is 25 to 30 years and hence galvanisation of structures becomes a requirement to sustain the structures thus increasing the cost.

To address flexibility needs as the demand for renewable energy grows, global battery storage capacity shall increase significantly. We strongly believe that Lead will provide a cheap source for energy storage. With development of Zinc air batteries, we believe Zinc will play a vital role in energy storage systems too. Due to the increased need for our products, we have opportunities to expand our business through organic growth. Our expansion/ capacity increase plans and business targets are well in place to meet the growing demand.

Case Study - Risk
Dependency on Captive thermal Power Plants
Hindustan Zinc has 6 Captive Power Plants which generate electricity for its operational needs and is dependent on coal for the same. Coal demand-supply mismatch will have direct impact on production and revenue generation. IEA scenarios of APS & NZE show a significant decline in global coal supplies. There will also be decline in unabated fossil fuel for energy use.

Keeping this in mind we have already started increasing our dependency on renewable energy by signing PDA for 450 ME RE-RTC which will not only suffice more than 50% of our electricity needs by 2026 but also help reduce our carbon footprint by 2.7 million tCO_2e.

Financial Impact due to Physical Risk

Impact Area	Cost occurred for the mitigation measures (INR Cr.)	Mitigation Measures	Impact
Expenditure	17	Rainwater Harvesting at RAM	87 lacs m^3 ground water recharging potential annually
Expenditure	121	3,000 KLD RO-ZLD plant at Zinc Smelter Debari, ZLD plant at CLZS & DSC of capacity 3200 KLD & 600 KLD respectively	Reduced freshwater consumption & treatment of additional wastewater/effluent

Financial Impact due to Transitional Risk

Impact Area	Cost occurred for the mitigation measures (INR Cr.)	Mitigation Measures	Impact
Expenditure	788	450 MW Renewable Energy- Round the Clock (RE-RTC)	Reduce GHG emission (~2.7 Mn TCO2e) & GHG intensity and increase renewable energy share in power mix
Expenditure	46	Biomass use as substitute of coal in Captive Power Plants	Reduce conventional fuel consumption and GHG emissions

Supply Chain Risk Assessment

Hindustan Zinc, being a responsible producer went ahead to assess the risks of critical suppliers. 235 suppliers were identified as critical to business through a robust screening process. The nature risks associated with the critical suppliers were identified. Three types of risks were assessed: Climate, Water and Biodiversity risks.

HZL used the WWF's Water and Biodiversity risk filter to identify the high-risk areas. The collaborators of WWF risk filter include IBAT, RepRisk, Encore, IASA among others. A cumulative risk was identified based on a weighted average combination of Physical, Regulatory and Reputational risks. Parameters involved exact location of the supplier (Lat-Long), Business Importance and Type of Industry. Using the filter, we were able to sort the suppliers based on overall Very high risk, high risk, medium risk, low risk & very low risk. As a starting step, the suppliers in the Very high-risk zones were contacted to identify their Operational Risks as well.

The climate risk assessment of critical suppliers was carried out using the World Bank's Climate Change Knowledge Portal and ThinkHazard tool. The susceptibility to climate risks was calculated based on frequency and intensity of occurrence of the risks namely river, urban and coastal floods, water scarcity, cyclone, extreme heat, earthquake, tsunami, volcanic eruption, and wildfire hazards. Based on the location of our suppliers, extreme heat, wildfire and water scarcity came up as the main physical risks. HZL identifies risk to the organization as percentage sourced from the suppliers in the high-risk regions and is working on steps to reduce such risks.

Sustainability through Supplier Collaboration

We are currently in the- process of evaluating the impact of the identified climate related risk and opportunities on our supply chain. Having a diverse set of operations, we are working towards creating a synergy with our value chain elements on decarbonization.

We are focusing on making upstream supply chain sustainable by

- Creating sustainability awareness and assessing sustainability performance of suppliers (Climate/Water/Biodiversity).
- Identifying suppliers' sustainability goals and helping them achieve their targets.
- Sustainable Supply Chain initiative is in line with HZL's Sustainability Goal of Sustainable Sourcing.

This collaboration has helped us identify our upstream suppliers with significant emissions and streamline our scope 3 emissions.

We are working with our suppliers to submit their GHG reduction strategies and align our long-term strategies with them.

Metrics & Targets

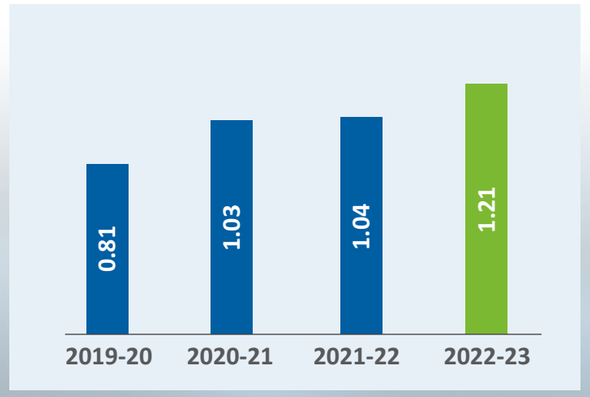
Alignment With TCFD Recommendations		
Disclose the metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process.	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Metrics
GHG emissions are calculated & reported in accordance with Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition).

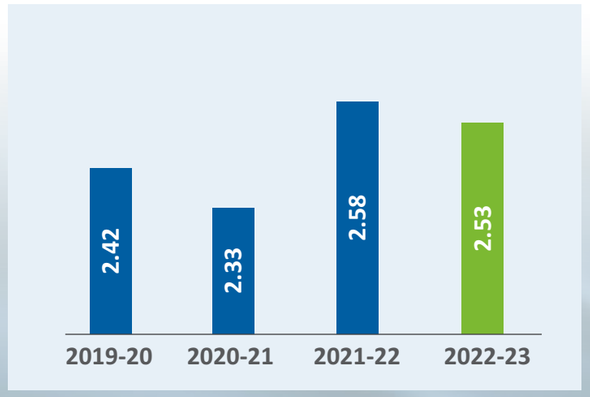
During the year total energy consumption was 42.84 Mn GJ which is ~9% less than previous year i.e., FY2022, this is despite the increase in production by more than 6% in the same time frame. This is also reflected on 14% reduction in Energy Intensity (GJ/MT) reduction from FY22. This is in-line with our commitment to energy efficiency and a cleaner future.

The energy efficiency projects undertaken in FY2022-23 have contributed to savings of 0.58 Mn GJ.

Renewable Energy Consumed (Mn. GJ)

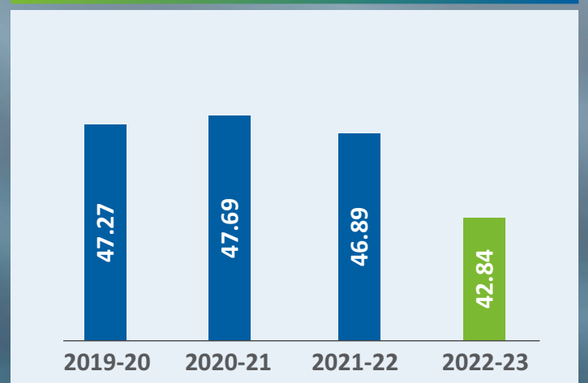


Total Renewable Energy Generation (Mn. GJ)

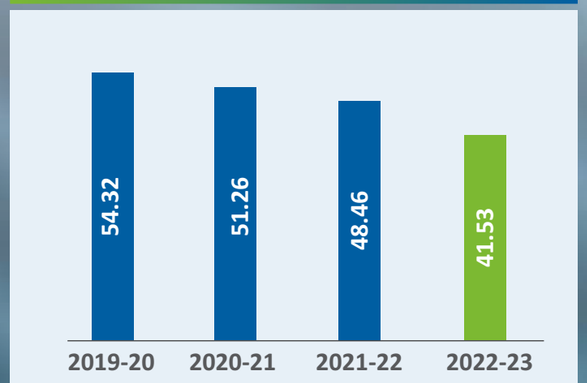


Despite increase in production by more than 6% we were able to reduce absolute (Scope 1+Scope 2) emissions by 4.75% and emission intensity by 10.66% that has been contributed by energy efficiency measures & increased renewable energy use like Pantnagar Metal Plant stared using 100% renewable power.

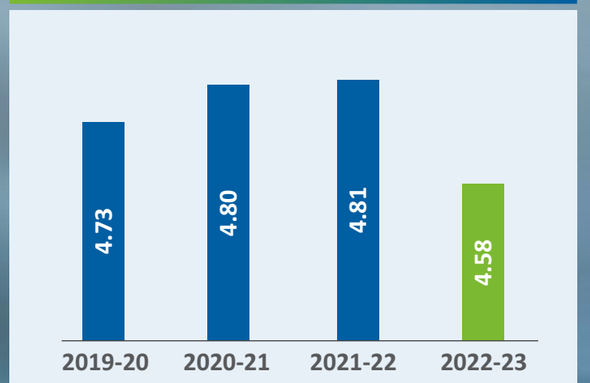
Energy Consumption (Mn. GJ)



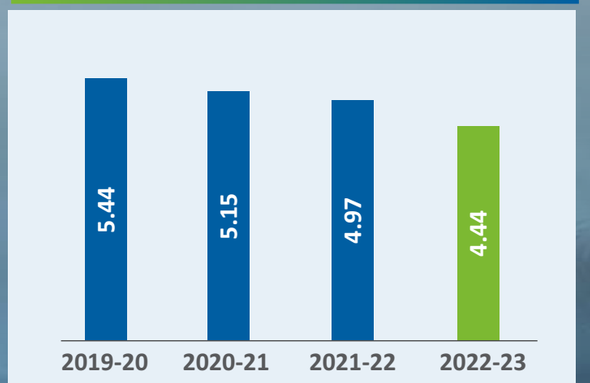
Energy Intensity (GJ/MT)



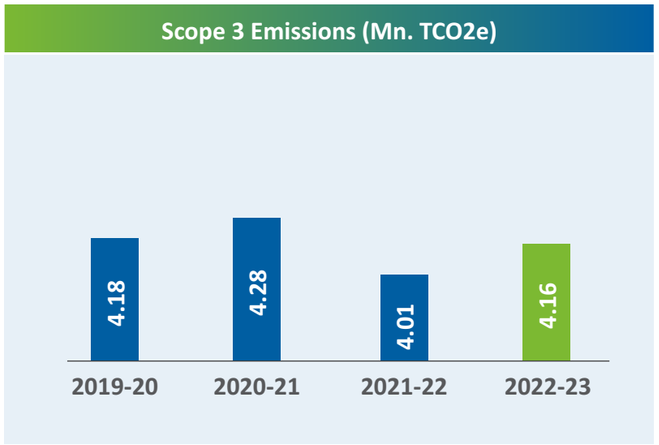
Scope 1 + Scope 2 (Mn. TCO2e)



GHG Emission Intensity (Scope 1+Scope 2)/MT



Scope 3 emissions saw a rise of 3.74% due to increase in production, we remain committed to reduce our Scope 3 emissions by taking proactive measures and engagement with our upstream and downstream value chain partners

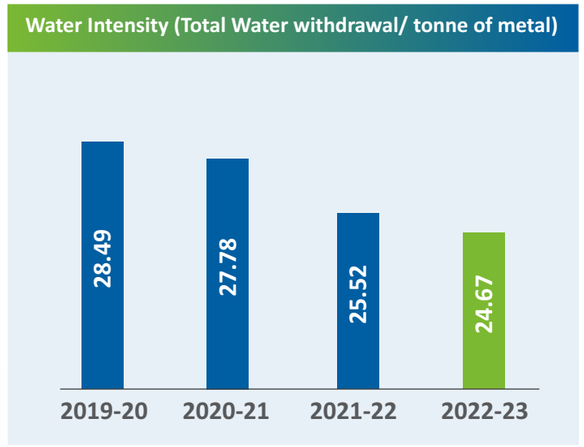


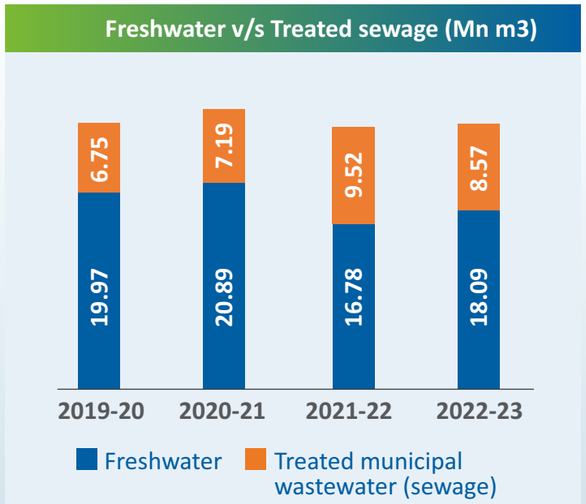
Category Wise Scope 3 Emission Distribution (TCO2e)

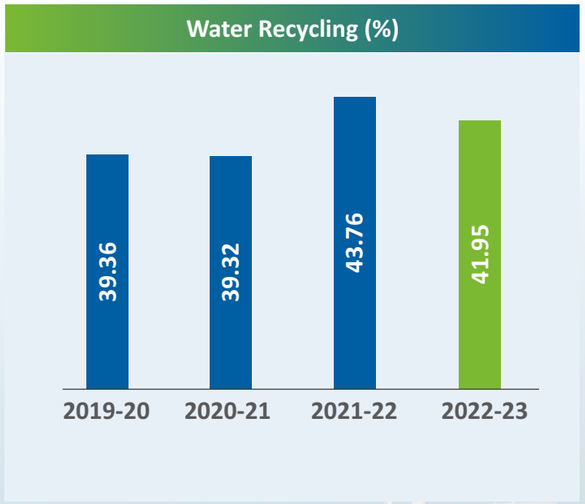
Category	FY21-22	FY22-23
Category 1 Purchased Goods & Services	3,69,317	3,69,654
Category 3 Fuel & Energy Related Activities	4,04,006	4,64,128
Category 4 Upstream Transportation & Distribution	9,727	9,899
Category 5 Waste Generated In Operations	0	-
Category 6 Business Travel	155	630
Category 7 Employee Commuting	1,827	1,252
Category 8 Upstream Leased Assets	40	66
Category 9 Downstream Transportation & Distribution	26,060	46,553
Category 10 Processing of Sold Products	3,19,263	2,22,527
Category 12 End-of-life Treatment of Sold Products	28,81,698	30,47,478
Total	40,12,093	41,62,188

WATER

Water forms an indispensable part of our operations considering our extraction, processing and smelting activities. Due to this, it is imperative that we strive to reduce the water consumption throughout our value chain and reuse it in the best possible way. Our water consumption has seen a slight increase attributed to increase in production (evident in decreasing trend of Water Intensity) however, many proactive measures like Zero Liquid Discharge plants, Dry Stack Tailing & rainwater harvesting will help reduce total water consumption.







Key Targets & Progress

Energy & Emissions Performance

Monthly performance review is undertaken to keep track of energy efficiency initiatives and GHG emissions generated, this helps to plan and implement emission reduction measures. We have also submitted updated ambitious Science based targets and are pending for verification with SBTi.

HZL has set Science based targets of

- 50% reduction of Scope 1 & Scope 2 emissions & 25% reduction of Scope 3 emissions by 2030 from base year FY2020
- Net Zero by 2050 from base year FY2020

2025 Sustainability Goals

Areas	Goals	Performance FY'23
Climate Change	0.5 Mn tCO2e GHG emission savings in our operations from the base year 2017	• 0.34 Mn tCO2e GHG emissions reduced from base year 2017. (68% of target achieved)
Water Stewardship	5 times water positive company & achieve 25% reduction in freshwater consumption	• 9.41% reduction in freshwater from base year FY2019-20
Circular Economy	3 times Increase in gainful utilization of smelting process waste	• 31.01% recycling of total waste in FY23
Biodiversity Conservation	Protect & enhance biodiversity throughout the life cycle plant 1 million trees	3.4 lacs increase in plantation from FY2020. • 1092 Ha. of habitat restoration from baseline FY2020-21

Net Zero by 2050

HZL has committed to Business Ambition for 1.5°C campaign of the Science Based Targets initiative (SBTi), a landmark decision taken under the oversight of Board to align company's climate mitigation targets with the most ambitious Paris Agreement - reaching net-zero global emissions by 2050 at the latest to limit global warming to 1.5°C.

Our commitment towards renewable energy, evident from Power Delivery Agreement of 450 MW Renewable Energy Round the Clock (RE-RTC) which will help reduce our dependency on electricity from non-renewable sources and thus reducing maximum portion of our GHG emission contributor.

Our business is in the state of Rajasthan, India, which has a high potential of renewable energy from Solar power. We plan to harness the opportunity that government commitments on renewable energy as per India's Nationally Determined Contribution (NDC).

5X Water Positive Company

HZL believes in creating long term value for all its stakeholders and in line with the same we believe that reducing freshwater consumption plays a vital role for our commitment towards a sustainable future. Non-availability of water will directly impact our business operations and subsequently reduce revenue and increase costs.

Our approach to water management includes

- Installation of Zero Liquid Discharge plants and strengthening water recycling across the operations- Commissioned & upcoming Zero Liquid Discharge will together contribute to 14800 KLD freshwater saving by 2025
- Exploring alternatives to freshwater- 60 MLD sewage treatment plant at Udaipur
- Rainwater harvesting via localised water shed management- Rainwater harvesting at Rampura Agucha Mines leads to 87 lacs m^3 ground water recharge potential annually.
- Dry Stack Tailing at our mining locations will help water recovery
- Water risk assessment using WRI Aqueduct Water Risk Atlas, Water Risk Monetiser, WWF Water Risk Filter

The above initiatives will help us reduce water withdrawal from fresh water sources across the units and will help us achieve our target of becoming 5 times water positive company from current 2.41 times water positive

Way Forward

Tackling climate change requires the integrated efforts of all stakeholders. HZLs Climate Risk Assessment Report is just one step towards communicating our climate strategy and the climate-related risks and opportunities addressed. We initiated the climate-related risk assessment and disclosed the financial impacts of climate change on our business following TCFD recommendations. Going forward, we will strengthen and extend the scope and coverage of risk management. In this direction, the following steps will be taken.

Business Growth
Study of climate-related risks and opportunities will be a key element for the pursuit of new business opportunities, divestments, mergers & acquisitions, and asset capture across geographies.

Financial Planning
Further, we plan to prepare a separate budget provision to address climate-related risks and opportunities with the approval of the Board and refine the financial cost estimates. The financial planning will be assessed every year considering the climate change targets aligned as per SBTi and internal commitments after accounting both risks and opportunities.

Supply Chain
Our focus is to sensitize the supply chain partners, on the need for adhering to sustainable business practices and inculcate the same culture in their own supply chain.

Our next focus is to collect long-term action plan from key business partners aligning our expectation and collaboration with business partner to achieve the goal. `

Market & Product
In the coming years, we will evaluate opportunities for new products to address climate change induced opportunities in global markets and explore with our customers as to how can we be a contributor to attain climate-related opportunities.

Metrics & Targets
We have committed to short, medium, and long-term targets to achieve carbon, water, and waste stewardship. We are committed to adopting additional climate related KPIs emphasizing on vulnerability and impacts like duration of heat waves, green products, reputational risk score, etc.

Alignment with TCFD
We have already begun aligning our strategy and governance to support the mitigative and adaptive measures and harnessing of future possibilities. We endeavour to support the TCFD recommendations and are fully committed to climate related quantification, analysis, and assessment. We believe we are on the right path towards the alignment of the business and climate-related risks and opportunities.

Forward Looking Statements

This report's disclosures are being made to fulfil TCFD reporting requirements, to meet investor and other stakeholder requests, and to improve our collective comprehension of how climate risk relates to HZL's major risk categories. As was mentioned above, we take a different approach to the disclosures in this report than we do to those in our mandatory disclosures.

This report contains "forward-looking statements," some of which concern our net zero aims, goals, strategy, and ambitions, among other things. Additionally, we could include forward looking statements in other publicly accessible publications, and our management might do the same when speaking verbally with analysts, investors, members of the press, and other parties. Forward-looking statements often don't reflect historical truth but rather our and our management's expectations for the future.

Forward-looking statements include risks, uncertainties, assumptions, and changes in circumstance that are hard to foresee and frequently outside of our control. These assertions do not represent assurances of future performance, outcomes, or conditions. Furthermore, a lot of the standards, metrics, and measures that were used to prepare this report are still evolving and were based on assumptions that were deemed plausible at the time of preparation, but they shouldn't be taken as assurances. We might not be able to predict in advance whether or to what extent we will be able to achieve our plans, aims, or goals due to the inherent uncertainty of the estimates, assumptions, and time scales mentioned in this report. We safeguard the quality of information contained in this report through a robust assurance process. The content and data disclosed in this report have been externally assured by Ernst and Young Associates LLP in accordance with the requirement of the ISAE3000 Assurance Standard. Due to a number of factors, including, among others, global socio-demographic and economic trends, energy prices, technological advancements, climate-related conditions and weather events, legislative and regulatory changes, our ability to gather and verify data regarding environmental impacts, and our ability to successfully implement our business strategy, actual results and financial condition or outcomes may differ materially from those expressed in or implied by any of these forward-looking statements.

This report and other disclosures are accessible on our corporate website at **https://www.hzlindia.com**.

These risks, along with others, could cause actual results and financial position to substantially differ from those predicted in forward-looking statements. This report includes claims that are based on hypothetical or extremely unlikely situations and assumptions; these comments shouldn't be taken as predictions of expected risk or as being indicative of existing or real danger.

Any forward-looking statement is only accurate as of the date it was made and is based on management's assumptions at the time; we do not undertake to amend any forward-looking statement to account for circumstances or events that have changed after the statement was made.

TCFD Mapping Index

TCFD Pillar	Description		Disclosure	Section Reference	Page #
Governance	Disclose the organisation's governance around climate related risks and opportunities	a)	Describe the board's oversight of climate-related risks and opportunities.	**Governance** - Board Oversight	11-13
		b)	Describe management's role in assessing and managing climate related risks and opportunities.	**Governance** - Management's Role	13-15
Strategy	Disclose the actual and potential impacts of climate related risks and opportunities on the organisation's businesses, strategy and financial planning where such information is material	a)	Describe the climate-related risks and opportunities the organisation has dentified over the short, medium and long-term	**Strategy -** Our Climate-related Risks and Opportunities	20-30, 41-44
		b)	Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.	**Strategy -** Our Climate-related Risks and Opportunities, Path to Decarbonisation, Putting a price on carbon, Scenario Analysis and Results	16-17, 21-29, 36, 41-44, 45-46
		c)	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	**Strategy -** Our Path to Decarbonisation, Putting a price on carbon, Scenario Analysis and Results	16-17, 24-33, 36
Risk Manag-ement	Disclose how the organisation identifies, assesses, and manages climate-related risks.	a)	Describe the organisation's processes for identifying and assessing climate-related risks.	**Risk Management** - Our Risk Management Procedure (Risk Identification and Assessment)	37-44
		b)	Describe the organisation's process for managing climate related risks.	**Risk Management** - Our Risk Management Procedure (Risk Management and Mitigation)	41-42
		c)	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	**Risk Management** - Our Risk Management Procedure (Risk Monitoring and Reporting) Our Risk Resilience towards Climate Change	37-41
Metrics & Targets	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material	a)	Disclose the metrics used by the organisation to assess climate related risks and opportunities in line with its strategy and risk management process.	**Metrics and Targets**	47-52
		b)	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	**Metrics and Targets** – Energy & Emissions Performance	48-49
		c)	Describe the targets used by the organisation to manage climate related risks, and opportunities and performance against targets	**Metrics and Targets**	51

HINDUSTAN ZINC
Zinc & Silver of India

List of Abbreviations

APS	Announced Pledges Scenario
CAGR	Compound Annual Growth Rate
CAPEX	Capital expenditure
CBAM	Carbon Border Adjusted Mechanism
CCUS	Carbon Capture, Usage & Storage
CLZS	Chanderia Lead Zinc Smelter
CPCB	Central Pollution Control Board
CPP	Captive Power Plant
DSC	Dariba Smelting Complex
ZSD	Zinc Smelter Debari
ELT	Executive Leadership Team
ERM	Enterprise Risk Management
ESOS	Employees' Stock Option Scheme
EV	Electric Vehicle
FCR	Forum on Corporate Responsibility
FSB	Financial Stability Board
GHG	Greenhouse gas
HZL	Hindustan Zinc Limited
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IZA	International Zinc Association
KM	Kayad Mine
KPIs	Key Performance Indicators
MACC	Marginal Abatement Cost Curve
NDCs	Nationally Determined Contributions
NGFS	Network for Greening the Financial System
NPV	Net Present Value
OPEX	Operating expense
PDA	Power Delivery Agreement
RAM	Rampura Agucha Mines
RCP	Representative Concentration Pathway
RDM	Rajpura Dariba Mines
REC	Renewable Energy Certificate
RPO	Renewable Purchase Obligations
RTC	Round the Clock
SBTi	Science-Based Targets Initiative
SBU	Strategic Business Unit
SEBI	Securities and Exchange Board of India
SKM	Sindesar Khurd Mines
STEPS	Stated Policies Scenario
TCFD	Task force on Climate-related Financial Disclosures
TNFD	Task force on Nature-related Financial Disclosures
VSAP	Vedanta Sustainability Assurance Programme
WRI	World Resources Institute
ZLD	Zero Liquid Discharge
ZM	Zawar Mines

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Building a better working world

Independent Assurance Statement

The Management and Board of Directors
Hindustan Zinc Limited
Yashad Bhawan
Udaipur-313004
Rajasthan, India

Scope

We have been engaged by Hindustan Zinc Limited (hereafter "HZL") to perform a 'limited assurance engagement,' as defined by International Standards on Assurance Engagements, hereafter referred to as the engagement, to report on HZL's Task Force on Climate-related Financial Disclosures (TCFD) (the "Subject Matter") contained in HZL's (the "Company's") TCFD Report that is being assured as of 26 July 2023 for the period from 1 April 2022 to 31 March 2023"(the "Report").

Other than as described in the preceding paragraph, which sets out the scope of our engagement, we did not perform assurance procedures on the remaining information included in the Report, and accordingly, we do not express a conclusion on this information.

Criteria applied by HZL

In preparing the TCFD Report, HZL applied the TCFD recommendations by Financial Stability Board (FSB) (hereafter referred to as "the Criteria"). TCFD recommendations were specifically designed for TCFD disclosures; As a result, the subject matter information may not be suitable for another purpose.

HZL's responsibilities

HZL's management is responsible for selecting the Criteria, and for presenting the TCFD Report, in accordance with that Criteria, in all material respects. This responsibility includes establishing and maintaining internal controls, maintaining adequate records, and making estimates that are relevant to the preparation of the subject matter, such that it is free from material misstatement, whether due to fraud or error.

EY's responsibilities

Our responsibility is to express a conclusion on the presentation of the Subject Matter based on the evidence we have obtained.

We conducted our engagement in accordance with the *International Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* ('ISAE 3000 revised'), and the terms of reference for this engagement as agreed with HZL on 24 February 2023. Those standards require that we plan and perform our engagement to express a conclusion on whether we are aware of any material modifications that need to be made to the Subject Matter in order for it to be in accordance with the Criteria, and to issue a report. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risk of material misstatement, whether due to fraud or error.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

Our Independence and Quality Control

We have maintained our independence and confirm that we have met the requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants and have the required competencies and experience to conduct this assurance engagement.

EY also applies International Standard on Quality Management 1, *Quality Management for Firms that Perform Audits or Reviews of Financial Statements, or Other Assurance or Related Services Engagements*, which requires that we design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Description of procedures performed

Procedures performed in a limited assurance engagement vary in nature and timing from and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Our procedures were designed to obtain a limited level of assurance on which to base our conclusion and do not provide all the evidence that would be required to provide a reasonable level of assurance.

Although we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems.

A limited assurance engagement consists of making enquiries, primarily of persons responsible for preparing the TCFD Report and related information and applying analytical and other appropriate procedures.

Our procedures included:

- Review of the standard disclosures as per TCFD recommendations regarding the company's material sustainability aspects contained in the report;
- Physical and remote verification of data, on a selective test basis, for the following sites, through consultations with the site team and corporate sustainability team;

S.No.	Entity	Geography	Mode of assurance
1	HZL Debari Smelter	Rajasthan, India	Physical and Virtual
2	HZL Dariba Agucha Mines	Rajasthan, India	Physical and Virtual
3	HZL Zawar Mines	Rajasthan, India	Physical and Virtual
4	HZL Kayad Mines	Rajasthan, India	Physical and Virtual
5	Hindustan Zinc Limited (HZL), Corporate Office	Rajasthan, India	Virtual

- Verification of following GHG Emissions Categories and water related disclosures, on a selective test basis, through consultations with the site team and corporate sustainability team.

GRI 305-1	Scope 1 (FY 2022-23)	Direct GHG emissions	34,44,672 Metric tonnes of CO2 equivalent
GRI 305-2	Scope 2 (FY 2022-23)	Indirect GHG emissions	11,35,622 Metric tonnes of CO2 equivalent
GRI 305-3	Scope 3 (FY 2022-23)	Category 1 - Purchased Goods & Services	41,62,188 Metric tonnes of CO2 equivalent
		Category 3- Fuel & Energy Related	
		Category 4- Upstream Transport	
		Category 6 - Business Travel	
		Category 7 - Employee Commute	
		Category 8 – Upstream Leased asset	
		Category 9 - Downstream Transport	
		Category 10- Processing of Sold Products	
		Category 12- End of life treatment of sold products	
GRI 303-1	Total volume of water withdrawal – operational and non-operational use (in KL)		2,66,67,321
GRI 303-4	Total volume of water consumption (in KL)		2,54,57,583
GRI 303-3	Total volume of water recycled/reused (in KL)		1,83,96,116
GRI 306-1	Total Volume of water discharge (in KL)		0

- Review and execution of an audit trail of claims and data streams, on a selective test basis, to determine the level of accuracy in collection, transcription and aggregation processes followed;
- Conduct interview of select representatives of Company's management to understand the reporting process, including management's processes to identify HZL's material climate-related risks and opportunities;
- Performed walkthroughs informed by analytical procedures to gain an understanding of the approach to HZL's scenario analysis, key assumptions, and consistency with the principles and documents specified in the Criteria.

We also performed such other procedures as we considered necessary in the circumstances.

Emphasis of matter

The assurance scope excludes:

- Data and information outside the defined reporting period-1 April 2022 to 31 March 2023;
- Data and information on economic and financial performance of the Company;

- Data, statements and claims already available in the public domain through Annual Report, or other sources;
- The Company's statements that describe the expression of opinion, belief, inference, aspiration, expectation, aim or future intention;
- The Company's compliance with regulations, acts, guidelines with respect to various regulatory agencies and other legal matters.

Conclusion

Based on our procedures and the evidence obtained, we are not aware of any material modifications that should be made to the TCFD Report for the period of 1 April 2022 to 31 March 2023, in order for it to be in accordance with the Criteria.

Restricted use

This report is intended solely for the information and use of HZL and is not intended to be and should not be used by anyone other than HZL.

For and on behalf of Ernst & Young Associates LLP.

Saunak Saha
Partner
26 July 2023
Kolkata, India

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