

Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Hindustan Zinc is a company in zinc, lead and silver business. We are one of the world's largest integrated producers of zinc and are among leading global lead and silver producers. We are one of the lowest cost producers in the world and are well placed to serve the growing demand of Asian countries.

We are a subsidiary of Vedanta Limited which owns 64.9% stake in the Company while the Government of India retains a 29.5% stake. We are listed on the NSE and BSE.

Our core business comprises of mining and smelting of zinc and lead along with captive power generation. We have a metal production capacity of over one million tonnes per annum with our key lead-zinc mines in Rampura Agucha and Sindesar Khurd; and key modern smelting complexes in Chanderia and Dariba, all in the state of Rajasthan in India. We are focused on operational excellence and long-term sustainability on the back of our high-quality assets, long mine life of over 25 years and low cost base.

With a reserve base of 150 million MT and mineral resources of 298 million MT, our exploration programme is integral to our growth and future expansions. Successful exploration and subsequent development of mineral assets underlines our mission and business strategy. We own 474 MW of coal based thermal captive power plants in Rajasthan to support our metallurgical operations. In addition, our environment friendly power generation includes 273.5 MW of wind energy, 40.42 MW Solar power and 35.27 MW from waste heat generation. The solar power projects have been installed on waste dumping yard, tailing dam, Jarosite pond and waste land and these land can't be used for any other purpose. We have saved the useful land this has showcased our commitment towards creating positive impact on the environment. We are renowned globally for the high purity refined metals that we supply. Marketed under various brand names, our product line also includes LME registered Special High Grade (SHG) zinc and lead. Our business entails mines, smelters and refineries.

Our operations are now becoming increasingly digitalised and we are automating processes to reduce the level of human intervention. Ours is a transformational business, fuelled by data-driven decision-making and a holistic approach to value creation. Our constant focus is on making our operations safer, utilising our natural resources prudently and enhancing our sustainability quotient constantly.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	April 1, 2020	March 31, 2021	Yes	1 year

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

India

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

INR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C-MM0.7

(C-MM0.7) Which part of the metals and mining value chain does your organization operate in?

Row 1

Mining

Zinc

Lead

Processing metals

Silver

Zinc

Lead

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	<p>CEO has the ultimate responsibility for climate change and has the highest decision-making authority within the company. Our CEO is one of the members of HZL’s Board of Directors and heads the Executive Sustainability Committee which plays a role to provide overall guidance on all identified key ESG issues and reviews the company’s progress towards sustainability goals 2025. The board is briefed on various climate related issues, yearly targets, site’s performance, and progress of targets by our CEO and the whole time director. CEO is also authorized to sanction CAPEX & OPEX budgets and other necessary resources for the implementation of climate adaptation and mitigation actions. The responsibilities of our CEO are not limited to just climate change, but also include his prowess to execute the matters related to Procurement, Human Resources, Finance, Legal, and Risk Management.</p> <p>Examples of initiatives taken by our CEO: In 2020, under the helm of our CEO, HZL became a part of the business leader’s group - COP26, which is actively engaged in shaping the agenda for the 26th meeting with countries that signed the United Nations’ Framework Convention on Climate Change, to be held at Glasgow, UK in November 2021. Our CEO has a proactive engagement and attends the scheduled meetings chaired by President of working group.</p> <p>Our CEO has also been key in establishing the Energy and Carbon community to drive HZL’s progress towards Sustainability goal 2025 . Under the guidance of our CEO, Hindustan Zinc has signed a MoU with Epiroc Rock Drills AB (Sweden) for Zero Emission and Sustainable Mining by introduction of Battery Electric Vehicle (BEV) in underground mining. As part of our scenario analysis study, we have also identified risks which we need to mitigate by moving towards net zero emissions by 2050. The transition plan will be discussed in Annual General Meeting FY 20-21 scheduled on 9th August 2021 as part of CEO address to shareholders.</p> <p>HZL has committed to join the Business Ambition for 1.5°C campaign of the Science Based Targets initiative (SBTi), a landmark decision taken under the</p>

	oversight of CEO to align company's climate mitigation targets with the most ambitious Paris Agreement- reach net-zero global emissions by 2050 at the latest in order to limit global warming to 1.5°C.
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C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<p>Board Level: The HZL's Risk Management Committee is a cross-functional group that meets regularly and is responsible for reporting progress on risk mitigation efforts to the Board. Agendas for these meetings include various governance mechanisms including reviewing HZL's progress on climate-related risks and risk mitigation strategy. The Risk Committee also reviews potential impacts to production disruptions due to climate-related physical and transition risks that may impact HZL's core business. It reviews key risks along with a mitigation plan and guides on strengthening the overall risk management framework. In addition, HZL follows the guidelines of Vedanta Group's Board Sustainability Committee which oversees the implementation of groups' ESG Strategy including Climate Strategy and guides to take necessary actions in line with the group expectations and commitments.</p> <p>Management Level: CEO is authorized by the board to take day-to-day decisions related to climate risks, opportunities and investments. At executive level, (one level below the board), the Executive Sustainability Committee, led by CEO assists the Board in providing focused oversight of the company's strategy, policies, programs and related risks that concern key climate change including other sustainability matters. The agenda item for these meetings is a review of HZL's company-wide progress on our goals, including progress against our goal to reduce greenhouse gas (GHG) emissions by 14% in absolute terms by 2026.</p> <p>Further, the committee, consists of CEO, CFO, functional heads, plant heads, and SBU Directors and</p>

		<p>involves eight sub community chairmen and others. This Committee is responsible for formulating the sustainability strategy as well as the long-term goals and targets of the company. This Committee meets quarterly to review progress against the 8 sustainability goals 2025; progress against broader environmental & climate risk mitigation (such as our efforts to mitigate the impacts of climate change); to monitor implementation of annual plans, to set performance targets in alignment with sustainability strategy and to monitor annual budget utilizations. For Example: Vedanta Group being a signatory at the India CEO forum on Climate Change and has pledged to aid India in achieving its NDC. HZL aligns itself to Vedanta's sustainability framework, climate change being one of the priorities. HZL has completed a scenario analysis study in line with the TCFD. As part of the strategy, we have prepared the road map for achieving Net Zero by 2050. HZL has committed to join the Business Ambition for 1.5°C campaign of the Science Based Targets initiative (SBTi), to align company's climate mitigation targets with Paris Agreement- reach net-zero global emissions by 2050. Additionally, HZL is a member to CII-Working Group on driving accelerated climate action by Indian businesses and is actively participating on shaping the agenda for upcoming COP 26.</p>
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C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

Sustainability committee	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Environmental, Health, and Safety manager	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Other, please specify Chief HSE Officer- HZL	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Other, please specify Energy and Carbon Management Committee	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

At HZL, we have a three-tiered sustainability governance framework and each tier plays a significant role in driving our thoughts, ideas, and high standards of ethics, governance and corporate citizenship.

Board oversight

The key element of HZL’s corporate governance framework is its board level committees such as risk committee, audit committee and committee of Directors which oversee overall business performance including any issues, risks, plan and achievements related to climate change. The Risk Management Committee comprised of Independent Directors identify, assess, prioritize, address, manage, monitor and communicate our top enterprise risks of which climate-related risks is one. They are responsible for reporting progress on our risk mitigation efforts to the Board, play a vital role in strategic supervision and devising the organization’s long-term strategic approach. Our key Board Committees are entrusted with specific responsibilities and their decisions drive the Company’s overall management approach.

Management & control

This year, the Executive Sustainability Committee (ESC) at HZL was established. The committee consisting of CEO, CFO, functional heads, plant heads, all 8 sub community chairman and SBU Directors are key in implementing the climate change related mitigation and adaptation strategies; coordinating business transactions and focusing on process improvements at mines and smelters. The roles and responsibilities of the Group include but not limited to identifying climate-related issues and foster cross-functional collaboration within the company. ESC oversees execution of broad range of strategic sustainability issues ranging. The ESC is also responsible for identifying strategic business opportunities related to climate change. For example, ESC members have been working to embed sustainability into HZL’s business—from operating energy efficient equipment, , signing SBTi, to partnering with experts on climate related risks and opportunities and areas for improvement and review the

performance and effectiveness of the initiatives. In addition, the committee works with site teams to identify emerging risks, categorize them as per impact and likelihood, map it to key responsibilities of selected managers and further manage it with an appropriate mitigation plan through a formal monitoring process at the Company level. ESC monitors climate-related issues includes a detailed materiality assessment that is used to benchmark and monitor climate-related issues that are most relevant to our business. Key issues and action items from ESC meetings are reported up to the CEO and down to the relevant business units more frequently than quarterly.

Vedanta Carbon Forum: HZL participates in the carbon forum and aligns itself to Vedanta’s carbon management strategy long-term greenhouse gas (GHG) emissions intensity reduction targets, emerging regulatory risks and carbon pricing. Please refer to the website for more details: <https://www.vedantaresources.com/InvestorRelationDoc/TCFD%20report2020.pdf> HZL has also established an **Energy and Carbon Community as a taskforce under the Executive Sustainability Committee**, chaired by a senior leader, at the corporate level, to ensure strong governance for energy conservation, energy and carbon risk assessment, formulation of mitigation strategies, and continual improvement in energy and carbon management processes. The community is comprised of Energy and carbon representatives from each site. The community meets on monthly basis and appraise the Chairman of Executive Sustainability Committee on the various Energy and Carbon Management projects progress and seek guidance as and when required. The Community can co-opt members from other functions as and when required.

Execution

The Company follows a decentralized decision-making process, with the responsibility of overall execution and empowerment resting with the Strategic Business Units (SBUs). Functional teams represented by individuals from EHS, Production, Maintenance, HR etc.) meet via monthly meetings to monitor progress and collaborate on outstanding issues. The action items include issues related to business continuity, including exposure to physical climate events that could potentially disrupt our business, deviations from action plan and new risk identified. This teams are responsible for:

- Reviewing progress, data collection and reporting at a more ground level at a monthly frequency.
- Identifying new risks and managing it with a mitigation plan, this is done through a formal monitoring process at the unit level.

Energy & carbon representative nominated by the SBU interact with Energy and Carbon community on monthly basis to update on the progress of tracking the performance of the energy conservation projects, Clean Development Mechanism (CDM) projects, energy & emissions including GHG emissions targets; carrying out audits, energy, and carbon risk assessments and implementing the mitigation measures

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Provide incentives for the management of climate-related issues	Comment
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Row 1	Yes	
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C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target	<p>CEO whose role also focuses on leading the company's Sustainable Strategy is incentivized based on his performance against the targets set in the specific year. Sustainability performance includes energy reduction targets to be achieved during the year. Annual bonuses and related compensation is partially tied to his success in driving HZL's sustainability success and leadership.</p> <p>Individuals at the executive role are compensated based on the comprehensive evaluation of two indices - measurable and non-measurable. Measurable indices are defined in terms of financial performance that include revenue and operating profit while the non-measurable indices include leadership, achievement of strategic goals, and contribution to the company's management, sustainability performance and expertise. At HZL, all the sites every year undergo Vedanta Sustainability Assurance Programme (VSAP), built on the 13 pillars of Vedanta Sustainability Framework.</p> <p>The assurance model has different modules, which cover environment, health, safety, community and human rights elements. The assurance system works on the premise of tracking corrective and preventive action by each of our businesses and commissioning periodic formal audits by external experts. The performance bonus of CEO, Senior leadership and employees is linked to the above-mentioned VSAP scores covering energy, climate change and other sustainability KPIs. In leader's scorecard, a 20% weightage is attributed to the VSAP score and zero fatality.</p>
Other, please specify Business Heads-Environment, Health and	Monetary reward	Energy reduction target	<p>HZL has several functional heads whose role is focused on executing business strategy. Under the Variable pay scheme, heads are monetary rewarded based on their individual performance on achieving goals & targets. Performance bonus is based on VSAP score (17.5% weightage), guided by Vedanta's Sustainability Framework which is built on the 13 pillars, including energy and climate change. The scores are validated annually, through Vedanta Sustainability Assurance Program audit. A minimum score of 70% is required to be eligible for pay-out. For more details on Vedanta</p>

Safety; Mining			<p>Sustainability Framework, please visit: https://www.vedantaresources.com/Pages/SustainabilityManagementApproachVedanta.aspx#</p> <p>Example 1: Chief HSE Head, who reports to CEO, is a leader of implementing processes and initiatives to advance sustainability across the company. EOHS head is partially compensated based on the achievement of his KRAs which is directly linked to EHS & sustainability targets & KPIs (e.g. non-occurrence of environmental incidents and reduction in Energy requirements).</p>
Energy manager	Monetary reward	Emissions reduction target	<p>The Unit level teams with Energy managers are responsible for identification and implementation of Energy Efficiency and emission reduction projects. Every month, the effective projects and aligned managers are rewarded under KAIZEN. Annually competitions like 'Chanakya' and 'RACE' are organized at the unit and the corporate level to invite innovative ideas leading to significant reductions. Best ideas are further rewarded to encourage the employee engagement.</p>
Energy manager	Monetary reward	Efficiency target	<p>Energy managers at each site are responsible for identification and implementation of Energy Efficiency and emission reduction projects. Every month, the effective projects and aligned managers are rewarded under KAIZEN.</p> <p>In addition, annual competitions such as 'Chanakya' and 'RACE' are organized at the unit and the corporate level to invite innovative ideas leading to significant reductions. Best ideas are further rewarded to encourage the employee engagement.</p>
Other, please specify CDM Cell	Monetary reward	Emissions reduction project	<p>HZL has a Clean Development Mechanism (CDM) cell which dedicatedly works on renewable energy investment, generation and consumption. Performance based incentives are directly linked the implementation of renewable energy and CO2 emission reduction</p>
All employees	Monetary reward	Emissions reduction project	<p>As part of the annual competitions such as 'Chanakya' and "RACE, HZL recognizes employees who help attain HZL's sustainability goals, thereby reducing our environmental footprint. Champions who contribute best innovative ideas leading to significant reductions of emissions and energy are rewarded. Additionally, employees are also recognized for innovative initiatives undertaken by an individual or a team and nominated for 'Star of the month' and 'Star team of the month' awards and are rewarded by the CEO in town hall meeting 'Sampark'.</p> <p>Example:</p>

			<p>In FY21, various projects were rewarded under Energy Conservation category. Some include:</p> <ul style="list-style-type: none"> • For Reduction in Copper sulphate GPT for Kayad Ore in stream 3 • For Reducing manual bundling from 10% to 5% of total Bundles for the month. • For reduction in KMnO4 consumption from existing .086kg/MT of cathode to Zero kg/MT cathode. • For Reduction in specific power consumption for Mill-2 by 5% from 28.2 to 26.79 kWh/MT.
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C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	The climate related risks and opportunities identified to have an immediate impact on the company's business i.e. within a year, 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	1	3	Potential climate related risks and opportunities that may impact company's business in the near future (1-3 years) are categorized into medium term.
Long-term	3	10	Long term business risks and opportunities are usually anticipated and identified based on sectoral trends, market predictions, etc. Therefore, the climate risks and opportunities identified to have an impact within 3 to 10 years duration are termed as long term. Our definition for long term coincides with the SBTi's and with our own Sustainable Goals 2025 as well.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

HZL identifies and assesses strategic & financial impacts through a formal monitoring process at the unit level and at the corporate level, which identifies and categorizes existing and emerging climate-related risks and opportunities with respect to both Physical and Transitions risks. These risks are prioritized based on frequency of its occurrence or recurrence and on the degree of its impact on revenue & cost including its ability to disrupt our primary operations. Any issue that brings a change of $\pm 5\%$ to the EBITDA; causes $> 15\%$ production capacity ramp down in major product category, results into Fatality or serious nature and irreversible injury, causes long term serious reversible environmental impact (typically 3 months) or may result into Category IV incident; results into significant breaches, financial penalties & prosecution of staff / stoppage of business, negative media coverage are defined as having substantive financial or strategic impact on the business. In the expansion projects above 250 million USD, cost overrun by $> 10\%$ and Time overrun of > 12 months is considered to have a substantive financial and strategic impact.

We measure substantive financial impact by computing the number of production days lost or the economic cost the said risk has on our organization during the impact period. For instance, the non-availability of water can lead to a prospective loss of INR 292000000 due to shutdown of one of the CPP for a month

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

HZL leverages enterprise risk management framework to identify, assess, and respond to climate-related risks. The risk management framework is built on Vedanta Risk Management Standard that delineates process of risk assessment, the compilation of risk registers and associated action plans, mapping of events and its mitigation. The

framework is integrated through a three-tier governance structure that includes HZL's board-level risk management committee with a primary responsibility of oversight on key business risks and its risk mitigation, Risk Officer at the corporate level with an overall responsibility to monitor risks and co-ordinate with the sites and the Site level risk team with the responsibility to identify risks at local level and identifying the mitigation efforts and implementing the actions to reduce the risk. HZL's risk management committee is comprised of cross-functional and diverse group of directors with expertise in the areas of finance, strategy, risk, sustainability, climate change, and EHS. This committee meets regularly to review, assess, prioritize and address top strategic, financial, operational, compliance, safety, reputational, environmental risks and provide guidance around strengthening of overall risk management framework. HZL's Risk officer along with other Senior Management deliberate & review risks submitted by site level teams and present before the Risk Management Committee Quarterly. The risk management 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. Quarterly structured risk meetings are convened at site level wherein risks are reviewed for impact and likelihood along with its mitigation plan.

Risks are assessed on a scale of 1-5 based on its impact on the business and likelihood of occurrence. The risks with an overall scoring of above 4 are categorized as high impact risks and are termed as Principal Risks. These risks are monitored on a regular basis for its impact and its direction of movement. Risks with a score up to 3 are termed as Other Risks. After the risk prioritization has been carried out, formal mapping of risks and mitigation plans on a risk matrix is done. 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. A centralized repository of risk is maintained to be on top of the risks.

HZL identifies and categorizes existing and emerging climate-related risks and opportunities with respect to both Physical (Increase in temperature, Drought, Floods, Extreme weather, Cyclonic pattern, wind speed) and Transitions risks (change in policy change, technological change, market change, financial resource raising, reputational etc.) and assesses top climate change risks through a formal bottom-up monitoring process. The climate change risks and opportunities are identified over various climate scenarios coupled with the business value at risk which results in a view of its impact on employee health, the existing infrastructure, including the impact of on HZL's ecosystem and the business model. Climate Change risks management approach consists of an observations at present times and predicting the changes in the future. Each climate risk were identified by its own natural characteristics, including geographic area (areal extent), time of year it is most likely to occur and its severity.

For instance, a physical risk such as temperature extremes is examined at the granular level of each HZL physical asset. Depending on the likelihood of extreme weather days during a year and the resultant impact on the production, infrastructure, employee health and business model disruption, they are then prioritized for developing resiliency and

mitigation plans. Additionally, this year we appointed third party to help us understand Climate change associated risks and opportunities across 5 mining sites, 3 smelting plants and a refinery to check the preparedness of mitigation and adaption in 'well below 2 degree scenario', modelled for two time zones i.e. Time period I (2020-2039) and Time period II (2040-2059). For this, interviews were conducted with asset level managers and functional teams related to EHS, HR, Commercial, Risk Management etc. to identify these risks and opportunities. The initial mapping was validated with the senior management during the assessment phase, and scenarios were set to delineate impact of emerging risks on the site operations and the company's business model. Scenario analysis considering Representative Concentration Pathway (RCP) 4.5 and Nationally Determined Contributions (NDCs) for transition risks is in accordance with the Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) recommendations. The summary of the report briefed to the Board as well. A formal mapping of key risks is done along with mitigation plans in a digital Risk Matrix. Risk officers are assigned at each of the operating sites as well as at corporate level and progress on the risk mitigation plan is linked to the KRAs.

For example, physical risk of drought and resultant scarcity of water was flagged by our team at Zawar mines, Rajasthan. Similar risk was also identified at other locations in Rajasthan due to persistent drought like situation. Our total water requirement is expected to increase by 15% year on year may pose a significant challenge in FY 22 when we anticipate the availability of water to be 80%, 20% short of our requirement. This increasing water requirement and lack of availability of water infrastructure can lead to delay in the delivery of key projects and can affect business continuity. This allows HZL to then make informed decisions about water conservation efforts and investments to be made in order to manage physical risks of climate change. To mitigate the risk, we have taken a target to reduce our fresh water consumption by 25% by 2025. Our strategy to use alternative water sources such as municipal water, increase recycling percentage and build water harvesting structures helps position us and our communities to compete more effectively in a resource constrained future. Through the program, we are working with communities to reduce physical climate change impacts and improve water availability. The acute and chronic physical risks posed by climate change are managed through this program.

Value chain stage(s) covered

Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

As part of our risk management framework, we engage regularly (more than once) with our key upstream and downstream stakeholders such as, suppliers, regulators, local communities, investors and consumers to capture their emerging concerns due to physical or transition climate change risk & their contribution to mitigate climate change related impacts. In addition, we capture key concerns, risks and opportunities through Grievance Redressal mechanism which is accessible for use to all. The feedback received as part of consultations or raised through portal are thoroughly evaluated and assessed for subsequent monitoring. Issues which we assess to have a potential impact on our business operations are included in our materiality matrix, monitored and reported on. The current materiality matrix (can be accessed at <https://www.hzindia.com/wp-content/uploads/Integrated-Annual-Report-2020-21.pdf>) includes climate change and energy as key material topics.

Supply chain ESG risks including climate change and environment are identified through an institutionalized due diligence process of our suppliers. Key risks such as increase in the price of material, non-availability of resources, non-compliance to regulations etc. help us take appropriate actions. Suppliers are consulted as part of our overall sustainability strategy. In order to mitigate risks, we are implementing Risk Model framework for improving our supply chain resilience. We carry out this activity in partnership with third party, wherein each vendor is periodically scored on a comprehensive set of ESG parameters such as ethics, labor and employee welfare, health and safety, environment including climate change, and management systems. The individual scoring allows us to take appropriate corrective actions with suppliers who do not meet our threshold criteria. The risk identification process is based on our newly adopted Responsible Sourcing Policy which delineates the expectations that we have from suppliers on ESG including performance on our climate change goals. Recently, we have started collaboration activities such as knowledge sharing sessions, projects on decarbonization with few of our critical suppliers is under discussions. We have partnered with Confederation of Indian Industry (CII) for building awareness of suppliers on EP 100, SME Climate Hub, RE 100, EV 100, Technology transfer. Regulatory risks are critical to our business and thus the regulators are consulted for their inputs during our risk assessments. We engage with the regulatory authorities throughout the year. We also engage with our customers through stakeholder engagement programs and customer feedback programme to understand their views on energy management of their operations so as to design our product in such a way to reduce water and energy consumption at customer end. For example, Continuous Galvanizing Grade (CGG) zinc alloy as per customer requirement removes the need to further alloy it at the customer's premises and thus saves water, energy, and cost and improves bath management during galvanizing.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	<p>Compliance with applicable laws and regulations as well as changes in the government policies around royalty mechanism or rates, reduction in export incentives, tax structure, cancellation or non-renewal of mining leases and permits as well as reduction or curtailment of duty and tax benefits available are relevant and may adversely impact operations and hamper growth. As an emissions-intensive industry, climate change-related regulations focused on adaptation (Renewable energy obligations, REC) have a direct impact on our business. Currently, all of our mining operations and smelters are covered by Renewable energy obligations. HZL engages with government functionaries, industry associations, and experts to identify, quantify, forecast and manage exposure to risks associated with current regulations. Risks and opportunities are prioritized based on their likelihood of occurrence and the potential severity of impact. Impacts to business considered include financial impacts, regulatory/legal impacts, health, safety, environment and community impacts, and reputational impacts. As an example, risks and opportunities related to Rajasthan Electricity Regulatory Commission's Renewable Energy Obligation of 10.2% renewable energy has been prioritized because: i) significant CAPEX is required to develop Renewable Energy Infrastructure, and ii) Non-compliance to the RPO obligation may cost penalty equivalent to 40.5 crores per year. Apart from this there is regulatory requirement of installation of FGD (Flue Gas desulfurization) by 2024 and noncompliance to this will result in penalty of 73.6 crores per annum. Total Capex estimated for installation of FGD is 480 crores. HZL is complying with RPO requirements at present.</p>
Emerging regulation	Relevant, always included	<p>We review laws & regulations related to energy efficiency (for e.g. Perform Achieve Trade (PAT); air emissions and any emerging regulations on carbon emissions (for e.g. carbon tax/fuel tax etc.) as well as changes in the Government policies, cancellation or non-renewal of mining leases & permits. Any non-compliance on these aspects may adversely impact our revenue, operations, create reputational risk and hamper growth. The probability of few of these risks occurring due to climate change is increasingly evident, for e.g. Coal Cess has doubled in less than 2 years. Hence we consider these changes in our climate-related risk assessment. Example: Government of India is currently constituted High-level Ministerial Committee for implementation of Paris Agreement (Apex Committee for Implementation of Paris Agreement (AIPA) under the chairmanship of</p>

		<p>Secretary, Ministry of Environment, Forest and Climate Change(MoEFCC)for Decommissioning of Coal Based power plants and shift away from carbon intensive process technologies. This policy shift is intended to meet Paris Agreement obligations and to reduce overall GHG emissions associated with fossil based power generation. It is anticipated that after implementation of this regulation, we have to stop our power generation from thermal power plant. The availability of firm RE or Storage solution is still a matter of concern. This regulation will increase the overall cost, which will impact operational revenue.</p>
Technology	Relevant, always included	<p>Technological advancements have the ability to impact both operational competitiveness as well as product demand. For example, the increased adoption of renewable energy technologies, Hydrogen based energy solutions, Battery Energy Storage Solution , Carbon Capture and Storage (CCS) & Carbon Conversion technologies and electric vehicles will likely play a role on our path to achieving NetZero by 2050. Adoption of these technologies has the potential to hinder or improve our competitiveness (i.e. increase or reduce our costs). Renewable energy technologies and electric vehicles will also likely require increased battery demand for energy storage. As energy storage technologies evolve with this focus, this could impact the demand for our products like lead and zinc which have significant application in batteries today. For example, HZL is exploring technological solutions for optimizing beneficiation and smelting process with a goal of progressively improving metal recovery & throughput and optimizing resource consumption. Waste utilization increases process efficiency and reduces land requirement. Both the aspects support mitigate climate risk. We have conducted Trials of DROSRITE™ zinc dross treatment process at zinc melting section of Pantnagar Metal Plant. This process uses the heat generated by the oxidation of unrecoverable zinc metal, in the presence of oxygen, as a source of energy and leads to energy conservation. When we transition from the trial to absorption of this process in our system there is always a technology transition risk we carry.</p>
Legal	Relevant, always included	<p>Over last many years, there has been a growing focus by investors and various groups to assign liability for climate-related impacts to companies that are involved in mining. While the legal theories underlying these potential claims are largely untested, as a producer of zinc, lead and Silver, such actions could expose HZL to legal liability. We regularly review related laws & regulations as well as sentiments of our stakeholders as any non-compliance on these aspects may adversely impact our operations, create reputational risk and hamper growth. For example, use of furnace oil which we use in our mining equipment was banned by supreme court as it is highly polluting. HZL shifted its fuel use to diesel/ PNG immediately to avoid any legal actions on power and fuel usage.</p>

		<p>We also have a risk of non-compliance to existing regulators norms such as that of emission, waste disposal, harmful gas emissions etc. This may result into suspension of operations, occupational hazards for the employees/workers or even cancellation of “Consent to Operate” license.</p>
Market	Relevant, always included	<p>We analyzed the impact of climate related market movements on our products. As the world transitions to a low-carbon economy, there will naturally be shifts in demand for certain commodities; demand for those required for low-carbon technologies may increase, while others may decrease. Changing consumer preferences to have decarbonized upstream mining commodities will have a direct short-term impact on the revenue as the requirement of recycled input materials increases as well as on operating costs e.g higher compliance costs, increased insurance premiums etc.</p> <p>For example, with increase in battery recycling regulations, and enhanced availability of recycled zinc, the demand for virgin zinc will get slightly impacted.</p>
Reputation	Relevant, always included	<p>Poor performance with respect to managing the risks and opportunities of climate change, compliance issues related to emission/ green energy related obligations, and failure to meet commitments could result in reputational impairment and may even result into public and regulatory opposition to HZL’s projects and/or operations. This has a direct impact on increase in cost-of-capital, perceived risk amongst the investor community and high legal /litigation costs. Further, financial companies are devising strategies to decarbonize their investment portfolio, mitigating their exposure to climate related risks. A dismal ESG rating of the company could impact access to finance as well the associated cost.</p> <p>For example, if HZL fails to manage risks related to water availability in already water stressed regions, it is likely to cause discontent at the community level and may even put HZL’s social license to operate at risk.</p>
Acute physical	Relevant, always included	<p>Climate change may cause or result in sea level increases, increases in extreme weather events and resource shortages. Our operations are located in Rajasthan, which experiences drought and extreme heat waves, these factors could affect our operations and the ability of our employees to work in extreme temperature scenarios. Also, extreme weather events such as flooding have the potential to disrupt operations at our mines and to impact our logistics, assets and transportation infrastructure. The mitigation measures could have a financial impact due to higher resource acquisition costs and insurance</p>

		<p>costs for the organization. For example, this year we faced drought like situation in Chanderiya, Rajasthan, where one of our zinc smelters is situated. Withdrawal of water from the captive surface water source (Gosunda Dam) was restricted to 5000 m³/day as against the ~30000 m³ allowance, by the authorities. This resulted into temporary closure of CPP with a financial loss of 29.2crores and increase in cost to channelize water from alternative sources such as the Chittorgarh City Sewage Plant, , Udaipur STP etc.</p> <p>The occurrence of cyclone may increase as 2 cyclones occurred in INDIA in 1st half of 2021 itself. We are using sea route for import/export of material. Due to increase in occurrence of cyclone have the potential to disrupt our supply chain.</p>
Chronic physical	Relevant, always included	<p>Physical chronic risks like change in precipitation patterns, extreme temperature, might impact productivity in the two time period (2039 and 2059) and the severity of impact may increases with time. In view of increasing heat scenario, we have escalated this risk from non-relevant to relevant and have started to include it in our risk assessment. For example, in post 2039 scenario, our Kayad mine will be at high risk due to increase in temperature. This increase may potentially cause Operational disruptions- mine closure (Reduced revenue), Employee heat exhaustion and dehydration (Lower Production), Increased electricity cost due to installations of cooling devices (Increased operating costs), Increased probability of vector borne diseases and biodiversity (Higher operating costs & Mine closures) or Equipment operating thresholds can be reached at a faster rate (Increased operating costs). As an adaptation strategy, we are ensuring that proper ventilation is maintained to make it favorable working conditions; Sufficient water facilities and dehydration's solutions are provided to the employee working in high risk zones.</p>

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Mandates on and regulation of existing products and services

Primary potential financial impact

Increased capital expenditures

Company-specific description

Emerging regulations related to de-carbonization such as, Perform Achieve Trade (PAT), carbon tax/fuel tax, changes in the Government policies, cancellation or non-renewal of mining leases & permits as well as Implementation of Paris Agreement policies are categorized as a risk type and primary climate related risk driver due to the increasing number of regulations that are implemented to mitigate the effects of. Any non-compliance on these aspects may adversely impact our revenue, operations, create reputational risk and hamper growth. The probability of few of these risks occurring due to climate change is increasingly evident, for e.g. Coal Cess has doubled in less than 2 years. Hence we consider these changes in our climate-related risk assessment. These regulations would directly impact HZL as there can be carbon obligations on our organization, for instance, in the form of a GHG prices and Capital expenditures to implement mitigation and adaptation measures.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

405,000,000

Potential financial impact figure – maximum (currency)

1,677,000,000

Explanation of financial impact figure

The range of carbon compliance cost on HZL is based on compliance cost in FY 20-21 and future projected costs in the FY 26. In the long term, we anticipate the Renewable Purchase Obligations to reach 30% as against 10.2% currently. The cost accounts for current & future liabilities, compliance cost towards future carbon regulations that may

be applicable for metals and mining industry, installation of Renewable Energy infrastructure in line with the RPO requirements. The current liability as per the RPO for captive generation 10.2% and 16.5% for power purchase from IEX is 40.5 crores for 404.8 MU of Renewable Energy. With the projected RPO obligation of 30%, the financial impact will be INR 1677000000 for not being able to meet the requirement of through Renewable Energy. These calculations are based on the assumption of current energy demands.

Cost of response to risk

20,000,000,000

Description of response and explanation of cost calculation

We assess regulatory risks and their financial implications regularly. We also calculate and consider our financial exposure in terms of absolute costs incurred on compliance & capital expenditures on an annual basis and projected out to five years. The most effective manner to manage our compliance risk is to reduce our GHG emissions. In light of our commitment to climate action and the risks and opportunities present for our operations, HZL has set an ambitious objective of achieving Net zero across all its operations and activities by 2050. To mitigate this risk, we are continuously improving our renewable energy portfolio. The total solar power capacity of the Company is 40.42 MW for captive consumption and 273.5 MW of wind farms in five states across India. All the wind and solar power projects are registered under Clean Development Mechanism (CDM) program by United Nations Framework Convention on Climate Change (UNFCCC) as well as under Gold Standard which is most rigorous certification standard globally for carbon offset projects. In addition, the Company has captive capacity of 35.4 MW through waste heat recovery boilers registered under Rajasthan Renewable Energy Corporation. The Company is planning to increase RE power portfolio by addition 400 MW solar project by 2023 and 14.5 WHRB project by FY 2021, replace diesel fueled transportation vehicles with Electric vehicles (estimated expenditure for introducing 4 vehicles- INR 800000000), Turbine revamping of all the CPPS (estimated costing approx. INR 1240000000), install Hydrogen or Electric/Induction Furnaces, enhance our carbon Capture, Storage and Utilization capacity etc. We have invested close to INR 2280000000 towards our decarbonization strategy. To fund our future plans, we have budgeted additional INR 1825000000 (based on estimation of per MW cost for solar/wind as per government budget projections in tariff orders and our past project development expenditures) for the installation of renewable power. The cost of response is in line with our assumption that we will be able to mitigate the risk if we decarbonize the business by adopting various mitigation measures.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Other, please specify

Drought

Primary potential financial impact

Increased direct costs

Company-specific description

Climate change may cause or result in increase in extreme weather events and subsequent resource shortages. Our operations are located in Rajasthan which is one of the designated water stressed regions in the country based on WRI's Aqueduct tool. There is a high probability of experiencing situations of drought and extreme heat waves. Since water is a critical input to our business, both for mining and smelting operations, these factors have the potential to disrupt operations, to impact productivity of staff as well as to impact our revenues and logistics. To mitigate the risk, several mitigation measures such as utilizing STP water, implementing water efficiency and saving initiatives projects are or have to be implemented which have a financial impact for the organization. For example, this year we faced drought like situation in Chanderiya, Rajasthan, where one of our zinc smelters is situated. Withdrawal of water from the captive surface water source (Gosunda Dam) was restricted to 5000 m3 /day as against the ~30000 m3 allowance, by the authorities. This resulted into temporary closure of CPP with a financial loss of INR 292000000 / month and increase in cost to channelize water from alternative sources such as the Chittorgarh City Sewage Plant, Udaipur STP etc.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

292,000,000

Potential financial impact figure – maximum (currency)

1,369,000,000

Explanation of financial impact figure

Range covering minimum and the maximum financial impact is based on costs incurred due to water stress related operational disruption in FY 20-21 and future projected costs in the FY 26. This range is based on the assumption that non-availability of water for a month results into complete shutdown of CPP. There is a substantial impact on the cost if the stress continues for more than a month, leading to shutdown of 2 CPP. Only in such situations, we realise a production loss. The minimum range value is based on the cost implication due to complete shutdown of 1 CPP and the maximum range value considers cost implications due to complete shutdown of 2 CPP (INR 409000000) and production loss i.e. (5000 MT/month * 2500 Dollars= INR 967500000 /month)

Cost of response to risk

4,570,000,000

Description of response and explanation of cost calculation

To mitigate this risk, we are continuously maximize recycling and reuse of water at all our operations to reduce freshwater withdrawal, developing rainwater harvesting systems to replenish ground water sources, and build a second STP project at 40 MLD. The Company is planning to be 5 Times Water Positive Company and reducing the water consumption by 25% by 2025 from base year 2020. Cost of response of INR 457 crores (based on cost for installation of water recycling plants, Udaipur STP installation and installation of dry tailing plant. Estimates also include cost for the future projected years. Water is an inherent risk due to the location of our sites. It gets further enhanced due to climate change. We have taken proactive measures to address it and have been working for many years.. In addition, the cost of response also includes direct and indirect expenses to implement the following measures. a. identify and reduce water consumption - undertake water conservation projects across our operations b. reduce fresh water consumption - as above c. identify alternate sources of water – Undertake alternate water source and vulnerability assessment studies d. move towards disruptive changes in water management like dry tailing process. To implement these we have a well-established policy and process in place. A business plan and implementable action plan followed by periodic monitoring at operational and company levels. Various multi-pronged strategy is institutionalized within the operations and also various strategic actions / initiatives that are initiated and undertaken. In order to enhance the water retention capacity of the areas where operations are located we carry out extensive plantation.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased direct costs

Company-specific description

Climate change may cause or result in increase in extreme weather events and resource shortages. Our operations are located in Rajasthan, which is prone to erratic precipitation leading to flooding. For example few locations have witnessed upto 400 mm of rainfall in a single day. These factors have the potential to cause breach of tailings dam, to disrupt operations at our mines and to impact our revenues and logistics. The mitigation measures such as dewatering from underground and keeping in sumps, designing flood resilient structures, implementing technologies for surveillance , set up instrumental monitoring and enhanced insurance coverage can have a financial impact for the organization For example tailing dam breach due to excessive rain in RA mines can result into financial impact of ~INR 1500000000 for the reclamation of area of 7 KM which includes cost of reclamation and remediation measures .

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,500,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Financial impact is based on costs incurred due to destruction of the asset and reclamation cost due to flooding/ heavy rainfall. The estimates are based on tailing dam break assessment conducted by global experts and based on the assumption that any of the tailing dam breach will impact the surrounding areas up to 10 kilometers. The average cost of remediation would be approximately around INR 1500000000. . The cost is assumed to reflect complete damage of the asset especially tailing dam in an event of extreme rainfall.

Cost of response to risk

7,300,000,000

Description of response and explanation of cost calculation

During construction, operation, maintenance and closure of the tailings facilities, it is vital to take extensive measures to mitigate the risk of tailings dam failures and incorporate the best available technology to minimize the environmental impact. Continuous operational and stability monitoring plays a major role in ensuring the safety of tailing dam storage facilities. We conduct regular physical inspections of the structural integrity of the dams, regular instrumental monitoring through Geodetic surveys of pillar-prisms, measurements of pore water pressure, installation of satellite based InSAR (Interferometric Synthetic Aperture Radar) monitoring technique to provide early warning of surface ground movements etc. to ensure that the risk of breach of tailing dams facilities is minimized to the maximum extent possible. For example, We invested ~INR 1300000000 (INR1270000000– height raising ,15000000– Diversion structure , INR 2500000 - Geotechnical monitoring studies , INR 10000000 - Surveillance equipment) at our Rampura mine and approximately INR 6000000000 (INR 1000000000 - Height raising , INR 5000000000 - Dry tailing plant, INR 150000000 other expenditure including studies , surveillance equipment etc.) at RDM mine. The cost to response takes into consideration the cost to implement mitigation measures

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced direct costs

Company-specific description

HZL draws power from its 6 Captive Power Plants to fulfill power requirement of its smelters. Due to ongoing expansions, there is a continuous increase in load demand. To meet this demand and fulfil our commitments to reduce Co2 emissions, we have undertaken turbine revamping i.e increasing the capacity from 80 MW to 91.5 MW, after a detailed feasibility analysis done in consultation with OEM and turbine manufacturers. per unit in FY 2020-21. We see this as an opportunity to not only successfully increase power using same quantity of coal but also reduce the overall CO2 emissions. The project is registered under VERRA- the world's most widely used voluntary GHG program as a carbon reduction project. The turbine revamping of all Hindustan Zinc captive thermal power plants will help in reduction of 2,70,000 tCO2e per annum equivalent to 5.6% of annual emission of Hindustan Zinc as well as save approximately INR 754700000 per annum . For example, the cost of turbine revamping at Zawar Mines is INR 225400000, that supported in generating 440gm/KWH energy for the same quantity of coal, resulted into a savings of INR 144100000.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

144,100,000

Potential financial impact figure – maximum (currency)

754,700,000

Explanation of financial impact figure

Financial impact of revamping turbines is based on the projected increase in power production across all 6 CPPs using the same amount of coal in FY 20-21. The minimum potential financial reflects the potential benefit accrued per annum by revamping one CPP. The maximum potential financial reflects the potential benefit accrues per annum by revamping six CPPs.

Formula used for calculation of benefit= (Coal consumption for production of unit Power before revamping in Gm/KWH – coal consumption for production of unit power after

revamping in Gm/KWH) * Total power generated from CPPs in MU * Cost of coal in INR per tonne).

Cost to realize opportunity

1,240,500,000

Strategy to realize opportunity and explanation of cost calculation

To meet our commitment of reducing GHG emissions and meet our increase in load demand due to ongoing expansions, we have undertaken project of turbine revamping of all our CPPs i.e increasing the capacity from 80 MW to 91.5 MW, after a detailed feasibility analysis done in consultation with OEM and turbine manufacturers. We have budgeted an investment of INR 1240500000 to revamp the turbines at 6 of our CPPs. This is a one-time cost of realizing the opportunity of having annual savings of INR 754700000. The cost assumptions are made on the basis that there will be no increase in cost of coal in which case, the savings will increase by equivalent percentage

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

With world moving towards decarbonization and major electrification, the demand of metals which assist in this transition is also increasing. Many studies (e.g power magazine, Forbes) suggest that zinc-ion battery is an attractive solution to renewable energy storage, particularly for its compatibility along with other advantages. In a lithium-ion supply chain constrained world, we anticipate the demand of Zinc and Silver to significantly rise. As more and more governments around the world pass the legislation that accelerates the transition to renewables, this is an opportunity that we can't ignore. We are also assessing the feasibility to acquire or develop new low emission metals assets such as Lithium. For example, our low carbon zinc has a potential to charge premium of 100 \$ per MT or INR 7200 as against the current rate of 2900 \$ /MT or INR 208800/MT.

Further, focus on solar energy and anti- dumping and other regulatory measures to

incentivize production of Solar panels in India will see a boost to Silver demand as Silver paste is used in Photovoltaic cells. For example, the outlook for silver prices during FY2021 and FY2022 remains exceptionally encouraging, with annual average prices projected to rise by 46% to a seven-year high of \$30.00 or INR 2160 /troz.

Zinc thermal metallization is considered the best method, globally, to prevent corrosion especially in the automobile, infrastructure and construction sectors. Government of India's thrust on infrastructure development and electrification of Railways will boost demand for our products. We are working closely with our customers to increase supply of value added products such as Continuous Galvanizing Grade (CGG) and Electro Plating Grade (EPG) from current 15% to 25% of total zinc sales in FY 22.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

5,150,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Financial impact is based on the market outlook of decarbonized metals, and revenue from increased demand from low emission products such as Zinc in FY 20-21 and future projected revenue opportunity in the FY 26. As per the current outlook the average pricing of Zinc in the market is 2800 Dollars, with some premium coming from derivatives trading in China. The potential financial opportunity is calculated on the projected revenue in FY 26 using production estimates and price outlook. The price assumptions are based on the current demand & supply trends and premium on low emission products. Our opportunity estimates are also supported by our continuous efforts to reduce the cost of production which includes undertaking several measures for mineral recovery, transitioning to clean & cheap power alternatives, waste recycling & recovery etc. For example in the FY 20-21, the Zinc cost of production was 945\$- 5% lower than in FY 19-20 both in INR & USD due to higher volumes, lower power cost, higher sulphuric acid credit, and lower cement cost partly offset by higher met coke and diesel costs. The potential benefit considers the revenue increment due to a premium of

100 Dollars or INR 7200 due to demand. Formula for calculation= P rice premium
*Production of Zinc in Tonnes i.e INR 7200 * 715445 Tonnes= INR 5150000000.

Cost to realize opportunity

7,200,000,000

Strategy to realize opportunity and explanation of cost calculation

To meet the future demand of our products, especially Zinc, we have plans to increase the capacity from 1.2 million tons to 1.35 million tons and eventually to 1.50 million tons. The board has approved a CAPEX of 7500000000 to increase reserve and resource through expansion. We compute the same CAPEX as an estimate to realize the opportunity of increased Zinc sales in the future. The calculation is based on the assumption that we are able to secure the mining license for increased capacity and there is no legislation to drive down the production of minerals. Dollar value of INR 72 for 1 Dollar has been considered for calculation.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resilience

Primary climate-related opportunity driver

Participation in renewable energy programs and adoption of energy-efficiency measures

Primary potential financial impact

Reduced direct costs

Company-specific description

Currently, all of our mining operations and smelters use energy for operations. Being located in Rajasthan which has a high potential for solar and wind energy harnessing, we have an opportunity to leverage if we transition to green fuel, which is cost-effective in terms of tariff costs and also helps us in being competitive. We have developed a pathway to NetZero minimizing 92 % of our GHG emissions to Zero by transitioning to RE 100- 100% Renewable Energy (by 2040). The last 8% of emissions, we can address by using Green Hydrogen for reduction post 2040. HZL also has opportunity to sequester (its own CO2 and others as service) and use CO2 to produce concretes. Simultaneously, we are focused to reduce our overall energy demand by undertaking several energy conservation initiatives. . For example, this year we entered into a MoU with Epiroc Rock Drills AB (Sweden), one of the largest battery manufacturers, for co-developing and supplying battery electric vehicles, trucks and equipment for

underground mining transportations & operations. Our efforts on digitizing mining operations, have helped us lower energy use and emissions by reducing 10% cycle time for haulage and by reducing 50% time in ramp jam. These initiatives including adoption of RE is based on the premise that it will help us build resilience in a future resource-constrained world where costs and carbon legislations will pose a risk to the company's operation as well as its reputation. Additionally these measures, drive cost reductions as well as aid in positioning some of our products as low carbon products, thus helping us charge premium over the floor prices. Our ability to decarbonize much earlier than the competition by switching to Firm RE could enable us to harness the new markets as also to seek a premium for low carbon or zero carbon metals such as Silver, Zinc, lead.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

510,260,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Financial impact is based on tariff reductions due to adoption of RE in FY 20-21 and future projected costs in the FY 26. This range also includes cost benefits received as a result of energy efficiency measures taken up during FY 20-21 and projected to FY 26. The current cost estimates include the net difference in cost on power multiplied by the total % of power contribution through RE in FY 26. Formula (Cost of Power purchase from Grid - Cost of Renewable power) * total % of energy use through renewable) (6.3-5.68)* 823= 510260000. The financial opportunity is based on the assumption that cost of renewable power will remain constant or decline by FY 26. We align ourselves to India's Intended Nationally Determined Contributions – Towards Climate Justice. Prime Minister is also ambitious to ramp up green energy capacity in the world's second-most populous country more than four-fold to 450 gigawatts (GW) by 2030. We are continuously exploring the opportunity to invest in Renewable power and decrease our carbon footprint.

We are also part of COP-26 Business Leaders and working with industry leaders to

increase the awareness related to climate changes and impact of the same on society.

Cost to realize opportunity

20,000,000,000

Strategy to realize opportunity and explanation of cost calculation

To realise this opportunity, we will have to make various capital expenditures as well as operational expenses. We are optimising ourselves towards long term financial planning and incorporating technologies to minimize and reduce the impact. We have identified moving towards net zero emissions by 2050, bifurcated in four segments (i.e. Year 2026, 2030, 2040 and 2050). The Company is planning to increase RE power portfolio by addition 400 MW solar project by 2023 and 14.5 WHRB project by FY 2021, replace diesel fueled transportation vehicles with Electric vehicles (estimated expenditure for introducing 4 vehicles- INR 800000000), Turbine revamping of all the CPPs (estimated costing approx..INR 1240000000), install Hydrogen or Electric/Induction Furnaces, enhance our carbon Capture, Storage and Utilization capacity etc. We have invested close to INR 2280000000 towards our decarbonisation strategy. To fund our future plans, we have budgeted additional INR 18250000000 (based on estimation of per MW cost for solar/wind as per government budget projections in tariff orders and our past project development expenditures) for the installation of renewable power. Estimates include cost of implementing climate change mitigation and adaptation measures in our plan to meet our SBTi targets by Year 2026-27.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization’s strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization’s low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	Yes	

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization’s use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
<p>RCP 4.5 Nationally determined contributions (NDCs)</p>	<p>HZL considers the climate-related scenario analysis as an essential tool to develop the de-carbonization pathway & utilizes this to visualize risks, including risks relevant for business continuity, climate change mitigation, climate-related stakeholder communications and disclosures. We carried out the Scenario analysis and stress testing for understanding the implications of climate change on our operations across the units and to have longer term strategy about risks and opportunities possessed by climate change. We used Representative Concentration Pathway (RCP) 4.5 for climate-related scenarios for physical risks and Nationally Determined Contributions (NDCs) for transition risks. These scenario analysis were in accordance with the Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) recommendations and were used to ensure HZL is identifying and managing its physical and transition risks. (https://www.hzlindia.com/wp-content/uploads/HZL-TCFD-Report-20-21.pdf). We also analyzed inputs, production, country level GDP growth projections, metal & mining sector growth projections, inflation, country’s existing NDC commitment, existing policies, potential changes in energy/emission regulations etc. The resulting analysis were used to further augment all of HZL’s current risk management practices.</p> <p>Through this activity we carried out the assessment of possible scenarios in the two time period, i.e. 2039 and 2059 and applied possible futures to our business, to test strategic resilience. Time period I (2020-2039) - This time period enables us to think and look beyond the current scenario and identify milestones towards the longer-term impact which will enable us to navigate through the identified risk and harness opportunities. Time period II (2040-2059) – Recognizing the uncertainties, we used scenario planning to explore energy transitions in the next 20-30 years considering changes in policy, societal preferences, economic growth and technological progress.</p> <p>Through advanced climate modelling we assessed for each of the sites on the parameters of Physical Risks (Increase in temperature, Drought, Floods, Extreme weather, Cyclonic pattern, wind speed etc.) and India’s NDCs induced Transition Risk (due to change in policy change, technological change, market change, financial resource raising, reputational etc.). As part of the analysis, potential vulnerabilities to our operated assets, nearby communities, ecosystems and customers due to physical risks associated were considered. We identified options for increasing our strategic and business resiliency to plausible climate-related risks and opportunities through adjustments to strategic and financial plans. Risk mitigation and adaptation strategies in short, medium and long term</p>

	<p>scenarios for both physical and transition risks.</p> <p>We discovered from this assessment that the assets, safety margins maintained in engineering designs, insurance provisions, and governments’ proactive climate change adaptive actions could be sufficient to mitigate much of the impacts. We identified some additional adaptation measures as abundant precaution, and would make such investments to ensure water security at our mines and smelter sites and alleviation of heat stress at our smelter sites. Further, we will integrate the new identified climate risks as emerging risks in our enterprise risk management and financial planning. The results of the climate scenarios and risks are reported to the CEO. HZL has defined an internal carbon pricing to bring in organizational change by influencing internal behavior and to drive energy efficiency. The internal carbon pricing is applicable to all HZL's units.</p>
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C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<p>Climate related risks and opportunities have played a crucial role in influencing our strategy with regards to our products and services. As reported in Opportunity 2, 2.4a . As our products can be impacted by climate change our approach has been to develop our products which are climate resilient and can cope with dynamic markets and consumer demand. Our strategy of tapping correct markets and using efficient methods of production we have gained a competitive advantage and as a result we can offer low carbon products at competitive prices without eroding quality. For example Zinc has anti-corrosive properties and HZL sees an opportunity that the penetration of zinc in India can be in all its application areas, from steel galvanizing to die casting and other alloys, as well as zinc oxide.</p> <p>Application of Zinc will increase the life of the railway tracks, buildings etc. and in turn will reduce the energy consumption and GHG consumption in the entire life cycle of the Steel.</p> <p>Further, focus on solar energy and anti- dumping and other regulatory measures to incentivize production of Solar panels in India will see a boost to Silver demand as Silver</p>

		<p>paste is used in Photovoltaic cells. The Company is focusing on increasing the supply of value-added products. Share of value-added zinc products was 16% in FY 2020-21. These measures have already been initiated and we will continue to refine these in the coming years as we move towards our goals of 2025.</p>
Supply chain and/or value chain	Yes	<p>Climate related risks and opportunities have greatly influenced our strategy as most of our operations take place in regions which are at risk due to climate change and as most of our suppliers and value chain are also present in these areas. We have 474 MW of own captive power plant and for us the coal availability is the major driver in supply chain and this is very well explained in 2.3 a risk 1. To mitigate the risks related to supply chain and related business impact We are continuously improving our renewable energy portfolio. Currently having 40 MW of solar , 35 MW of WHRB and The Company is planning to increase RE power portfolio by addition 400 MW solar project by 2023 and 14.5 WHRB project by FY 2021. Furthermore, HZL has worked to optimize our supply chains. An example of this is the Project 'Sarathi' which optimizes end-to-end logistic value chain via real-time movement and tracking of key input and intermediate materials. Furthermore, to eliminate this risk through technology and innovation, Integrated Transport Management System (also known as TMS) has been introduced. The salient features of this system include route deviation alert and fleet breakdown notifications; which have helped us reduce the turnaround time. HZL also encourages vendors to set up local manufacturing units in vicinity of our operations to reduce transportation risk and carbon emission. A vendor who is recyclers of waste has put an ancillary plant near our premises which help us to reduce transportation and carbon emission. These measures have already been initiated and we will continue to refine these in the coming years as we move towards our sustainability goals of 2025.</p>
Investment in R&D	Yes	<p>Research & Development is a critical function to help achieve Climate Goals and mitigate climate change risks and opportunities. Therefore, as an organization we initiated investments in R&D (5 crore in FY 20-21) to ensure our operations are resilient to climate change and sustainable. One of the examples is we are working towards Zinc-air battery to increase the utilization of renewable power which is variable in nature and stable power is required for operations. This becomes important as we</p>

		<p>identified in 2.3 that emerging and current regulations can have financial impact on us and to mitigate that we are moving towards renewable energy and for consistency in availability of renewable energy Zinc batteries can be useful. We have already initiated these measures and our investments in R&D are aligned to our Sustainability Goals 2025 and our ambitions of transitioning to a circular economy, while simultaneously maintaining our capacity enhancements. We have been granted 2 patents in the FY 20-21 by US Patents Act on developing Potassium Antimony Tartrate technology and pavers brick using smelter waste.</p> <p>In addition, we have partnered with University of Greenwich to convert Jarosite into aggregate product using Accelerated Carbonation Technology. 1 ton of jarofix can lead to 25000 TCO_{2e}.</p>
Operations	Yes	<p>Climate related risks and opportunities play a crucial role in our operations strategy. As we identified in 2.3 in Risk 1 and 2 that the current and emerging regulations like GHG obligation, coal cess, and electricity duty can have major financial impact to us, As a result, we have invested in low-emissions technologies and green energy such as solar panels and turbine revamping. We are also pioneering in introduction of Battery Electric Vehicles (BEVs) in underground mining. Taking a step closer to achieving carbon neutrality, Hindustan Zinc signed a memorandum of understanding (MoU) with Epiroc for 'Zero Emission and Sustainable Mining by introduction of Battery Electric Vehicle (BEV) in underground mining'. This will help HZL to explore the possibility of introducing battery operated vehicles in underground mines which will help reduce carbon emissions, enabling the mine operations to become more environment friendly. We have switched from High-speed Diesel (HSD) to Natural Gas at PMP and CLZS Pyro and installed VFDs to reduce auxiliary power consumption, increased cell house efficiency, installed shaft at mines, install hydrogen or Electric/Induction Furnaces, enhance our carbon Capture, Storage and Utilization capacity etc.. HZL will continue to implement energy efficiency measures across its operations as we are committed to our Sustainability Goals 2025.</p>

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Capital expenditures	<p>Climate related risks and opportunities have influenced HZL’s financial planning process as it provides our organization with a clear directive of how to fund/allocate capital expenditures towards low carbon solutions, renewable energy, and installation in mines. We engage our sustainability, functional heads, plant heads and finance departments as it is essential to have a cross functional insight on climate related investments (Opex/Capex/other investments). It also helps HZL to understand on the type of investments required to meet our sustainability goals, and our ambitions to transition towards a circular economy and Netzero. The use of climate related risks and opportunities in financial planning also helps to our senior management to anticipate which investments will be viable and which areas of our business require investments in the short term, medium term, and long term.</p> <p>As part of our scenario analysis study, we have identified risks which we need to mitigate by moving towards net zero emissions by 2050. The mitigation and adaptation plans delineated have been bifurcated in four segments (i.e. Year 2026, 2030, 2040 and 2050). We have started to estimate the financial exposure arising due to risks and opportunities for short term, medium term and long term across the units. The transition plan will be discussed in Annual General Meeting FY 20-21 scheduled on 9th August 2021 as part of CEO address to shareholders</p> <p>For example, to develop decarbonize our operations and to mitigate the risk of future regulations, we need to make an additional capital expenditure of INR 18250000000. We have introduced carbon pricing as a component in all our capital expenditures to fund such investments. Right now, the internal carbon price is INR 1451/tCo2e.</p>

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Water Risk - Water CDP

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Base year

2016

Covered emissions in base year (metric tons CO₂e)

4,402,891

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2026

Targeted reduction from base year (%)

14

Covered emissions in target year (metric tons CO₂e) [auto-calculated]

3,786,486.26

Covered emissions in reporting year (metric tons CO₂e)

4,796,511

% of target achieved [auto-calculated]

-63.8573934393

Target status in reporting year

Underway

Is this a science-based target?

Yes, and this target has been approved by the Science-Based Targets initiative

Target ambition

Well-below 2°C aligned

Please explain (including target coverage)

HZL committed to reduce company-wide absolute Scope 1 and 2 GHG emissions 14% by 2026 from a 2016 base-year. This goal has been approved by the Science Based Targets Initiative (SBTi) and is aligned to well below 2C pathway. The base year 2016 means FY 16-17 and same applies to current year as well. These targets were approved by SBTi in September 2018 for 100% mines and smelters owned by HZL.

Our scope 1 + 2 (location based) emissions in FY 20-21 were 4796511 tCO₂e, FY 19-20 were 4734643 tCO₂e whereas for target setting year (FY18-19) were 4870000 tCO₂e. The absolute emissions are on increasing trend since the base year and target setting year- 8.94% higher than in base year 2016, due to expansion activities and increase in production however, there is a reduction by 1.51 % from FY18-19. While we are taking several measures to reduce our carbon emissions, all the initiatives are in the initial stages of implementation. Bulk of the reduction in Scope 1 & Scope 2 will be seen in FY 2022-23 when these projects will be fully implemented. Also, we aim to achieve the SBTi target by investing in Renewable Energy infrastructure progressively by 2026.

Target reference number

Abs 2

Year target was set

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Other, please specify
including all relevant sources

Base year

2016

Covered emissions in base year (metric tons CO₂e)

2,776,909

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2026

Targeted reduction from base year (%)

20

Covered emissions in target year (metric tons CO₂e) [auto-calculated]

2,221,527.2

Covered emissions in reporting year (metric tons CO₂e)

4,285,442

% of target achieved [auto-calculated]

-271.6208921502

Target status in reporting year

Underway

Is this a science-based target?

Yes, and this target has been approved by the Science-Based Targets initiative

Target ambition

Well-below 2°C aligned

Please explain (including target coverage)

HZL committed to reduce absolute Scope 3 GHG emissions covering (purchased goods (e.g. cement, lime and soda ash, coal and inter-organization transportation of materials); business travel; and upstream and downstream transportation and distribution) 20% by 2026 from a 2016 base-year. The base year 2016 means FY 16-17 and same applies to start year as well. These targets were approved by SBTi in September 2018 for 100% mines and smelters owned by HZL.

Our scope 3 emission for FY 20-21 is 4285442 tCO₂e, FY 19-20 was 4187597 tCO₂e whereas for target setting year FY 18-19 was 4244587 tCO₂e. The absolute Scope 3 emissions have increased by 0.96% from target setting year and by 2.45% from last year, due to increase in production by 7%, and subsequent increase in downstream transportation & distribution, processing of sold goods, and end of life treatment related emissions.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Net-zero target(s)

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number

NZ1

Target coverage

Company-wide

Absolute/intensity emission target(s) linked to this net-zero target

Abs1

Target year for achieving net zero

2050

Is this a science-based target?

No, but we are reporting another target that is science-based

Please explain (including target coverage)

In 2021, HZL has committed to join the Business Ambition for 1.5°C campaign of the Science Based Targets initiative (SBTi), a landmark decision taken under the oversight of CEO to align company's climate mitigation targets with the most ambitious Paris Agreement- reach net-zero global emissions by 2050 at the latest in order to limit global warming to 1.5°C. Once this commitment letter is processed by SBTi we will be recognized as "Committed" to UN Global Compact, We Mean Business and to the UNFCCC Race to Zero Campaign. By 2050 HZL will remove from the environment all the carbon the company has emitted either directly or by electrical consumption. We recognize that progress requires not just a bold goal but a detailed plan. As described below, we are launching an aggressive program to minimize our carbon emissions, both for our direct emissions and for our entire supply and value chain. Our program is staged in 4 phases which are categorized into various time horizons such as, 2026-Transition to Clean Energy, 2030- In line with NDC, 2040- Scaling Up, 2050- Delivering Commitment. All these plans would be achieved through Firm RE, H2, CCUS, Efforts on Scope 3 and Circular Economy

Our reductions in CO2 emissions between now and 2040 will come from currently-available technologies. We have developed a pathway to Net Zero in spite the abatement for us are hard. Our intent to becoming Net Zero reflect our action towards mitigating the impact of climate change. Our GHG emissions can be set to Zero by transitioning to RE 100- 100% Renewable Energy (by 2040) as about 90% of emission is due to electricity . As the company expands, organically and inorganically we will harness the opportunity presented by the growth of energy storage and PV panels, the Firm RE availability and shift will be a critical consideration. The last 8-10% of emissions, we can address by using Green Hydrogen for reduction post 2040.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	
To be implemented*	8	284,543.57
Implementation commenced*	0	0
Implemented*	65	44,718.4
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes
Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

440.5

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2,256,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

No payback

Estimated lifetime of the initiative

Ongoing

Comment

The energy efficiency in the production processes of DSC-Zinc were enhanced by The steps taken to increase the efficiency as stated as follows:

- Replaced few components of CWP-2 to reduce the power input
- Restored Air Compressor-04 in Compressor-Utility Zinc Plant from overload condition.
- Improved rated flow capacity to 100% of 3 pumps in ACT-51

This is the process optimization project no cost involvement was there and hence no payback period is applicable.

Initiative category & Initiative type

Low-carbon energy generation

Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)

1,126.2

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

9,125,000

Investment required (unit currency – as specified in C0.4)

39,000,000

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

To supplement the low carbon energy generation, 1 MW of solar installations at Kayad mines were done by HZL

Initiative category & Initiative type

Energy efficiency in production processes

Other, please specify

Reduced energy consumption

Estimated annual CO2e savings (metric tonnes CO2e)

3,780.1

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

19,744,000

Investment required (unit currency – as specified in C0.4)

15,300,000

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

Comment

We undertook several low cost initiatives at the locations to reduce our overall energy consumption. Few of the projects are listed below:

- Installation of Energy Efficient blower at 215A of 315 kW capacity as a standby of 215 C & E blower.
- Installation of LED lights by replacing ordinary lights in all plant roof area
- Modification of line size of reclaim water pump to avoid dual operation of 6316 A/B and 6414 A/B pumps
- Installation of Auto operation of sump pumps with Level transmitter in Mill-1
- Power optimization of Zinc middling and Lead middling pumps by level transmitter in mill-1
- Stopping of double running pumps in Lead middling, Zinc scavenger pumps etc. (5P06A/B, 5P03A/B, 5P08A/B, 6P05A/B, 6P11A/B, 2P01A/B) in Mill-1
- Installation of pump for water handling in place of tailing battery in mill-1
- Auto operation of sump pumps with Level transmitter in Mill-2&3
- Lighting power optimization by providing timers and replacement with LED lights
- Power optimization by replacing Pneumatically operated Auto valve for Blowers in Mill-2
- Power optimization by replacing Pneumatically operated Auto valve for Blowers in Mill-3
- Replacement of faulty I2 efficiency motors with I3 efficiency motors.

Initiative category & Initiative type

Energy efficiency in production processes

Other, please specify

Alternatives for power generation

Estimated annual CO₂e savings (metric tonnes CO₂e)

58,000

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

23,450,000,000

Investment required (unit currency – as specified in C0.4)

225,400,000

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

Hindustan Zinc has six units of Captive Power Plant across different locations. Due to continuous increase in load demand on account of ongoing expansions and commitment to reduce CO₂ emissions, we have started looking for innovative ways to generate power. Turbine revamping project was undertaken after a detailed feasibility study and discussion with OEM as well as various turbine manufacturers. This project is registered under VERRA.

(The world's most widely used voluntary GHG program) as a carbon reduction project. This project will also help in generating more power from CPP with no additional fuel. The project implemented at one our CPP will help to reduce 24280.7 tCO₂e per annum. Further, with this project of turbine revamping of all Hindustan Zinc captive thermal power plants it is estimated that it will help in reduction of 270000 tCO₂e per annum equivalent to 5.6% of annual emission of Hindustan Zinc in the near future.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for energy efficiency	HZL's is focused on energy efficiency and it is largely driven by the cost. In the beginning of every financial year, we plan and identify a range of energy conservation projects for the year and accordingly the budget is allocated. However, apart from this there is provision to get the budget granted for additional initiatives identified during the year such as for technological retrofit and replacement projects which lead to a significant reduction of energy
Dedicated budget for other emissions reduction activities	We are committed to minimize the environmental impact and carbon footprint of our products and manufacturing operations, especially Greenhouse Gas (GHG) emissions in particular. The Company aims to meet this commitment through focusing on technological innovation and establishing other emission reduction efforts. At HZL, each unit has its individual set of identified targets corresponding to corporate emission reduction targets, against which activities are identified and budget is allocated accordingly for the implementation.
Compliance with regulatory requirements/standards	Compliance with regulatory requirements and standards is one of our basic prerequisites. With the increase in number of regulations and standards, we continue to invest in emission reduction activities and thereby foster innovation. HZL remains to progress its R & D efforts for efficient use of water reduction and reuse of waste generated out of its facilities. To be in compliance with the RPO obligation, HZL is investing significantly in RE generation. Also to ensure adherence to the highest level of the safety standards HZL adheres with the IFC norms.
Internal price on carbon	For setting up internal carbon price per tonne of CO2 equivalent we follow the 'implicit price of carbon'. Internal Carbon Price is calculated based on the abatement method which involves the calculation of the price required for avoiding a tonne of CO2e through adoption of energy efficiency and renewable energy related measures and respective investments. The calculated 'Implicit cost of carbon' of HZL comes out to be INR 1451.26 per tonnes of CO2 equivalent.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Company-wide

Description of product/Group of products

Jarosite is among the most significant solid waste material that is generated during the hydrometallurgical zinc extraction process. On the other hand, fly ash wastes are produced from the coal used for power generation in our captive power plant and ferro-silicate slag waste is generated from the Imperial Smelting Furnace (ISF slag) production of zinc. All three wastes- Jarosite, Fly ash and Slag are used as a raw material substitute in cement & construction industry. While, Jarosite and slag can be used as an aggregate replacement in cement concrete & cementitious mixes, Fly ash is usually used as a substitute of Limestone in cement production.

The use of de-carbonated/non-carbonate lime-bearing raw materials such as Jarosite, Flyash and Lead Zinc Slag on one hand leads to the reduction of GHG emissions due to reduction of clinker factor in cement, and on the other hand reduces the energy required for de-carbonation fuel combustion and calcination. For example, use of 31% fly ash as a substitute to virgin limestone in the manufacturing of Cement saves 250 kg CO₂ per ton of Cement and thermal savings of 180 kcal/kg cement. Use of 55% slag as a substitute in the cement blend saves 448 kg CO₂ per ton of Cement and electrical savings of 25 kWh per ton of Cement. Source: india-cement-carbon-emissions-reduction.pdf (ifc.org)

We aim to increase the sale of Jarosite to cement industries progressively – from 70000 MT/annum in FY2020 to 150000 MT/annum by FY2025. During FY2021, we dispatched 89031 MT of Jarosite, 301713 MT of fly ash, and 93683 MT of slag to the cement industry.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Replacement of raw material and reduction in fuel consumption use for excavation of Lime stone

% revenue from low carbon product(s) in the reporting year

0.1

Comment

During FY2021, we dispatched 89031 MT of Jarosite, 301713 MT of fly ash, and 93683 MT of slag to the cement industry and due to this 319626 tCO₂e approximately of emission reduction could be avoided at the consumer end.

Level of aggregation

Company-wide

Description of product/Group of products

We have 273.5 MW wind farms in five states across India which are registered under Clean Development Mechanism (CDM) program by United Nations Framework Convention on Climate Change (UNFCCC) as well as under Gold Standard. The electricity generated from these project is being supplied to respective state DISCOMs under the bilateral contractual agreements. Green energy indirectly reduce the dependency on the conventional sources of power generation as well as emissions. We sold 362.93 Million units of wind energy through the contract agreements worth INR 1390000000.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify
Reduction in emission of grid

% revenue from low carbon product(s) in the reporting year

0.06

Comment

This year wind power of 362.93 million units leading to a reduction of 330707 tCO₂e through green power. Which is 0.063% of our revenues from wind power

Level of aggregation

Company-wide

Description of product/Group of products

Over 70% of Indian zinc demand comes from galvanizing steel, predominantly used in construction and infrastructure sectors. ~70% of the Zinc produced by us used in Hot Dip Galvanizing of steel. With galvanization, a piece of industrial steel is expected to last more than 50 years in average environments

(<http://www.nationalmaterial.com/galvanized-steel-types-uses-benefits/>) . And thus Usage of zinc in galvanization can reduce the need of generation of more steel for construction and infrastructure rebuilding.

On an average 0.50 million MT of Zinc produced by us can be used to galvanize ~10 Million MT of Steel. And with the enhanced life of steel in longer term (35-50 years) the CO₂ emission (25.04 million tCO₂e) from generation of 10 million tonnes of steel can be avoided.

Source of calculation: (2.5tCO₂e/ t of steel- <https://steel.gov.in/energy-environment-management-steel-sector>)

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Reduction in emission of grid

% revenue from low carbon product(s) in the reporting year

43

Comment

25.04 million tCO₂e of carbon emissions can be avoided by using 50 million MT of Zinc supplied by us to the steel galvanizing companies.

Level of aggregation

Company-wide

Description of product/Group of products

Our increased focus on value added products has improved energy consumption at the consumer's end. For example: Jumbo zinc, with innovative design and customization of products, better zinc galvanizing bath management is achieved since melting of uniform bigger blocks is less energy consuming than smaller ingots due to lesser surface area, better transmission of heat and no energy wastage due to lesser splashing in zinc bath. Substantial amount of energy cost saving has been realized by zinc consumers. Customers get benefit of less dross generation and less recycling cost. Also with CGG, Pre aluminium alloyed Zinc etc., the customer gets benefit of avoiding the alloying energy cost.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Direct supply of value added zinc products leads to reduction in energy consumption at customers end

% revenue from low carbon product(s) in the reporting year

16

Comment

FY2021 witnessed a decline in VAP sales on account of the COVID-19 impact across industries of use. We produce two types of VAP – 1) CGG, which is used by Steel Galvanizing companies, with the final product finding use in construction, and 2) HZDA, which is used by Die Casting companies, with the final product being utilized by the Automobile sector. With both construction and auto sector being highly impacted by the pandemic, the demand for the final customized products plummeted, causing VAP

demand to also decline. The Company thus, strategically chose to produce more commodity grade zinc, which was exported in increased quantity during the year. We are working closely with our customers to make our zinc product portfolio robust in terms of value-added products (VAP). Our focus is on increasing the supply of VAP to 25% of total zinc sales in FY 2021-22, from 16% in FY 2020-21.

Level of aggregation

Company-wide

Description of product/Group of products

Potassium Antimony Tartrate technology development & Paver blocks using smelter waste

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify
Reduction in emission of grid

% revenue from low carbon product(s) in the reporting year

0

Comment

In our constant pursuit of innovating for a sustainable future, our teams at Hindustan Zinc have achieved a big milestone, being granted US patents for a technology developed in-house by our state-of-the-art research and development center– ZnTech (formerly Central Research and Development Laboratory) for manufacturing paver blocks from process waste material. Pavers block is a new product and we are yet to realize the revenue from sale of the product.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO₂e)

4,288,645

Comment

The year 2016 in SBT means FY 2016-17

Scope 2 (location-based)

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO₂e)

114,246

Comment

The year 2016 in SBT means FY 2016-17

Scope 2 (market-based)

Base year start

April 1, 2016

Base year end

March 31, 2017

Base year emissions (metric tons CO₂e)

0

Comment

Not applicable

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO₂e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

4,489,443

Start date

April 1, 2020

End date

March 31, 2021

Comment

Scope 1 GHG emissions in FY21 have increased by 0.19 % from last year. In FY19-20, Scope1 GHG Emissions were 4480887 tCO2e. . Increase in GHG Emissions is due to increase in production by 7%. We witnessed the highest ever ore production of 15.5 MT. We also delivered the highest ever annual silver production of 706 tons. However, due to concerted efforts to reduce emissions through- (use of PNG, renewable energy sources and energy saving projects), the overall increase in emissions from last year is insignificant.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

4,480,887

Start date

April 1, 2019

End date

March 31, 2020

Comment

Scope 1 GHG emissions in FY20-21 increased by 0.19 % from last year. In FY19-20 the Scope1 GHG Emissions were 4480887 tCO2e.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment

Location based is used as market based data. Data for market based is not accessible.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO₂e?

Reporting year

Scope 2, location-based

307,068

Start date

April 1, 2020

End date

March 31, 2021

Comment

Scope 2 emission for FY 20-21 has increased over FY 19-20 by 21.01 %. Location based scope 2 emission for FY 19-20 was 253756 tCO₂e. The overall increase is attributed to the usage of state grid energy for increased mine development activities. Hence, increase in GHG Emissions is due to the increase in production by 7%. We witnessed the highest ever ore production of 15.5 MT, and we also delivered the highest ever annual silver production of 706 tons.

Past year 1

Scope 2, location-based

253,756

Start date

April 1, 2019

End date

March 31, 2020

Comment

Scope 2 emission for FY 20-21 has increased over FY 19-20 by 21.01 %. Location based scope 2 emission for FY 19 was 253756 tCO₂e.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

314,837

Emissions calculation methodology

IPCC guidelines and GHG protocol have been used for the calculation. Quantity of cement, soda ash and lime have been considered with relevant emission factors. All our data is obtained from internal sources.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Emissions calculation has been performed as per 2006 IPCC guidelines. Emission from the purchased goods includes cement, lime and soda ash. Emission factor for soda ash, lime has been sourced from 2006 IPCC. Emission calculation for cement has been performed as per GHG protocol and IPCC guideline.

Capital goods

Evaluation status

Not relevant, explanation provided

Please explain

This pertains to our capital equipment purchase. These are one- time expense and need base. Due to the nature of our operation, our value chain is largely comprises of service providers for transportation, contractors etc. with who we interact on a regular basis. We are not working with our capital goods suppliers in our current strategy of engagement. Capital procurement is need based on not regular and thus not considered as a material topic.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

510,536.069

Emissions calculation methodology

This includes the emission due to coal and inter-organization transportation of materials. IPCC guidelines and GHG protocol have been used for the calculation. Quantity of coal has been factored with relevant emission factor. The emission from transportation of coal has been calculated by multiplying distance travelled with the relevant emission factor for sea transport and road transport.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Emission from production and transportation of coal is included in this category. Emission calculation has been performed as per the 2006 IPCC guidelines for the coal production. Upstream transportation of coal includes ship and road transportation. The international sea transportation has been calculated as per the guideline of DEFRA considering the ton-KM and respective emission factor. The road transport emission, within India, has been calculated as per India GHG program. The distance travelled has been considered as provided by supplier. The quantity of coal purchased is maintained by HZL. Our operation involves material transportation in-between the HZL's operational sites. This includes transportation of concentrates, coal, calcine, other fuel and ore. The transportation is done via road for all the aforementioned materials and rail for cathode. Emission factors have been sourced from India GHG program.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

19,041

Emissions calculation methodology

Emission calculation from road travel has been calculated as the factor of distance travelled and relevant emission factor. Emission from ship transportation has been calculated as the factor of quantity of material, distance travelled and relevant emission factor. Emission factors are sourced from India GHG program and DEFRA.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream transportation includes ship and road transportation. The international sea transportation has been calculated as per the guideline of DEFRA considering the ton-KM and respective emission factor. The domestic road transportation has been calculated as per India GHG program guideline and emission factor, as applicable.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

420,393.12

Emissions calculation methodology

IPCC guideline on emission calculation from waste has been used for landfill and reuse/recycle of zinc dust. DEFRA guideline has been used for metal (silver) and tyre recycle

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

IPCC guideline and default values have been used. The calculation for emission from Jarosite, cooler cake and spent catalyst have been done for "industrial waste" (in absence of any other specific value) and ETP sludge for "Sludge" of the IPCC Waste model tool. tCO2 emission calculated is the total emission till the landfill is completely decomposed – 2017 to 2030. DEFRA emission factor has been used calculation of emission from metal scrap and tyre recycling

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,257.41

Emissions calculation methodology

Passenger kilometer travelled has been multiplied with the relevant emission factor to calculate the total emission due to business travel by air.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The business travel at HZL includes air travel. There is very minimal number of road travel related to business and thus, have been neglected. The emissions from business travel by air have been calculated for domestic and international air travel for the reporting year. For the domestic travel, emission factor has been sourced from India GHG program. The emission factors for long, medium and short haul have been sourced by US-EPA database.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

1,946.69

Emissions calculation methodology

Type and quantity of fuel consumption by bus has been factored with emission factor of transportation fuel as provided by GHG protocol. For four wheeler, the distance travelled has been factored with relevant emission factor as per India GHG program- road transportation.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

We use dedicated bus and SUV service for employee commute. The total distance travelled by the bus has been multiplied with average bus mileage to calculate the total fuel consumption. The emission factor of fuel is sourced from GHG protocol (Cross sector tool) transport fuel use. For SUV, emission factor is sourced from India GHG program road transportation.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

0

Emissions calculation methodology

Total electricity consumption multiplied with India grid emission factor.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Till 2019-20, we used to report the data for our 4 marketing offices and 1 liasioning offices and Electricity consumptions at these offices have been considered. In FY 20-21 our upstream leased assets were shutdown due to COVID restrictions.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

19,134.72

Emissions calculation methodology

Total distance travelled multiplied with respective vehicle emission factor

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Total KM covered by the vehicles during the reporting year for freight transportation has been considered. Emission factor has been sourced from India GHG program. The finished goods transportation by road has been considered in the calculation. We intend to include the additional plausible emission due to sea/rail transportation in our next disclosure.

Processing of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

305,325.63

Emissions calculation methodology

It is calculated by amount of product sold to different customer (For galvanization, battery manufactures etc.) and emission factor for that organization taken from GABI software

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Our product, zinc and lead, are largely used in galvanization and batteries manufacturing process respectively. The process of galvanizing in steel industry consumes approximately 3% to 4% of total energy of the steel making process and thus, emission from processing of zinc for galvanizing has been considered to be minimal. We are in the process of evaluating the emission from processing of our products and shall report on the same in future reporting

Use of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Since our product is metal, zinc, lead and silver, the usage of metal does not have any significant CO₂ emission.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

2,692,970.7

Emissions calculation methodology

Quantity of each type of product sold during the reporting year has been multiplied with respective emission factor for recycling.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Since all our products, namely, zinc, lead and silver, are metals, end of life treatment has been considered to be recycling. Emission has been calculated using IPCC 2006 guidelines for zinc and lead and metal recycling emission factor for silver has been sourced from DEFRA.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

HZL does not have any asset given on lease and thus, no emission from downstream leased assets is applicable to us.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

HZL does not have franchises and thus, no emission from this is applicable to us.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

HZL has not done any major investment or acquisition which are not the part of scope 1 and scope 2 emissions. Thus, scope 3 emission from the investment has been considered as zero and neglected.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

Our upstream emissions are from transportation and distribution and upstream leased assets which are been covered under the said scope 3 parameters.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

Our downstream emissions are from transportation and distribution and downstream leased assets which are been covered under the said scope 3 parameters.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO₂e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00002119

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO₂e)

4,796,511

Metric denominator

unit total revenue

Metric denominator: Unit total

226,290,000,000

Scope 2 figure used

Location-based

% change from previous year

17

Direction of change

Increased

Reason for change

This year the revenue is 226290000000 INR which is 21.9% higher than last year's revenue of 185610000000 INR. Due to this overall scope 1 and scope 2 emissions combined have increased, the emission intensity has increased as compared to last year.

Intensity figure

5.16

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

4,796,511

Metric denominator

metric ton of product

Metric denominator: Unit total

929,844

Scope 2 figure used

Location-based

% change from previous year

5.25

Direction of change

Decreased

Reason for change

Even though the absolute emissions (Scope 1 + Scope 2) have increased, overall production in FY 20-21 increased by 7 % from previous year resulting into overall decrease in GHG intensity per metric ton of product.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

No

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
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India 🗨️ ₁	4,489,443
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🗨️¹All our operations are based in India only

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By facility

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO ₂ e)	Latitude	Longitude
Chanderiya Lead Zinc Smelter with CPP	2,225,872	24.83	74.82
Dariba Smelting Complex with CPP	1,512,261	24.95	74.13
Zinc Smelter Debari	3,147	24.6	73.83
Rampura Agucha Mine	65,707	25.83	74.74
Rajpura Dariba Mine	7,235	24.95	74.13
Sindesar Khurd Mine	30,223	25	74.16
Zawar Mine Complex with CPP	629,137	24.35	73.71
Pantnagar Metal Plant	7,764	29.04	79.4
Kayad Mines	8,097	26.53	74.69
Head Office, Udaipur	0	24.57	73.69
Central Research Development Laboratory	0	24.95	74.13

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO₂e.

	Gross Scope 1 emissions, metric tons CO ₂ e	Comment
Metals and mining production activities	4,489,443	We are integrated producer of Lead, Zinc and Silver and no segregated figure is available.

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
India D ¹	307,068	0	374,473.67	0

D¹All our operations are based in India Only

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Chanderiya Smelting Complex	62,279	
Dariba Smelting Complex	30,435	
Debari Zinc Smelter	59,638	
Pantanagar Metal Plant	44,157	
Rampura Agucha Mines	78,562	
Rajpura Dariba Mine	0	
Sindesar Khurd Mine	0	
Zawar Mine Complex	24,181	
Kayad Mine	7,062	
Head Office	577	
Central Research Development Laboratory	177	

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization’s total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Metals and mining production activities	306,314	0	This figure is excluding the Research laboratory, and Head office and other Admin offices as they are outside the mine and mining production activity.

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	8,556	Increased	0.19	The scope-1 emission of company for this reporting year is 4489443 metric tons of CO2e. Scope-1 emission for the previous reporting year was 4480887 metric tons of CO 2e. This means that the total change in emissions is 8556 metric tons of CO2e, equal to a 0.19% increase, according to the formula in the explanation of terms, above: $(8556/4480887) * 100 = 0.19\%$. There is increase in renewable energy consumption a) Solar energy- 0.300 Million GJ in comparison of 0.285 million GJ of last

				<p>year</p> <p>b) Waste Heat Recovery Boiler - 0.73 Million GJ in comparison of 0.52 million GJ of last year</p> <p>Overall there is 28 % increase in Renewable energy use.</p>
Other emissions reduction activities	27,810	Decreased	14.75	<p>The CO₂e due to HSD consumption for this reporting year is 160788 tCO₂e and emission for the previous reporting year due to HSD consumption was 188598 tCO₂e. This means that the total change in emissions is 27810 metric tons of CO₂e, equal to 14.75% decrease from last year as we are switching from HSD to Pipe Natural Gas. During the year there is reduction in HSD consumption 2169878 GJ in comparison with 2545189 GJ HSE consumption of last year). This year we enhanced the consumption of cleaner fuel PNG - 249421 GJ.</p>
Divestment	0	No change	0	Not Applicable
Acquisitions	0	No change	0	Not Applicable
Mergers	0	No change	0	Not Applicable
Change in output	61,868	Increased	1.31	<p>The gross emissions (Scope 1 + 2) of company for this reporting year are 4796511 metric tons of CO₂e. Its gross emissions for the previous reporting year were 4734643 metric tons of CO₂e. This means that the total change in emissions is 61868 metric tons of CO₂e, equal to a 1.31% increase, according to the formula in the explanation of terms, above: $(61868/4734643) * 100 = 1.31\%$. Increase in GHG Emissions is due to increase in production by 7%. We witnessed the highest ever ore production of 15.5 Mt, we also delivered the highest ever annual silver production of 706 tons.</p>
Change in methodology	0	No change	0	Not Applicable

Change in boundary	0	No change	0	Not Applicable
Change in physical operating conditions	0	No change	0	Not Applicable
Unidentified	0	No change	0	Not Applicable
Other	53,312	Increased	21.01	Scope 2 emission for FY 21 is 307068 which has increased over FY 20 by 21.01 %. Location based scope 2 emission for FY 20 was 253756. The increase is due to the use of state grid energy for increased mine development activities. We witnessed the highest ever ore production of 15.5 million MT, we also delivered the highest ever annual silver production of 706 tons.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 10% but less than or equal to 15%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes

Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	12,588,911.19	12,588,911.19
Consumption of purchased or acquired electricity		0	374,473.67	374,473.67
Consumption of self-generated non-fuel renewable energy		286,552		286,552
Total energy consumption		286,552	12,963,384.86	13,249,937

C-MM8.2a

(C-MM8.2a) Report your organization's energy consumption totals (excluding feedstocks) for metals and mining production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstocks)	LHV (lower heating value)	12,588,911.19
Consumption of purchased or acquired electricity		374,473.67
Consumption of self-generated non-fuel renewable energy		286,552
Total energy consumption		13,249,937

C8.2b

(C8.2b) Select the applications of your organization’s consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

4,383

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

4,383

Emission factor

63.1

Unit

metric tons CO2e per GJ

Emissions factor source

2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Primarily used for process heat generation

Fuels (excluding feedstocks)

Propane Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

1,824

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

1,824

Emission factor

64.2

Unit

metric tons CO₂e per GJ

Emissions factor source

2006 IPCC Guidelines for national Greenhouse Gas Inventories

Comment

Primarily used for process heat generation

Fuels (excluding feedstocks)

Acetylene

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

144

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

144

Emission factor

74.1

Unit

metric tons CO₂e per GJ

Emissions factor source

2006 IPCC Guidelines for national Greenhouse Gas Inventories

Comment

Primarily used for process heat generation

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

681,416

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

681,416

Emission factor

74.1

Unit

metric tons CO₂e per GJ

Emissions factor source

2006 IPCC Guidelines for national Greenhouse Gas Inventories

Comment

Primarily used for process heat generation

Fuels (excluding feedstocks)

Coal

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

11,831,859

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

11,831,859

Emission factor

96.009

Unit

metric tons CO₂e per GJ

Emissions factor source

2006 IPCC Guidelines for national Greenhouse Gas Inventories

Comment

Primarily used for process heat generation

Fuels (excluding feedstocks)

Other, please specify

Piped Natural gas (PNG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

69,284

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

69,284

Emission factor

56.1

Unit

metric tons CO₂e per GJ

Emissions factor source

2006 IPCC Guidelines for national Greenhouse Gas Inventories

Comment

Primarily used for process heat generation

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	4,674,482	3,637,996.5	649,482	286,552
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C-MM8.2d

(C-MM8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed for metals and mining production activities.

	Total gross generation (MWh) inside metals and mining sector boundary	Generation that is consumed (MWh) inside metals and mining sector boundary
Electricity	4,674,482	3,637,996.5
Heat	0	0
Steam	0	0
Cooling	0	0

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

0.45

Metric numerator

tCO2e emitted due to waste generated is considered

Metric denominator (intensity metric only)

Total MT of metal produced is considered

% change from previous year

7.73

Direction of change

Decreased

Please explain

Waste matrix is maintained for calculation of scope -3 emissions from hazardous and non-hazardous waste from all our operating units. There is reduction by 1.32% of tCO₂e emitted due to waste generated and also there is increase in production by 7%.

C-MM9.3a

(C-MM9.3a) Provide details on the commodities relevant to the mining production activities of your organization.

Output product

Zinc

Capacity, metric tons

12,801,831

Production, metric tons

755,849

Production, copper-equivalent units (metric tons)

302,340

Scope 1 emissions

577,511

Scope 2 emissions

85,649

Scope 2 emissions approach

Location-based

Pricing methodology for copper-equivalent figure

The source is Transition Pathway Initiative publication on Carbon Performance Assessment in the Diversified Mining Sector (May, 2020). The Discussion Paper contains the price factor for copper-equivalent calculations. So, we have taken the price factor of 0.4 for Zinc, 0.4 for Lead and 93.1 for Silver.

(<https://www.transitionpathwayinitiative.org/publications/57.pdf?type=Publication>), Page No. 17

Comment

The total mined metal production is 971976 Mt out of which Zinc is 755849 Mt (78%) and Lead is 216127 (22%). So, we have considered the same percentage for calculations of Scope 1 & Scope 2 emissions for Zinc, Lead and Silver production.

Output product

Lead

Capacity, metric tons

2,498,169

Production, metric tons

216,127

Production, copper-equivalent units (metric tons)

86,451

Scope 1 emissions

162,888

Scope 2 emissions

24,157

Scope 2 emissions approach

Location-based

Pricing methodology for copper-equivalent figure

The source is Transition Pathway Initiative publication on Carbon Performance Assessment in the Diversified Mining Sector (May, 2020). The Discussion Paper contains the price factor for copper-equivalent calculations. So, we have taken the price factor of 0.4 for Zinc, 0.4 for Lead and 93.1 for Silver.

(<https://www.transitionpathwayinitiative.org/publications/57.pdf?type=Publication>), Page No. 17

Comment

The total mined metal production is 971976 Mt out of which Zinc is 755849 Mt (78%) and Lead is 216127 (22%). So, we have considered the same percentage for calculations of Scope 1 & Scope 2 emissions for Zinc, Lead and Silver production.

C-MM9.3b

(C-MM9.3b) Provide details on the commodities relevant to the metals production activities of your organization.

Output product

Zinc

Capacity (metric tons)

913,000

Production (metric tons)

715,445

Annual production in copper-equivalent units (thousand tons)

286,178

Scope 1 emissions (metric tons CO2e)

2,882,265

Scope 2 emissions (metric tons CO2e)

151,655

Scope 2 emissions approach

Location-based

Pricing methodology for-copper equivalent figure

The source is Transition Pathway Initiative publication on Carbon Performance Assessment in the Diversified Mining Sector (May, 2020). The Discussion Paper contains the price factor for copper-equivalent calculations. So, we have taken the price factor of 0.4 for Zinc, 0.4 for Lead and 93.1 for Silver.

(<https://www.transitionpathwayinitiative.org/publications/57.pdf?type=Publication>), Page No. 17

Comment

The total refined metal production is 930550 Mt out of which Zinc is 715445 Mt (76.88%), Lead is 214399 Mt (23.04%) and Silver is 706 Mt (0.08%). So, we have considered the same percentage for calculations of Scope 1 & Scope 2 emissions for Zinc, Lead and Silver production.

Output product

Lead

Capacity (metric tons)

210,000

Production (metric tons)

214,399

Annual production in copper-equivalent units (thousand tons)

85,760

Scope 1 emissions (metric tons CO2e)

863,780

Scope 2 emissions (metric tons CO2e)

45,449

Scope 2 emissions approach

Location-based

Pricing methodology for-copper equivalent figure

The source is Transition Pathway Initiative publication on Carbon Performance Assessment in the Diversified Mining Sector (May, 2020). The Discussion Paper contains the price factor for copper-equivalent calculations. So, we have taken the price factor of 0.4 for Zinc, 0.4 for Lead and 93.1 for Silver.

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Output product

Silver

Capacity (metric tons)

800

Production (metric tons)

706

Annual production in copper-equivalent units (thousand tons)

65,729

Scope 1 emissions (metric tons CO2e)

2,999

Scope 2 emissions (metric tons CO2e)

158

Scope 2 emissions approach

Location-based

Pricing methodology for-copper equivalent figure

The source is Transition Pathway Initiative publication on Carbon Performance Assessment in the Diversified Mining Sector (May, 2020). The Discussion Paper contains the price factor for copper-equivalent calculations. So, we have taken the price factor of 0.4 for Zinc, 0.4 for Lead and 93.1 for Silver.

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C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	A total amount of INR 5 Crores was invested for various research and development activities, such as for the utilization of Jarosite/Jarofix as aggregates by Accelerated Carbonation Technology (ACT) –Agreement signed between HZL, CSIR-Central Institute of Mining and Fuel Research (CIMFR), Dhanbad & University of Greenwich under IU-CERI (Indo-UK Centre for Environment Research and Innovation).

C-MM9.6a

(C-MM9.6a) Provide details of your organization’s investments in low-carbon R&D for metals and mining production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Green metals				HZL has a vision of zero waste and our R&D focuses on exploring new zero waste technologies for metal recovery from residues & wastes. PRO-CI technology is being tested in collaboration with Process Research Ortech, Canada for metal recovery from two residues - a. Bulk concentrate generated from mine tailings ~ 160,000 ton/annum metal opportunity – Zn & Pb ~50,000 TPA & Silver ~33 TPA

				<p>b. Weak acid leach residue from Zn hydro smelter ~ 160,000 ton/annum, metal - metal opportunity – Zn&Pb ~10,000 TPA & Silver ~32 TPA</p> <p>The feasibility testing has been completed and pilot plant trials are initiated. The main aim of the process is to convert all impurities into saleable byproducts and other residues will be suitable for usage in construction sector.</p> <p>R &D Expenditure – 50 Million</p>
Waste reprocessing				<p>The purification cake which consists of major impurities like Cu, Cd & Co is being reprocessed in ancillary plant and waste residue with 1% Co & ~30% Zn is being generated. A process is developed to enrich Co concentration in residue from 1% to 5% and improve Zinc recovery from purification cake by 50%. Further it has been planned to enhance Co grade upto 20% and generate Co value added products. The total opportunity of Co is around 15 TPA from purification cake.</p> <p>Spent catalyst generated from Sulphuric Acid plant is a hazardous waste which is presently being dumped in secured land fill. The spent catalyst consists of 3-4% of Vanadium on silica base. A green technology has been developed to recover vanadium from spent catalyst in the form of Ammonium Meta Vanadate and Silica rich residue. AMV can be used for generating Vanadium oxides and Silica rich residue can be used as flux.</p> <p>R& D expenditure – 30 Lakhs.</p>

<p>Other, please specify</p> <p>Waste Utilization, Waste to Wealth</p>			<p>In HZL, all of ores are produced from underground mines, these ores are then processed in Mill to produce lead and Zinc concentrates which accounts for around 10% of total weight of Ore, remaining 90% of the material is tailings. These tailings are being used for Mine backfilling by mixing it with cement as binder using Paste Fill Technology. Of the total volume of Paste around 8% by weight is Cement and rest of 92% is tailings. Fly Ash is one of the wastes generated by our Captive power plants (CPP), its disposal is a big environmental concern. At HZL's R&D center, a project was started to substitute some ratio of cement with Fly Ash in Paste Fill. Fly Ash is also known to be helpful for its binding properties. After a rigorous nine month in house testing of different combination of Fly Ash, Cement and tailings, we were able to conclude the replacement of Cement by 25% with Fly Ash. Similar tests were also performed by outside Government Research agencies and they came to conclusion on similar lines of HZL. This project is successfully implemented in two of our mines which results in cost saving on cement consumption. HZL R&D has started to work on utilization of grounded Fly ash in paste fill plant to further reduce the cement consumption from 6% to 4% and rest of 92% is tailings. Further reduce the size of fly ash through fine grinding increase the cementitious properties and acts as a cement extender. Similar tests have carried out in collaboration</p>
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				<p>with government research institute and it has decided to replace cement with 50% ultra-fine fly found feasible. The project has finalized for plant level implementation. which results in cost saving on cement consumption along with better utilization of Fly Ash. With collaboration with IIT - Roorkee, a project was started to substitute certain ratio of cement with Jarosite in preparation of concentrate used in civil applications. Jarosite also contains Cementous materials. Concluded that it was possible to replace the cement with Jarosite about 10-15%. Pilot demo tests were conducted internally. After checking the desired parameters, it was found that 10% Jarosite replacement is possible in concrete preparation. This idea was implemented in house civil constructions. Which saves the cost of cement consumption as well as land to dispose.</p> <p>R &D Expenditure – 10 Million.</p>
Waste reprocessing				<p>High feed grade and complex ore mineralogy in one of our mines resulted in some amount of metal lost in tailings. Re-processing of tailing was attempted to recover metal in tailing to produce bulk concentrate containing Lead, Zinc and Silver. At HZL’s R&D center, this project was taken at Lab and Pilot scale in number of trials and parameter were optimized to produce bulk concentrate with required grade at significant metal recoveries.</p> <p>This project was implemented at plant scale and is now fully commercial scale ready to run in</p>

				plants. This project improved overall metal recovery leading to resource conservation and utilization. R &D expenditure – 50 Lakhs
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C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/ section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/ section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3 (upstream & downstream)

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Purchased goods and services

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Waste generated in operations

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Employee commuting

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Downstream transportation and distribution

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Processing of sold products

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: End-of-life treatment of sold products

Verification or assurance cycle in place

Annual process


Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

 HZL GHG Inventory Assurance Statement 2020-21_Final.pdf

Page/section reference

1-2

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C8. Energy	Energy consumption	AA1000 Assurance Standard v3	It is an organization wide verification done on an annual basis. The questions which include these verified figures are C.8.2a, C8.2c, C8.2d. The verification has been completed as part of Scope 1& 2. The assurance statement is included as a part of Sustainability Disclosure and the same is awaited. The AA1000 Assurance Standard (AA1000AS v3) is the leading methodology used by sustainability

			<p>professionals worldwide for sustainability-related assurance engagements, to assess the nature and extent to which an organization adheres to the AccountAbility Principles. The AA1000AS v3 is a next generation standard for sustainability assurance that:</p> <ul style="list-style-type: none"> • Offers Principles-based Guidance rooted in the AA1000 Accountability Principles (2018) of Inclusivity, Materiality, Responsiveness, and Impact. • Incorporates a Wide-angle, Integrated, and Forward-looking view of a company’s overall sustainability management, performance, and reporting practices. • Ensures Flexibility, Accessibility, and Applicability by any organization, of any size, in any industry, anywhere in the world. • Prioritizes the User Experience to be easy to read, simple to use, and clear in its objectives.
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C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, but we anticipate being regulated in the next three years

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

HZL is not regulated by any regulatory carbon pricing systems. However, we anticipate a future applicability of such schemes in the years to come. Although, India does not have a regulated carbon pricing system at this moment, however, it does have an energy related system called Perform, Achieve and Trade (PAT) and Renewable energy certificate (REC). PAT was initially applicable to 7 energy intensive sectors and the sphere was later increased to 9 sectors including ferrous based production and excluding all non-ferrous metal and mining activities. We anticipate that our activities may get impacted by PAT in future. Our technology mix and asset configuration sets us apart in our ability to comply with existing climate regulations like REC/RPO and the emerging regulations that are likely to be put in place by the inter-ministerial Apex Committee for Implementation of Paris Agreement (AIPA) of Government of India . REC’s are applicable to operations where captive power is generated from non-renewable sources. Since, we consume power from coal based captive power plants, REC obligations are applicable to us. It is expected that the REC obligations may also increase.

Our total obligation to buy REC for FY20-21 was 404843MWh. We are in compliance with the same obligation by producing 1606860 MWh of our renewable energy.

To prepare for the applicability possible future regulations on carbon pricing or energy, HZL has identified following as the key areas to focus:

1. Reducing the energy consumption and increasing energy efficiency of our operations.

Annually we undertake measures to reduce our energy consumption and increase energy efficiency in our operations. This has led to decrease in specific energy consumption from 20.39 GJ/MT in FY 17 to 19.96 GJ/MT in FY21. We undertake yearly energy efficiency targets to make continuous progress.

2. Making provisions for renewable energy consumption

. The current liability as per the RPO for captive generation 10.2% and 16.5% for power purchase from IEX. In the long term, we anticipate the Renewable Purchase Obligations to reach 30%.

The Company has made significant investment in green energy aggregating to 349.20 MW to reduce greenhouse gas emission and carbon footprint. In FY'21 total 1 MW of ground mounted solar power plant has been commissioned taking the total solar power capacity of the Company to 40.42 MW for its captive consumption. In addition, the Company has captive capacity of 35.27MW through waste heat recovery boilers. The 273.5 MW wind energy plants are in five states and are under long-term power purchase agreement with distribution companies. During the year, the Company produced solar power of 83.43 million units, waste heat energy of 203.13 million units and wind power of 362.93 million units leading to a reduction of 5,51,695 MT of CO₂ through green power. We are moving proactively forward towards achieving our goal to reduce our carbon footprint by 5, 00,000 MT of CO₂ by 2025 through a series of innovative initiatives. Some of this include, Installation of 20 MW solar power project at Dariba. Commissioning of 35.27 MW Waste Heat Recovery Boiler (WHRB) at Fumer project and Installation of 5.58 MW WHRB at Dariba etc.

3. Increasing the green cover through plantation drives

We undertake plantation for resilience and increasing the carbon sink. This year we have planted 96,380 plant saplings around our operations. Under the Biodiversity Park project, around 10 ha of land in Rajpura Dariba Complex has been developed where around 50,000 plants of 42 different species were planted to attract local and migratory birds which come to a nearby irrigation pond.

4. Developing a portfolio of internationally accepted/accredited carbon credits

The 12 UNFCCC registered projects have the potential to reduce the Company's carbon footprint by 649914 MT of CO₂ emission per annum while unregistered projects provide reduction of 131178 tonnes CO₂ emissions per annum. The Company has also registered these projects at 'Gold Standard', the most rigorous certification standard globally for carbon offset projects supported by WWF.

5. Developed an internal pricing on carbon

HZL has defined an internal carbon pricing to bring in organizational change by influencing internal behavior and to drive energy efficiency. The internal carbon pricing is applicable to all HZL's units. The internal carbon price is INR 1451/tCo₂e.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit origination

Project type

Wind

Project identification

Wind Power Plants at 9 sites.

Verified to which standard

CDM (Clean Development Mechanism)

Number of credits (metric tonnes CO₂e)

330,709

Number of credits (metric tonnes CO₂e): Risk adjusted volume

330,709

Credits cancelled

Not relevant

Purpose, e.g. compliance

Other, please specify

Credit Selling

Credit origination or credit purchase

Credit origination

Project type

Energy efficiency: own generation

Project identification

9.4 MW Steam Turbine Generator project by HZL

Verified to which standard

Other, please specify
Non-registered project

Number of credits (metric tonnes CO2e)

37,113

Number of credits (metric tonnes CO2e): Risk adjusted volume

37,113

Credits cancelled

Not relevant

Purpose, e.g. compliance

Other, please specify
Credit Selling

Credit origination or credit purchase

Credit origination

Project type

Solar

Project identification

38 MW Solar at HZL

Verified to which standard

CDM (Clean Development Mechanism)

Number of credits (metric tonnes CO2e)

73,664

Number of credits (metric tonnes CO2e): Risk adjusted volume

73,664

Credits cancelled

Not relevant

Purpose, e.g. compliance

Voluntary Offsetting

Credit origination or credit purchase

Credit origination

Project type

Energy efficiency: own generation

Project identification

Electricity Generation from Waste Heat Recovery boilers at different locations of HZL

Verified to which standard

Other, please specify

Verified by energy auditor on yearly basis

Number of credits (metric tonnes CO2e)

107,228

Number of credits (metric tonnes CO2e): Risk adjusted volume

107,228

Credits cancelled

Not relevant

Purpose, e.g. compliance

Voluntary Offsetting

Credit origination or credit purchase

Credit origination

Project type

Solar

Project identification

Roof top and kayad solar project at HZL

Verified to which standard

Not yet verified

Number of credits (metric tonnes CO2e)

2,981

Number of credits (metric tonnes CO2e): Risk adjusted volume

2,981

Credits cancelled

Not relevant

Purpose, e.g. compliance

Voluntary Offsetting

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

- Navigate GHG regulations
- Change internal behavior
- Drive energy efficiency
- Drive low-carbon investment

GHG Scope

- Scope 1
- Scope 2

Application

Corporate structure that price is applied to (i.e. business units, corporate divisions, facilities)
The internal carbon pricing is applicable to all HZL's units, which includes our all facility

Actual price(s) used (Currency /metric ton)

1,451

Variance of price(s) used

The internal uniform carbon pricing is applicable to all HZL's units, which includes all business units, corporate divisions, facilities etc. HZL assumes that the carbon credit regulation in India may come into force in three years and hence, carbon price may evolve or vary in future depending upon the local carbon tax regulations applicable.

Type of internal carbon price

Implicit price

Impact & implication

The internal carbon pricing helps us to 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. ICP is used for financial evaluation of projects and the allocation of CAPEX/OPEX respectively.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism

Code of conduct featuring climate change KPIs

Climate change is integrated into supplier evaluation processes

% of suppliers by number

20

% total procurement spend (direct and indirect)

68

% of supplier-related Scope 3 emissions as reported in C6.5

20

Rationale for the coverage of your engagement

HZL has a Responsible Sourcing Policy which delineates the expectations that it has from suppliers on ESG including performance on our climate change goals. The engagement process at HZL is spread out in three stages which include, the first stage where we undertake pre-qualification of all potential business partners through obtaining and monitoring evidence to ensure that a potential partner meets or exceeds our standards, as a pre-condition to be engaged for the supply of products and services to Hindustan Zinc. In order to maintain key supplier status within our procurement strategy, we require all suppliers to report on their compliance with ISO 14001. This screening is done through a pre-qualification questionnaire (PQ) where various topics related to environmental, social and governance issues are covered. Further, HZL conducts site visits and audits to verify compliance to the code of Conduct including compliance with the Responsible Sourcing Standard. For our critical suppliers, we ensure that any potential and emerging risks are identified through site visits (as a part of due diligence and audits), interviews and information collection.

The pre-screening criterion is applicable to 100% of our suppliers. We conduct due diligence and risk assessment as an ongoing activity is done progressively over a period of 3 years. During this year, we have assessed 214 (20%) critical suppliers. In last 3 years, we have assessed 85 % of our supplier base (893 out of 1050) suppliers.

Impact of engagement, including measures of success

The engagement with suppliers helps HZL to mitigate risks by identifying red flag suppliers, fulfill their commitment, and build a strong relationship. From the information provided in the screening and due diligence, selected suppliers are requested to

undertake third party on-site assessments. Where risk issues, including non-compliance with the requirements of the Responsible Sourcing Standard for Suppliers, are identified, corrective action plans are developed and agreed with suppliers. The success of this engagement is measured by the identification of 51 high risk suppliers and further recommendations are shared for improving their performance and a track of their performance improvement is maintained accordingly.

Comment

None

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Share information about your products and relevant certification schemes (i.e. Energy STAR)

% of customers by number

100

% of customer - related Scope 3 emissions as reported in C6.5

70

Please explain the rationale for selecting this group of customers and scope of engagement

Customers are the crucial stakeholder to our business and we ensure to always engage with our customers to be consistent in managing and mitigating social and reputation risk. Climate change is integrated into our customer engagements and no separate engagements are conducted therefore. Our customers' expectations, requirements and feedback are essential to us as they determine the quality and pricing of our products. We innovate and develop products keeping our customer requirements in-line. Feedbacks are collected for all the bi-annual online customer satisfaction survey that HZL conducts. At HZL, we value customer feedback and further evaluate and incorporate them in our process.

Based on these interactions, it was realized that the products in current form are leading to higher energy consumption at some of our customers. Hence, value added products and tailor made propositions were made for the clients. HZL has also been working on improving the technical and support services for all the customers for better awareness and detailing of product portfolio. With the world moving towards de-carbonization and major electrification we are engaging with our customers to identify opportunities of developing low carbon products as well as forecast demand for our products in this

transition.

Considering that these products lead to lower carbon emissions at customers end HZL also collaborated with Indian chapter of IZA to grow the zinc consumption in domestic market through active market development programme. In the last year, IZA and HZL have conducted Seminar and Educational Programme in the various smart cities to enhance awareness about zinc in infrastructural Projects and Sustainability of Smart cities projects. Further, the team had organized seminars on Die Casting Technology based on technical and market related discussions. IZA, along with HZL has several engagements with Railway ministry, Steel ministry and Steel Authority of India Ltd for discussing the use galvanized railway tracks. We measure the success of our engagements using key metrics like energy savings, customer satisfaction scores, and qualitative feedback. This ensures that we are able to improve our engagement performance on a yearly basis.

Impact of engagement, including measures of success

The results of this interaction are: Creation of better products and services, appropriate disclosure of information on products and services, and improving resource efficiency are some of the customer requirements which we have received in last few years. Based on which we have successfully launched value added products like Hindustan Zinc Die-casting alloy. These products assist the customer in reducing their energy consumption and hence GHG footprint and creating resource efficiency. We have interacted with customers to educate them on the product and its advantages. FY2021 witnessed a decline in value added products (VAP) sales on account of the COVID-19 impact across industries of use. We produce two types of VAP – 1) CGG, which is used by Steel Galvanizing companies, with the final product finding use in construction, and 2) HZDA, which is used by Die Casting companies, with the final product being utilized by the Automobile sector. With both construction and auto sector being highly impacted by the pandemic, the demand for the final customized products plummeted, causing VAP demand to also decline. The Company thus, strategically chose to produce more commodity grade zinc, which was exported in increased quantity during the year. We are working closely with our customers to make our zinc product portfolio robust in terms of VAP. Our focus is on increasing the supply of VAP to 25% of total zinc sales in FY 2021-22, from 16% in FY 2020-21. The Company carries out customer satisfaction survey in every two years. This year we conducted a group wide survey for all metals. Our measure of success also includes the effectiveness of our grievance redressal mechanism, in FY2021, total 46 complaints were formally logged by our customers through the company's portal, out of which 44 complaints have been resolved and the pending 2 are under closure. We have increased reporting of our climate actions to customers through annual integrated report and sustainability report and through other periodic engagements.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Our stakeholders are our partners in progress and at HZL, we treat them on priority and ensure to consider their interests respectively. We engage with all our stakeholders on a continuous basis around the year as part of our business operations. We aim to understand their requirements and expectations by effectively engaging with them through various interactions and transactions. We have identified our key stakeholders based on the nature of the relationship we share, their key expectations and how critical they are to our business.

Employee: Employees are engaged and informed about company's initiatives, related to climate change, and expectations that the organization has of them. Employees are selected to attend in-house and external trainings on climate change. They are briefed on top climate change risks so they can effectively manage them. We encourage employees to share ideas on improving company's climate related performance. We provide monetary and non-monetary rewards & recognition for achieving climate change related targets. In FY 20-21, various town halls such as 'Sampark' were conducted wherein, the CEO connected with all the employees. As part of the annual competitions such as 'Chanakya' and "RACE, HZL recognizes employees who help attain HZL's sustainability goals. Champions who contribute best innovative ideas leading to significant reductions of emissions and energy are rewarded under KAIZEN.

Communities: Our harmonious co-existence with our communities is important for a disruption free operations and is also critical for our social license to operate. We engage with the communities through our Social contribution/CSR activities, Public hearings, awareness campaigns on Environmental topics, which may include energy and climate change. In order to inform them about the implications of the same community impact assessment surveys are conducted and the process for complaints and grievances are effectively established and communicated. Since we operate in a water stressed area, climate change has the potential to impact water related concerns of the society. This year a campaign of 'Koi Bacha Rahe Na Bhookha' campaign was run to eradicate hunger among the less privileged group. Education programs were conducted through various virtual mediums. Animal health camps were set up and Anganwadi Sustenance committee meetings were held. During the year FY 2020-21, HZL has installed 7 RO hub plants, 28 standalone ATMs benefiting 35 operating villages/hamlets and over 2500 villagers.

Government: Key engagement platform with government include advocacy through trade and industry bodies, close engagement with regulators, local administration, inspection bodies on a regular basis, regulatory and legal compliance. Engagement topics include climate change and energy while strategies include participation in industry and government collaborative projects like the forest department's plantation drives and collaborating with the State Government on rain water harvesting. We are the CSR partner under the Government of India's Swachh Iconic Places initiative as part of Swachh Bharat Mission. This year we engaged with the government to conduct silver industry and MSME focused webinars, and we also engaged into board meetings with government appointed directors.

Shareholders/ Investors: We engage with them through financial results declaration (quarterly), Annual General Shareholder's meetings (annual), Investor Relations events and one-on-one meetings. Our standard disclosure tools include our Annual Reports, Sustainability Reports, TCFD report, and company's website. We ensure to monitor complaints and grievances, key issues or expectations and engaging in a timely, fair assessment manner and further maintaining a proper disclosure, ratings and support from capital markets. HZL conducts a yearly shareholder gathering, an Annual General Meeting and presents its key performance indicators, the Company's net-zero strategy and the way forward. During this year, we

conducted a senior management Q&A round in quarterly earnings calls to engage with our shareholders and an Annual general meeting for FY2020 was also held.

Industry Association: This year HZL partnered with Confederation of Indian Industry (CII)'s Working Group on Driving Accelerated Climate Action by Indian Businesses and has been actively participating on shaping the agenda for upcoming, 26th meeting of countries that signed the United Nations' Framework Convention on Climate Change (COP26), to be held at Glasgow, UK in November 2021. HZL has also partnered with CII on promoting to Race to Zero on various run up events to COP 26. HZL has planned to conduct webinar series 'Race to Zero' with 5 specific sections planned on EP 100, SME Climate Hub, RE 100, EV 100, Technology transfer and one session planned with top Indian companies' CEOs on their views on Race to Zero (Planned from June to September)

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Clean energy generation	Support	HZL engages with CPCB and SPCB for receiving approvals for running pilot program. The pilot program is based on the usage of Jarosite in the cement plant as input material. We have also started using Jarofix for road construction.	HZL is engaging with SPCB and CPCB to get Jarosite removed from the list of hazardous waste materials. It is working on to further engage with the policy makers towards declaring Jarosite as 'High-Volume Low toxic' waste as it can be used in the cement plants. HZL anticipates the formulation of such policies in the future and has also received the approval for utilizing the Jarofix in road construction.
Clean energy generation	Support	HZL engages with coal and non-coal committee of MoEF on a regular basis for policy amendments and changes applicable for expansion of mines for exemption from public consultations	HZL experts are proactive in their engagements and provide inputs in various policy amendments and changes.

Clean energy generation	Support	Multiple engagement with BIS for approval of usage of 1% of Jarosite in cement.	We have gained approval from BIS for usage of 1% Jarosite in the manufacturing of cement.
Clean energy generation	Support	HZL engages with RERC for combination of solar and non-solar RPO's inorder to make it convenient for entities to meet their obligations..	Discussions with RERC resulted in amendment to include cogeneration from sources other than renewable sources in the applicability of RPOs. This has resulted to an increase in installation of alternate form of energy generation, such as, waste heat recovery.
Other, please specify Policy and Regulations	Support	HZL supports the National Committees involved in formulation of policies and regulations for improvement of environment including GHG reduction, throughout the country such as Ministry of Environment and Forest, National Committee on Environment, Central Pollution Control Board and State Pollution Control Board.	We, at HZL, actively engage in the formulation of the policies and regulations for improvement of environment including GHG reduction throughout the country. Our R&D is also committed to minimize the environmental impact and carbon footprint of its products and manufacturing operations, with Greenhouse Gas (GHG) emissions in particular. We also engage with the policy makers to discuss the growth opportunities we foresee in terms of zinc consumption in India in other applications, including zinc metallization of railway tracks, as a nutrient for zinc deficient soil in India, and increased galvanized steel in car bodies in-line with international standards etc. This year we have partnered with University of Greenwich to convert Jarosite into aggregate product using Accelerated Carbonation Technology. 1 and Hindustan Zinc and Rajasthan Government organized a mega webinar in September 2020 capturing the state's silver market potential.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

International Zinc Association

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

IZA is thoroughly committed to its the principle of sustainability. This very commitment is a foundation to our organization's sustainability charter and guiding principles as well. We believe that initiatives such as protection of the environment, open engagement on sustainability issues and supporting sustainable development practices not only drive long-term prosperity for the zinc industry; instead they also enable our customers to become more sustainable through the use of zinc products. Climate change is a key topic for the sustainability charter of IZA and the focus areas under this includes:

- Reducing GHG emissions from operations;
- Reducing GHG emissions from our supply chain;
- Proactively using knowledge of the full life cycle impacts of zinc to support the development of emission reducing products and solutions;
- Developing, implementing and promoting uses of zinc which contribute to climate change solutions;
- Participating in partnerships with other stakeholders who share similar climate change goals.

How have you influenced, or are you attempting to influence their position?

Our climate change related stand, ideas and activities are completely aligned with that of IZA. HZL engages with IZA in various activities such as to carry out a complete Life cycle assessment for our products which would include the cradle to grave journey of our products and the creation of the Zinc Sector SDG roadmap. The roadmap was developed by IZA in partnership with sustainability consultants ERM. Further the participation of the IZA member companies helped us to create a plan of action addressing some of the world's most prominent environmental, social, and economic challenges. We have been working towards the development of base metal standards to comply with LME responsible sourcing guidelines. Hindustan Zinc and International Zinc Association are working on developing new applications like Continuous Galvanized Rebar, Zinc Air batteries and Zinc Paints etc., which have promising potential in emerging economy, especially India which has vast coastal belts. Furthermore, Continuous Galvanized Rebar facility was built by Madhav Alloys in collaboration with Hindustan Zinc and the International Zinc Association (IZA). HZI has also joined

International Zinc Association Climate Change Task Force and has been 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

Trade association

Confederation of Indian Industry

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Climate change has become the crux of the discussions and strategic decision being taken by the Government and businesses all over the globe. So, it is essential to identify emission reduction initiatives. CII is consistently working on these issues and has been successful in implementing many initiatives. It works with IBBI on biodiversity conservation project. It has also initiated a Green Building certification program which encourage the organization to be green.

How have you influenced, or are you attempting to influence their position?

HZL has participated in various conferences, seminars and workshops organized by them and as a metal industry, we share our view and our best practices with them. This year HZL partnered with Confederation of Indian Industry (CII)'s Working Group on Driving Accelerated Climate Action by Indian Businesses and has been actively participating on shaping the agenda for upcoming COP 26. We sponsor knowledge sharing events such as, the Sustainability Summit every year, participate in CII ITC Sustainability award and also provide our comments on various policies drafts. HZL has also partnered with CII on promoting to Race to Zero on various run up events to COP 26.

Trade association

Indian Chamber of Commerce, Kolkata

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

ICC has been playing a critical role in having a policy dialogue on climate change both domestically and internationally to facilitate the carbon market through the Clean Development Mechanism. ICC has been creating stakeholder awareness programs in India and familiarizing stakeholders with the core issues and challenges in their sphere of work. It acts as a bridge between different carbon market stakeholders to advance CDM projects.

How have you influenced, or are you attempting to influence their position?

HZL shares process emission and technological intervention related information with them ICC Kolkata. This year we engaged on policies and regulatory matters.

Trade association

Federation of Indian Mineral Industries

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The ground reality of the mineral production and processing industry is that is de-regularized and liberated. FIMI has found that while the Government of India has liberalized the policies and dismantled regulatory regimes, these policies are yet to percolate to the State level and to other implementing agencies. It is to be noted that while federal Government is developmental and a regulatory body, the Constitution of India states that all minerals, fuels etc. are the property of individual States. Hence it is imperative that policies that emanate from Government of India should not only percolate to State level, but are also implemented in the spirit in which the pronouncements are made. FIMI is relentlessly working to bring out the necessary changes in procedures to avoid delays in order to harmonize the policy and practice.

How have you influenced, or are you attempting to influence their position?

As a membership of this association, HZL submits the performance detail on their COC principle every year. It also attend various conference organized by them and provide inputs on policy formation and any amendment in rules and regulation.

Trade association

Federation of Indian Chambers of Commerce and Industry(FICCI)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

FICCI has contributed to the India's industrialization and globalization by encouraging debate, articulating the private sector's views and influencing policy, which includes the aspects of climate change. It has been an impetus in the creation of stakeholder awareness in India and familiarizing stakeholders with the core issues and challenges. FICCI also facilitates Indian industry presence at an interface with the global mainstream in various international climate change and carbon market forums.

How have you influenced, or are you attempting to influence their position?

HZL participates in conferences, seminar and workshops organized by them and as a metal industries continues to share its inputs and best practices with them. It provides comments on policy formation and amendments in rules and regulations.

Trade association

Indian Wind Power Association (IWPA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

IWPA is plays a critical role in the policy dialogue on renewable energy sector. IWPA closely works with MNRE, CERC and state regulatory bodies towards the formulation of the policies for renewable projects. It has a vast contribution in the creation of stakeholder awareness.

How have you influenced, or are you attempting to influence their position?

HZL participates in conferences, seminar and workshops organized by them and as a metal industries continues to share its inputs and best practices with them. It provides comments on policy formation and amendments in rules and regulations.

Trade association

Rajasthan Solar Association (RSA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

RSA is a key role player the renewable energy sector and has been a majorly contributing towards the policy making initiatives in this sector by working with MNRE, CERC and state regulatory bodies. RSA continues to create and spread awareness among the stakeholders in India.

How have you influenced, or are you attempting to influence their position?

HZL participates in conferences, seminar and workshops organized by them and as a metal industries continues to share its inputs and best practices with them. It provides comments on policy formation and amendments in rules and regulations.

Trade association

ILZDA (India Lead Zinc Development Association)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

ILZDA actively participates in the committees of Ministries of Mines, Steel, Environment, Forests & Climate Change, DST, Central Pollution Control Board, Bureau of Indian Standards, FICCI etc.to contribute in the policy making & technical discussions. ILZDA

also played a key role in developing Battery (Management & Handling) Rules as well as rules & regulations for green recycling of used lead batteries in the country.

How have you influenced, or are you attempting to influence their position?

HZL has been involved and has participated in bi-annual event held under the auspices of the ILZDA, in association with ILA & ILZSG and mainly supported the market development initiatives to grow the green recycling of used lead batteries in the country in India. HZL has also been involved in the review of the policies and amendments in the regulations. HZL has participated in a national webinar on 'Lead batteries' and an international webinar on 'Galvanizing - Markets & Technology' conducted in January and February 2021 respectively.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

We engage in the policy discussions through trade associations whenever the industry opinion is sought after by the government and policy regulators. We ensure to voice out the industry opinion in terms of climate related policy decisions in India and globally as well. While doing so, we remain consistent with our company's commitments and ensure that responsible practices are encouraged towards climate change management and the transition to low carbon environment. Our climate, energy and water policy are also framed in consultation with internal and external stakeholders and is reviewed on frequently in line with the evolving scenarios. We ensure that we take our stand on the issues identified in our climate and sustainability related policy and are consistent in addressing them. In case of any noted inconsistency, it is discussed during the board meetings and necessary actions are taken. Our climate and all other sustainability related policies are publicly available for easy access by all our employees. Periodic training and engagement of board members and all key employees on the material risks and important topics like energy, climate and water, helps them understand the way forward, assist them in having engagements and interactions with other stakeholders which are in line with companies stand on the topic.

Climate change and related topics like energy and water are essential for our continuous business sustainability and growth. These are incorporated into the performance indicators of employees who are likely to participate in activities which may influence policy. Hence, the climate strategy is not a standalone subject but it is well embedded into our way of conducting business. Significant policy related discussions are done with the CEO and the board at regular intervals. Vedanta Sustainability Framework guides all the engagements on all risks, sustainability, climate and environment related topics. We conducted climate change assessment by aligning our reporting with the recommendations of the Task Force on Climate-related Financial Disclosures (<https://www.hzlindia.com/wp-content/uploads/HZL-TCFD-Report-20-21.pdf>) . The Climate change vulnerability assessments provides a critical tool for our improved understanding of the cause/effect relationships between climate change, its various impacts on the socio-economic and ecological systems within which we operate and how these impacts could affect our business operations. We have identified several specific climate-

related risks and opportunities for each time horizon as part of its risk management system (transition risks, physical risks and business expansion opportunities along with financial impacts. It also assists with identifying our risks and opportunities from an interlinked perspective, considering how water, energy and climate change impact one another. Risks and mitigation measures are mapped to key responsibilities of select managers and managed with appropriate mitigation plans. HZL has set an ambitious objective of achieving Net zero across all its operations and activities by 2050. HZL has committed to join the Business Ambition for 1.5°C campaign of the Science Based Targets initiative (SBTi), a landmark decision taken under the oversight of CEO to align company's climate mitigation targets with the most ambitious Paris Agreement- reach net-zero global emissions by 2050 at the latest in order to limit global warming to 1.5°C. Once this commitment letter is processed by SBTi we will be recognized as "Committed" to UN Global Compact, We Mean Business and to the UNFCCC Race to Zero Campaign.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

 Integrated-Annual-Report-2020-21.pdf

Page/Section reference

GHG emission trend: Page 26 High Material issue (Energy and climate change): Page 47-49 Strategy and trade-off related to climate change page 51 : Driving efficiency/ Renewable energy portfolio 90-91 : Page 48 Sustainability goals 2025, Brief on energy and climate change management: Page 105-106

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Publication

Other, please specify
TCFD Report

Status

Complete

Attach the document

 HZL-TCFD-Report-20-21.pdf

Page/Section reference

Governance - Page 8, , Strategy Page9-11, Risks & opportunities-Page 15-20, targets, metrics- Page 21

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

-

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	CEO	Chief Executive Officer (CEO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission
I am submitting my response	Investors	Public

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I have read and accept the applicable Terms