Hindustan Zinc - Climate Change 2020

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 114.7 million MT and mineral resources of 288 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, 39.64 MW Solar power and 35.37 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 2019	March 31 2020	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)	At HZL we believe that sustainability should be embedded in our business decisions and is overseen at the board level. We seek guidance from our CEO/ board on the matters related to climate risks, opportunities and investments as these aspects have a direct implication on our business and require Group sustainability committee of Vedanta to provide overall guidance on sustainability. At HZL, Sustainability Business Management Group, headed by HZL's CEO, provides overall guidance on all identified key ESG issues. Our CEO and whole time director brief the board on HZL's climate related issues, yearly targets and site's performance, and progress of targets. Based on the yearly targets taken, CEO provides the budgets and other necessary resources for the implementation of emission reduction projects. At a more organisational level, responsibility lies with HZL's chief HSE officer and site level teams to drive the various initiatives. Examples of initiatives launched by the CEO: Our CEO along with the Sustainability Business Management Group have launched a number of key initiatives to help mitigate climate risk and improve sustainability, these initiatives include the utilisation of SBTI to ensure consistency in GHG reduction targets with global targets. Our CEO has also outlined the Sustainability Goals 2025 which provide our organisation with a sustainability roadmap for the next 5 years. Establishment of Energy and Carbon community to drive our climate change related action plan is also a key decision made by our CEO.

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	Scope of board-level oversight	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	<Not Applicable>	The board provides guidance on climate change strategy of the company and also reviews quarterly major plans of action. Key climate related topics on which board insights are sought after including management's view on risk management policies, guidance on developing climate risk mitigation strategies, reviewing expenditures and budget allocation for these projects, setting performance objectives, reviewing progress on performance against goals set for climate change projects. All the climate related issue are presented in board by our CEO who is the board member also. Guidance on all critical business decisions is sought from our CEO. One of such important decision taken with guidance from our CEO was signing up for the Science Based Targets. Matters relating to climate change and energy are included in each quarterly report and this is treated as a top priority for our senior management

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)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Environmental, Health, and Safety manager	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Other, please specify (Chief HSE Officer- HZL)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Other, please specify (Energy and Carbon Management Committee)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Other, please specify (Vedanta Carbon Forum)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	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).

We have a three-tiered governance framework and each tier plays a significant role in driving high standards of ethics, governance and corporate citizenship. The three tiers of our governance system our strategic supervision, management and control and execution. These are explained below:

- **Strategic Supervision-** Aligned to the statutory stipulations, our Board of Directors comprises Committees that form the key elements of our corporate governance framework. The Board Committees play a key role in strategic supervision and the organisation's long-term strategic approach. Our key Board Committees are entrusted with specific responsibilities and their decisions drive the Company's overall management approach. At the board level we have a risk committee, audit committee and stakeholder relationship committee which incorporate climate change into their agenda.
- **Management and control-** The functional heads and plant heads of the Company, led by our Chief Executive Officer, Chief Financial Officer, SBU Directors are key to implementing the strategies, coordinating different business transactions and focussing on process improvements at mines and smelters. They form a part of our Executive Committee, which directly interacts with the Board and ensures seamless communication between the Company and the Board.
- **Execution-** This tier comprises several strategic business units (SBUs) for overall execution and empowerment through decentralised decision making.

At HZL sustainability is our topmost priority. We endeavour to embed elements of sustainability into our business decision making and have framed an extensive mechanism for assessing climate related issues. This framework is applicable to all climate change related issues as well. Short- and long-term sustainable goals, including climate goals are set across the value chain and systematic performance monitoring ensures alignment of sustainability priorities at all levels of the company.

Sustainability committee at group level (tier 1) -

Advises on sustainability policies and framework, clearly setting out the commitments of the Group to manage matters of sustainable development effectively; review and approve targets for sustainability performance & recommend initiatives required to institutionalise a sustainability culture. Responsibility has been assigned to the Sustainability Committee in order to ensure transparency and efficiency of the measures we have in place at the Group Management Assurance System. Furthermore, they also coordinate the risk management framework, which is reviewed annually by the Audit Committee on behalf of the Board at the Group level. This committee meets quarterly. HZL participates in Carbon forum which meets on monthly basis and monitors developments and sets out defensive policies, strategy and actions. Defined targets and action plans in place to reduce the carbon intensity of our operations. This includes reducing emission intensity, increasing renewable mix and green cover at locations

Sustainability Business Management Group at Company Level (tier 2)-

Identifies risks and opportunities and areas for improvement, reviewing the performance and effectiveness of the initiatives. At Hindustan Zinc we continuously identify, assess and mitigate risks arising as a result of internal and external factors. Through a formal monitoring process at the Company level, new risks are identified, categorised as per impact and likelihood, mapped to key responsibilities of select managers and managed with an appropriate mitigation plan. This group meets monthly.

Sustainability Review at Unit/Operation Level (tier 3) -

Along with reviewing progress, they are also responsible for data collection and reporting at a more ground level. Through a formal monitoring process at the unit level, new risks are identified and managed with a mitigation plan. There is a risk management committee at unit level. This review occurs monthly. We also established the Energy and Carbon Committee at the corporate level to ensure strong governance for energy conservation, Energy and Carbon risk assessment, mitigation strategies and continual improvement in Energy and Carbon Management and this is being chaired by senior leader.

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
Row 1	Yes	

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 inventivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Energy reduction target	The payment of the CEO's performance-based compensation of the annual salary is determined by a comprehensive evaluation of measurable indices such as financial performance including revenue and operating profit and the non-measurable indices such as leadership, achievement of strategic goals, expertise and contribution to the company's management and sustainability performance. Energy reduction targets fall under the category of sustainability performance matrix to be achieved.
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target	The payment of the CEO's performance-based compensation of the annual salary is determined by a comprehensive evaluation of measurable indices such as financial performance including revenue and operating profit and the non-measurable indices such as leadership, achievement of strategic goals, expertise and contribution to the company's management and sustainability performance. Emission reduction projects fall under the category of sustainability performance matrix to be achieved.
Other, please specify (Head Environment Health and safety)	Monetary reward	Energy reduction target	Sustainability team in HZL is headed by, Chief HSE Officer who reports to the CEO. HZL has set a Science based target of 14% reduction in the emissions from the base year of 2016 (i.e. FY16-17). Guided by the 'Vedanta Sustainability Framework', team is responsible for the achievement of the target by implementation of emission reduction and sustainability related activities at all the unit and corporate level. EHS & sustainability targets are embedded as the KRA and monetary compensation is given against the individual performance, upon fulfilling the targets. Performance of Environment, safety &, sustainability indicators and non-occurrence of environmental incidents and & fatalities has weightage in variable pay scheme. Also, Environment, Safety & Sustainability scores are based on the VSAP audit which includes climate change related issues as well. Assessment of performance against Environment sustainability and safety is measured by following indicators and reflects in the VSAP Score.
Other, please specify (Head-Environment, Health and Safety)	Monetary reward	Emissions reduction project	Sustainability team in HZL is headed by, Chief HSE Officer who reports to the CEO. HZL has set a Science based target of 14% reduction in the emissions from the base year of 2016 (i.e. FY16-17). Guided by the 'Vedanta Sustainability Framework', team is responsible for the achievement of the target by implementation of emission reduction and sustainability related activities at all the unit and corporate level. EHS & sustainability targets are embedded as the KRA and monetary compensation is given against the individual performance, upon fulfilling the targets. Performance of Environment, safety &, sustainability indicators and non-occurrence of environmental incidents and & fatalities has weightage in variable pay scheme. Also, Environment, Safety & Sustainability scores are based on the VSAP audit which includes climate change related issues as well. Assessment of performance against Environment sustainability and safety is measured by following indicators and reflects in the VSAP Score.
Energy manager	Monetary reward	Emissions reduction project	Unit level teams with Energy managers are responsible for identification and implementation of Energy Efficiency and emission reduction projects. Effective projects and aligned managers are rewarded on the monthly basis under 'KAIZEN'. Annual competitions like 'Chanakya' and "RACE" are organized on an annual basis, at the unit level and corporate level, to invite innovative ideas leading to significant reductions. Best ideas out of the received ones are rewarded to encourage the employee engagement.
Energy manager	Monetary reward	Energy reduction project	Unit level teams with Energy managers are responsible for identification and implementation of Energy Efficiency and emission reduction projects. Effective projects and aligned managers are rewarded on the monthly basis under 'KAIZEN'. Annual competitions like 'Chanakya' and "RACE" are organized on an annual basis, at the unit level and corporate level, to invite innovative ideas leading to significant reductions. Best ideas out of the received ones are rewarded to encourage the employee engagement.
Energy manager	Monetary reward	Efficiency project	Unit level teams with Energy managers are responsible for identification and implementation of Energy Efficiency and emission reduction projects. Effective projects and aligned managers are rewarded on the monthly basis under 'KAIZEN'. Annual competitions like 'Chanakya' and "RACE" are organized on an annual basis, at the unit level and corporate level, to invite innovative ideas leading to significant reductions. Best ideas out of the received ones are rewarded to encourage the employee engagement.
Other, please specify (CDM Cell)	Monetary reward	Energy reduction project	HZL has a Clean Development Mechanism (CDM) cell who dedicatedly work on identification and implantation of new energy saving project with tracking of saving from implemented projects. The team is responsible to identify the best energy saving activities worldwide through registered/under registration CDM project and under other mechanism. The team is also responsible to feasibility analysis of the project and implementation of the same.
Other, please specify (CDM Cell)	Monetary reward	Emissions reduction project	HZL has a Clean Development Mechanism (CDM) cell who dedicatedly work on renewable energy investment and generation and consumption of renewable energy. Implementation of renewable energy and CO2 emission reduction is directly linked with their performance based incentives. Team is also responsible to identify the emission reduction project based on energy efficiency / fuel changes etc. and implementation of the same.
All employees	Monetary reward	Emissions reduction project	Annual competitions like 'Chanakya', "RACE" :Sankalp" are organized on an annual basis, at the unit level and corporate level, to invite innovative ideas leading to significant reductions. Best ideas out of the received ones are rewarded to encourage the employee engagement.

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	Business risks and opportunities identified to have an immediate impact on the company's business i.e. within a year's are categorised under short-term horizon. The time horizon for assessing climate related risks are also aligned with time horizon for our business risk assessment
Medium-term	1	3	Potential business risks and opportunities that may impact company's business in the near future (1-3 years) are categorized into medium term. As climate change related risks and opportunities are also aligned with the business risk assessment, we follow the same time horizon
Long-term	3	10	Long term business risks and opportunities are anticipatory ones, identified based on sector trends, market predictions, etc. Similarly, climate risks and opportunities identified to have an impact within 3 to 10 years duration are termed as long term. Our long term definition coincides with the SBTis as well as with our own Sustainable Goals 2025.

C2.1b

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

Substantive financial impact to us would be a disruption in our primary operations that can result in a less production at our facilities which would therefore result in a loss of revenue. To add to this, substantive financial impact would also be any reason due to which very high additional costs have to be incurred. Further to this, HZL defines substantive impact based on two viewpoints, this first is the potential of occurrence or recurrence and the second is the degree of the impact. The onset of such a risk could be caused due to the physical risks associated with climate change including erratic weather patterns, droughts, etc. Additionally, these risks could also be brought upon our operations in the form of transition risks which include the introduction of new regulations, policies and laws. For instance the non-availability of Coal will hamper our CPP operations and would have a financial implication of loss of 3.29 crore per day.

We would measure substantive financial impact through the number of production days lost or the economic cost the said risk has on our organisation during the impact period. For instance any issue that has the potential to bring a change of ±5/10% to the revenue and costs are defined as substantive financial or strategic impacts on the business.

For us strategic impact would be any event which has been brought on by climate change which causes our operations to stop or would force us to relocate our operational sites. These events could be due to droughts in the areas we operate resulting in an inadequate supply or a poor quality of water that prevents desired production. Another strategic impact could be the non-availability of electricity which would cause less production. Other examples could be certain areas we operate in being categorized as at risk due to climate change, forcing us to rethink our operations. Climate change could also play a major challenge in availability of manpower it may happen that due to sudden and frequent change in weather conditions due to climate change our employees can get impacted and there will be impact on the business as well. These would be measured in financial loss due to relocation, shutdown of plants, and production days lost.

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
Our Risk Methodology HZL's process of identifying, assessing, and responding to climate-related risks is built around our risk management framework which assess the short, medium and long-term of climate change related risk to understand potential impacts on our business. Our risk management process includes risk assessment, the compilation of risk registers and associated action plans, and is a reflection of the Vedanta Risk Management Standard. We operate through a three-tier sustainability governance structure driving down from the Vedanta Board to company and ultimately to the units of operation at site level. Sustainability Committee at Vedanta Group Levels meets quarterly and carbon forum meets monthly. Hindustan Zinc Limited (HZL) has a Sustainable Business Management Group at company level, headed by the CEO of HZL, which meets monthly and has the ultimate responsibility for climate change risk management. Sustainability operational Review at Unit level and Energy and Carbon management committee also meets monthly to ensure timely assessment of the climate change related risks and actions being taken to manage them. Risk Identification and Assessment Our process for assessing the potential size and scope of identified risks includes the following 1) Identify the likelihood and potential degree of impact that the risk associated to climate change has on the business 2) Identify different areas of the company (environment and sustainability, regulation, strategy, business units) which need to be involved and the ones who will get directly impacted by the type of risk 3) Estimate the impact on revenue, expenses and investments arising from the manifestation of the expected scenarios taking into consideration the evolution over time of these variables 4) Quantify the impact that the changes of these variables in revenue and expenses in investment will have on cash flow, profit margins, revenues, insurance premiums and present value of the business and value at risk. Based on all the above, we define comprehensive risk management plans for our top risks. Risk Governance and Engagement Our risk management process is built on good governance and a well-designed risk management framework. The management of all types of risks take place through the risk management framework including climate change risk. The framework comprises of risk management committee which comprise of subject matter experts in the areas of sustainability, climate change, and EHS. This committee works as a sub-committee of the board, and they oversee risk management procedures and project implementation. Furthermore, each of our locations is designated with a risk management officer who is responsible for identification of risks at operational units. With regards to engagement, quarterly meetings are held at the Head Office and at the unit level to discuss the identified risks (including those associated with climate change) with the senior management. Risks identified are categorized on the basis of severity of impact on business. After the risk prioritization has been carried out, formal mapping of risks and mitigation plans on a risk matrix is carried out. For each of the risk identified, a 'risk owner' is assigned who monitors the progress on the actions taken for mitigating risk on an ongoing basis. For monitoring the progress on risk mitigation measures taken throughout the company, a risk officer is appointed at the Company's Head Office. Formal discussion on risk management happens in unit level review meetings which cover aspects related to climate change, efficiency, and pollution on quarterly basis. The respective units review the risks, change in nature and quantum of major risks since the last assessment, control measures established for mitigation and further action plans. The control measures stated in the risk register are periodically reviewed to verify their effectiveness.

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 also continuously engage with our supply chain partners like suppliers, regulators, local communities, investors, consumers to reduce their impact on climate change. Detailed stakeholder engagement plan along with Grievance redressal mechanism available at all units and as per plan we meet regularly to our key stakeholders. We engage with our stakeholders during Materiality analysis to take their feedback on Energy and climate change as one of our material issues. Suppliers are key components of value chain and there is risk of increase in the price of supply material or could be interruption of supply material in case of non-availability of energy at the supplier end, hence taking their critical inputs to our risk assessment becomes relevant. Suppliers are consulted through stakeholder consultation as part of our overall sustainability strategy. There are other engagement opportunities where suppliers can provide key feedback on such risk assessment.. During the year we conducted Confluence engagement session where in 50 + critical supplier attended the session, briefed about HZL's current risks and taken their inputs to improve the risk assessment and mitigation strategy. Regulatory risks are critical and thus their inputs are critical to our risk assessments. We engaged with the regulatory authorities throughout the year We engage with our customers for stakeholder engagement to get their views on energy management at 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 alloy at 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	We regularly review the laws & regulations related to energy efficiency (for e.g. Perform Achieve Trade (PAT) and any updates, emissions (overall air emissions and any emerging regulations on carbon emissions (for e.g. Renewable Purchase Obligation/carbon tax/fuel tax etc) as well as changes in the Government policies, cancellation or nonrenewal of mining leases & permits as any non-compliance on these aspects may adversely impact our 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 was doubled in less than 2 years. Hence we consider these changes in our climate-related risk assessment. Since, we produce captive power through coal, we are obliged to buy renewable energy certificates. Our total obligation to buy REC for FY 19-20 was 380655 MWh. We produced 211673 MWh of renewable energy, hence we had to buy only 168982 MWh of RECs. We plan to further increase the share of renewable energy to minimize the purchase of RECs. and to be prepared for further increase in the regulatory requirements
Emerging regulation	Relevant, always included	We regularly review the laws & regulations related to energy efficiency (for e.g. Perform Achieve Trade (PAT) and any updates, emissions (overall air emissions and any emerging regulations on carbon emissions (for e.g. Renewable Purchase Obligation/carbon tax/fuel tax etc) as well as changes in the Government policies, cancellation or nonrenewal of mining leases & permits as any non-compliance on these aspects may adversely impact our 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 was doubled in less than 2 years. Hence we consider these changes in our climate-related risk assessment. Example: Implementation of new regulation to fulfil the consumption requirement of 40% renewable energy as per INDC. This can impact our cost of operation. We are preparing for the same by generating more renewable power for captive consumption and reducing our specific energy consumption.
Technology	Relevant, always included	Technology transition risk is one of the risks identified by the company. To be climate resilient and to meet the climate change targets of the company, we need to continuously invest in new technologies and also carry out research and development activities. The time for adjustment to new technology or failure of technology can lead to disruption of production or delay in production due to operational challenges. The Company is exploring digital solutions for optimizing mining operations, mining value chain processing, and maintenance. We continue to invest significantly in best-in-class technologies in our beneficiation and smelting process with a goal of progressively improving metal recovery & throughput and optimising resource consumption. Optimizing includes optimization of energy, water consumption, reuse and utilization of waste back into the process. Waste utilization increases process efficiency and reduces land requirement. Both the aspects support mitigate climate risk. An example: We have conducted Trials of DROSRITE™ zinc dross treatment process conducted 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.
Legal	Relevant, always included	We regularly review the laws & regulations related to energy (energy tariff orders by Central Electricity Regulatory Commission (CERC), State Regulatory Commissions (SERC), any other legislations that might impact the energy pricing) and energy efficiency (for e.g. Perform Achieve Trade (PAT by Bureau of Energy Efficiency)) emissions (overall air emissions and any emerging regulations on carbon emissions (for e.g. Renewable Purchase Obligation/carbon tax/fuel tax etc) as well as changes in the Government policies, as any non-compliance on these aspects may adversely impact our 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 was doubled in less than 2 years. Hence we consider these changes in our climate-related risk assessment. Any change in electricity duty may affect the cost of operation. e.g currently Electricity duty charged 60 Paisa/ Unit. In FY 19-20, The electricity duty charges has been increased in FY 19-20 from 40 paisa/unit to 60 paisa/unit. Which has increased our liability/cost by around Rs. 70 Crs/annum. Use of furnace oil was banned by supreme court as it is highly polluting. HZL shifted its fuel use to Diesel and mitigated the risk. In view of climate change, we anticipate such legal actions on power and fuel usage to increase. Hence, we have been making efforts to reduce our fuel consumption and increase the portfolio of renewable power. For instance at our PMP plant we have reduced specific LPG consumption of zinc from 1.4 Kg/MT to 1Kg/MT.
Market	Relevant, always included	Our products are subject to market fluctuation. However, we have strong risk management practice on markets. Climate change can further increase the market risk. We continue to focus on developing our products for the shifting market or consumer needs. Competitive advantage through tapping correct markets, We are offering low carbon product & competitive pricing and maintaining good quality. e.g. Die-cast Alloy revamped and the new product has introduced in the market so that costumer not required to consume energy to convert metal ingot to alloy form.
Reputation	Relevant, always included	A number of factors such as quality mining, industry relations, frauds, compliance issues, etc., attribute towards reputational risk for e.g. Climate related performance such as not meeting with climate related commitments, non-compliances of emission/ green energy related obligations, which can be highlighted by our stakeholders, which can impacts the reputation of our company and hence these are included Inability to provide inclusive growth to the communities and any disruption to their lives due to the Company's operations will cause discontent and can have negative impact on the Company's reputation and social license to operate as per our identified risk. Under this risk climate change is likely to cause concern due to further reduction in water availability in already water stressed regions in which we operate. For example: 8 out of 9 of our operating sites our in Rajasthan and in water stressed areas. we see a climate change as a material concern for our business and stakeholders. Our focus is on both climate mitigation and adaption measures. This includes the diversifying water and energy resources, securing alternative water source for the business, public private partnership for municipal water reuse / recycling, sustainable agriculture, energy use optimization, efficiency improvement, alternative source of energy use etc. We planted 1.5 Lacs saplings during the year to increase flora density in the surrounding areas of our operations. Our renewable energy projects have been registered under Gold Standard which shows that our commitment towards Positively impact the economy, health, welfare and environment of the local community hosting the project.
Acute physical	Relevant, always included	Any big environment related incident due to acute physical factors (for e.g. extreme weather events) may pose an impact on company's operation as well as reputation and hence we consider these in our climate related risk assessment. In some cases, these can also lead to social unrest in the community leading to huge loss to business. e.g. Most of our operations are in state of Rajasthan which is water scarce region and we see a climate change can further intensify this risk and hence is a material concern for our business and stakeholders.
Chronic physical	Relevant, always included	Climatic conditions like heavy rainfall, drought and longer spells on heat wave and high temperatures pose risk to our mining operations in future. In view of increasing heat scenario, we have shifted this risk from non-relevant to relevant and started including it in our risk assessment. Currently, we have taken measures like improving ventilation in mines to combat the heat scenario. Measures for mitigating these physical risks include implementation of equipment/ systems like pumps, etc. for water removal during water logging and arrangement of alternate water sources during drought conditions. We are stopping our work during the heat wave alert release by Govt. and awareness given to all workforce for drinking of water and providing energy drinks like Glucon- D to mitigate from heat wave risk. Currently our exposure to this risk is very low. However, considering future scenario, we are further evaluating this risk and developing structured process to prepare for any response that may be needed. On the other hand, as our operations are far in land locked location far from sea cost sea level rise, cyclone etc. do not impact us.

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

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description
Emerging regulations are categorised 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 climate change. These regulations would directly impact HZL as there can be carbon obligations on our organisations, for instance, in the form of a GHG prices.

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)
<Not Applicable>

Potential financial impact figure – minimum (currency)
1060000000

Potential financial impact figure – maximum (currency)
6620000000

Explanation of financial impact figure
Range of carbon compliance cost (Carbon Tax) on HZL based on FY 19-20. This range includes current liabilities, compliance cost towards future carbon regulations that might be applicable for metals and mining industry. This range includes current and future liabilities in FY 25 or FY 26 based on future projects. It is anticipated that there will be mine development activities and smelter capacity enhancement and hence there will be increase in production capacities and corresponding process emissions.

Cost of response to risk
20000000000

Description of response and explanation of cost calculation
To comply this risk, we are continuously improving our renewable energy portfolio. Therefore, for our captive use, we have two solar power projects of 16 MW which were commissioned FY 2016-17 on waste land at Dariba mine and Debari Zinc smelter. 22 MW solar power plant was commissioned at Rampura Agucha tailings dam in FY 2018-19 . In addition of this we have commissioned 1.64 MW capacity roof top solar projects at various location of HZL. the total solar power capacity of the Company is 39.64 MW for captive consumption. In addition, the Company has captive capacity of 35.4 MW through waste heat recovery boilers. During the year, the Company produced solar power of 79.38 million units, waste heat energy of 146.24 million units and wind power of 437 million units leading to a reduction of 580995 MT of CO_2 through green power. 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. Budget of INR 2000 crores (based on estimation of per MW cost for solar/wind as per government budget projections in tariff orders and our past project development expenditures) has been sanctioned for the installation of renewable power. Out of which 16 MW has been already commissioned (costed INR 80 crores) in the year 2016-17 and FY 2018-19 we have commissioned 22 MW solar Plant at our Rampura Agucha Unit. Installation of the additional capacity of 400 MW is planned to be completed by the end of FY 2023.

Comment

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Current regulation	Mandates on and regulation of existing products and services

Primary potential financial impact
Increased capital expenditures

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
We have three captive thermal power plants at Chanderiya, Dariba and Zawar of combined power generation capacity of 474 MW.Government of India has imposed the:- clean energy cess, electricity duty for other than renewable and import duty on coal. These additional cess and duties results to increase in the cost of production.

Time horizon
Short-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)
3460000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Risk of increase in cost of electricity production due to the duty on coal and the other charges, HZL has paid INR 130 Crores as custom clearance, coal cess and related statutory approvals for coal and INR 210 Crores as the electricity duty in India, Coal cess in India INR 400/ton of coal. Electricity duty charged 60 Paisa/ Unit

Cost of response to risk
20000000000

Description of response and explanation of cost calculation
HZL is continuously increasing the power generation from the renewable sources to maintain the cost of production. We are planning to expand our energy generation from WHRB by 14.5 MW by 2021. And also targeting 400MW additional renewable energy projects by 2023. In FY 2016-17 we commissioned two solar power projects with a capacity of 16 MW at our Dariba and Debari locations for captive use of generated green energy. The solar power project at Debari smelter is installed on Jarosite pond while the Dariba project has been set-up on old tailing dam and FY 18-19 we have commissioned 22 MW solar Plant at our Rampura Agucha mine dumping yard. With the overall cost of ~203 crores . The dariba project installed on old tailing dam, Debari project installed on Jarosite pond and Agucha 22 MW project installed on waste dump yard at height of 150 meter from ground level. Which demonstrates our effort towards gainful utilization of wasteland. Budget of INR 2000 crores (based on estimation of per MW cost for solar/wind as per government budget projections in tariff orders and our past project development expenditures) has been sanctioned for the installation of renewable power. 16 MW has been already commissioned (costed INR 80 crores) in the year 2016-17 and FY 2018-19 we have commissioned 22 MW solar Plant at our Rampura Agucha Unit. Installation of the additional capacity of 400 MW is planned to be completed by the end of FY 2023.

Comment
HZL board of directors has approved INR 2000 crore for the development of the renewable energy projects in the state of Rajasthan.

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns

Primary potential financial impact
Increased capital expenditures

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
We have a 3 smelters and 5 mines located in Rajasthan area. So Change in the precipitation level is one of the major risk areas for HZL. Rajasthan is the state which suffers from extreme climatic condition in temperature and rainfall and battles water scarcity related issues. Change in the precipitation level further intensifies the problem as our operations in the mining and smelter industry are heavily dependent on water availability. If there is less rainfall in these areas in future, it may affect our operations and productivity due to inadequate supply of water leading to a direct impact on company's revenue.

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)
23200000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Operations in our industry are heavily dependent on water availability mainly smelting and CPP process. In worst scenario of less precipitation there will be direct impact on our CLZS and ZM operations as all other smelters and CPPs are currently using treated water from municipal sewage treatment plant of Udaipur city. Water consumption at CLZS CPP and ZM CPP is 45 % of total fresh water consumption so in worst scenario we will shut down the CPP operation at these two sites and will take the electricity directly from state grid and this will lead to direct cost implication of 2.3 crore/day crores (total electricity cost generated from CPP 4.5 Rs/kwh and total electricity cost of state grid is 7.6 Rs/ kwh.

Cost of response to risk
4070000000

Description of response and explanation of cost calculation
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. The cost of response is INR 407 crore is based on our STP plant related actual expenses of INR 170 crore and additional estimated INR 80 crore for another 25 MLD plant. 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. We have set up a 45 million litres per day Sewage Treatment Plant (STP) which treat sewage water of Udaipur city. This treated water is being used in our operations located in Dariba as alternative source of fresh water and reducing fresh water requirement.

Comment
20 MLD STP is already been setup with cost of 170 crore rupees and another 25 MLD established with expenditure of 80 crore rupees. Dry tailing plant- 91 crore, MVR at DZS and CLZS- 66 crores.

Identifier
Risk 4

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns

Primary potential financial impact
Other, please specify (Increased Direct Cost)

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
Due to any sudden weather conditions the availability of coal for CPP may hamper and this can be reason of stoppage of our operations. In that case we have to buy electricity from state grid on higher cost which is a direct cost impact on our business. Also it is anticipated that due to this there could be Reduction in plant capacities due to transmission line restrictions. There could be loss of 3.29 crore/ day if all the CPP closure will happen.

Time horizon
Long-term

Likelihood
Unlikely

Magnitude of impact
High

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
32900000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
There could be loss of 3.29 crore/ day if all the CPP closure will happen.

Cost of response to risk
20000000000

Description of response and explanation of cost calculation
Budget of INR 2000 crores (based on estimation of per MW cost for solar/wind as per government budget projections in tariff orders and our past project development expenditures) has been sanctioned for the installation of renewable power. Out of which 16 MW has been already commissioned (costed INR 80 crores) in the year 2016-17 and FY 2018-19 we have commissioned 22 MW solar Plant at our Rampura Agucha Unit. Installation of the additional capacity of 400 MW is planned to be completed by the end of FY 2023. In addition to the cost for renewable portfolio investment, this also includes direct and indirect costs for implementation of process efficiency/energy efficiency measures in our plants. We are continuously improving our renewable energy portfolio. Therefore, for our captive use, we have two solar power projects of 16 MW which were commissioned FY 2016-17 on waste land at Dariba mine and Debari Zinc smelter. 22 MW solar power plant was commissioned at Rampura Agucha tailings dam in FY 2018-19 . In addition of this we have commissioned 1.64 MW capacity roof top solar projects at various location of HZL. the total solar power capacity of the Company is 39.64 MW for captive consumption. In addition, the Company has captive capacity of 35.4 MW through waste heat recovery boilers. During the year, the Company produced solar power of 79.38 million units, waste heat energy of 146.24 million units and wind power of 437 million units leading to a reduction of 580995 MT of CO2 through green power. 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.

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?
Upstream

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
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. 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.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium-low

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
1260000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
An increase demand for Zinc and thus the subsequent increase in HZL's production of zinc could increase the overall revenue from Zinc. If the Zinc revenue will increase by 1% due to the opportunity related to Zinc markets being realised this could increase the total revenue by INR 126 crore per year.

Cost to realize opportunity
46600000

Strategy to realize opportunity and explanation of cost calculation
The cost of realizing the opportunity includes the following components. 1. Cost of undertaking any comparative life cycle analysis studies on Zinc and checking the potential benefit of our low carbon product in the use phase for various applications/customers 2. Research and development in enhance out low carbon products 3. Direct and indirect cost related to technical and general awareness sessions for various stakeholders (Customers, industry associations, regulatory authorities, others) HZL sees the importance of educating consumers especially those in the railways, the automotive sector and builders of bridges and high-rise structures, of the benefits in terms of safety and long life from the use of galvanized steel. We are engaged with IZA. Together with the International Zinc Association (IZA) we are on a mission to educate government departments on the befits of zinc, this includes improved safety and life-cycle cost advantages, galvanized steel should find growing use in railway projects, tall buildings and bridges. 3rd International Galvanizing Conference. We have also organized the 3rd International Galvanizing Conference with the International Zinc Association (IZA)on 19-20th September at New Delhi. The conference saw a participation from over 350 delegates from across zinc, steel and alloy industries. A Knowledge dissemination seminar on the theme 'Galvanizing the Future: Role of Zinc in strengthening Infrastructure' was organized by International Zinc Association, Hindustan Zinc Limited and Madhav Alloys in Jammu on 19th December 2019. IZA and HZL has been working together to promote Galvanization in AUTOBODY! In this regard a technical awareness seminar was organized with support from our customer (JSW) in 4 major autobody manufacturers in India in the month of February 2020. 1. Promotion of galvanized steel in infrastructure a. Seminar in 2019 at Builders Association of India, Mumbai, Navi Mumbai Airport Project at GVK, Galvanized Steel at NBCC, Kolkata, Godrej Properties on Usage of Galvanized Steel, Mumbai, Sabarmati Riverfront Development Corporation Ltd., Ahmedabad f. Technical & Awareness Building Seminar on Autobody Galvanizing to Mahindra & Mahindra & JSW, Bellari g. Presentation & Knowledge dissemination session on Zinc metallization of Rails at JSPL h. In-House Seminar at PWD, Delhi HZL sponsored various such workshops and seminars at the cost of 1.6 Crores

Comment

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Reduced water usage and consumption

Primary potential financial impact
Other, please specify (Reduced cost of production)

Company-specific description
Operating in the water-scarce zone of Rajasthan highlights how valuable a resource it is for us. HZL is water conscious company and constantly look forward to reduce specific water consumption through various initiatives. The Company has undertaken several water conservation and harvesting initiatives for reduction in fresh water intake. These include continual improvement in specific water consumption; adoption of best practice to achieve zero discharge in the Company's operating units and the establishment of rainwater harvesting structures both within the Company's premises and in the catchment areas of its operations. These initiatives not only lower fresh water consumption but also maximise groundwater recharge. We have set up a 45 million litres per day Sewage Treatment Plant (STP) to reduce our water footprint by using treated sewage water instead of fresh water. Also established India's First Dry tailing plant in Zawar Mines to increase the more water recovery and increase the safety of tailing dam. Through implementation of these initiatives, we are prepared for addressing any potential future water unavailability due to less rainfall.

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Low

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
23200000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Operations in our industry are heavily dependent on water availability mainly smelting and CPP process. In worst scenario of less precipitation there will be direct impact on our two CPPs which are currently using 45% of total fresh water so in worst scenario we will shut down the CPP operation and will take the electricity directly from state grid and this will lead to direct cost implication of 2.32 crore/day (total electricity cost generated from CPP 4.5 Rs/kwh and total electricity cost of state grid is 7.6 Rs/ kwh.

Cost to realize opportunity
2500000000

Strategy to realize opportunity and explanation of cost calculation
Investment in rainwater harvesting, STP expansion, and steam systems for enhancing the vent steam utilization put together comes out to be 250 Cr. These expenditures are based on past project implementation and insights from internal SMEs. HZL Implements initiatives towards the reduction in the specific water consumption and effective water management for eg. Rain water harvesting, increase in the treatment capacity of the STP, vent steam utilization etc. 25 MLD sewage treatment plant (STP) at Udaipur for treating municipal sewage was commissioned during 2018- 19 taking our STP capacity to 45 MLD (total cost 250 crores) and another 15 MLD STP is in progress.

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) Does your organization use climate-related scenario analysis to inform its strategy?
Yes, qualitative, but we plan to add quantitative in the next two years

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
2DS	HZL considers the climate-related scenario analysis as the essential tool to develop the decarbonisation pathway & utilizes this analysis to visualize risks, including risks relevant for business continuity, climate change mitigation & climate-related stakeholder communications & disclosures. The analysis has been done for medium to long term (10 years) time horizon & includes all our operations. The details of the methodology adopted are: 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 HZL has adopted a bottom up risk management approach for developing climate related scenario analysis. This involves identification of broad risks that are posed due to climate change at the asset level. In-depth discussions are carried out at the company level related to risk identification, where risks factors from each operational unit is looked into detail to form a HZL wise risk matrix. The results of the climate scenarios & risk are reported to the CEO. The progress on SBT targets is monitored according to the sustainability framework. HZL has switched to SBTi or Science Based Targets for scope 1+2 & scope 3 emissions 2 years ago & is also investing in renewable portfolio addition. We have adopted SBTi in order to align with the Paris Agreement where the world's governments have committed to limit global warming well below 2 degrees Celsius & to be in line with India's NDC commitment. The "science-based" target is in line with the level of decarbonisation required to keep global temperature increase below 2 degrees Celsius compared to pre- industrial temperatures, as described in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5). The scope of SBTi is for our entire company, & the scenario analysis was carried out for all our operations & 10 year time frame was used for setting the targets. HZL has also defined an internal carbon pricing to bring in organizational change by influencing internal behaviour & drive energy efficiency. The internal carbon pricing is applicable to all HZL's units, which includes our all facility. HZL has also initiated the adoption of TCFD framework for climate change risk & opportunity management. We are in the process of conducting a detailed gap analysis against the four core elements of the TCFD. To kick-start & support the implementation, we organised an interactive session for our senior management to understand the requirement of the TCFD through renowned consultant & also conducted an awareness webinar for all our employees on climate change, TCFD guidelines & how they can contribute to the same. By using SBTi & the TCFD framework we have identified the transition to a circular economy as a key strategic priority. We know that transitioning to a circular economy will help in realising our mission of sustainability & climate change mitigation. As part of this transition HZL is using technology & innovation to reduce-reuse-recycle waste & restore natural systems, including water & land, to transition to a circular economy. We are also embracing low-carbon & less-emission technologies, increasing renewable energy capacity & reducing the GHG emission of our operation. Our findings have helped us set the goal of 0.5MNtCO2e GHG emission savings from base year 2017. Some initiatives that we are implementing to meet this goal are listed below: • Turbine revamping that will help generate power without addition of Coal consumption - ~300k tonne CO2 saving every year • Solar- We have installed 1 MW solar at Kayad in 2019-20. • We are planning to convert Kayad mine as green mine, now we are taking up to 50% of power from solar- 1 MW • 400 MW of renewable power by 2023 As per our findings we are also in the process of initiating a detailed climate change related risk & opportunity assessment.

C3.1d

(C3.1d) 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	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 1 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. 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. The Company is focusing on increasing the supply of value-added products. Share of value-added zinc products up to 18.5% in FY 2019-20 from 16% in FY 2018-19. 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.
Supply chain and/or value chain	Yes	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 4. 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 optimise our supply chains. An example of this is the Project 'Sarathi' which optimises 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.
Investment in R&D	Yes	Climate related risks and opportunities play a crucial role in our investment in R&D Therefore, as an organisation we initiated investments in in R&D 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 identified in 2.3 in risk 1 and 2 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. Also we started investing in various waste recycling projects so as to reduce emissions from our waste. Our commitment is to minimize the environmental impact and carbon footprint of its products and manufacturing operations, with Greenhouse Gas (GHG) emissions in particular. 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.
Operations	Yes	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 have also used SBTi to ensure our strategy is aligned to the global ambition of limited temperature rise. HZL will continue to implement energy efficiency measures across its operations as we are committed to our Sustainability Goals 2025.

C3.1e

(C3.1e) 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	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 shaft installation in mines. We engage our sustainability, functional heads, plant heads and finance departments as it is necessary to have a cross functional insights on climate related investments (Opex/Capex/other investments). It also helps HZL understand what investments are required to meet the two degree scenario, our own sustainability goals, and our ambitions to transition towards a circular economy. The use of climate related risks and opportunities in financial planning also helps inform our senior management of which investments will be viable and which areas of our business require investments in the short term, medium term, and long term. For Example 203 crores investment in Renewable energy and our budgeted figure is 2000 crores similarly to mitigate risk related to water non availability we invested in 250 crores in Udaipur STP

C3.1f

(C3.1f) 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
2016

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)
4402891

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]
3786486.26

Covered emissions in reporting year (metric tons CO2e)
4734644

% of target achieved [auto-calculated]
-53.8206438840818

Target status in reporting year
Underway

Is this a science-based target?
Yes, this target has been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)
The base year 2016 means FY 16-17 and same applies to start year as well. These targets were approved by SBTi in August 2018. Our scope 1 + 2 (location based) emissions for FY18-19 were 4,870,000 MTCO2e where as in FY 17-18 it was 4,980,000 tCO2e and for this year FY 2019-20 this is 4734644 which is on a decreasing trend

although its 8% higher than base year but 5% lesser than 2017-18 value. So, we have achieved emission reduction as compared to last 2 years.

Target reference number
Abs 2

Year target was set
2016

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)
2776909

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]
2221527.2

Covered emissions in reporting year (metric tons CO2e)
4187597

% of target achieved [auto-calculated]
-254.003282066499

Target status in reporting year
Underway

Is this a science-based target?
Yes, this target has been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)
The base year 2016 means FY 16-17 and same applies to start year as well. These targets were approved by SBT in August 2018. In scope 3 as well, we have reduced our emissions from 4,440,000 MT CO2e 2017-18 to 4,244,000 MT CO2e in 2018-19 to 4187597 this year. Which is 6% reduction from 2017-18.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?
No other climate-related targets

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	0
To be implemented*	9	2802
Implementation commenced*	10	950.4
Implemented*	24	59237
Not to be implemented		

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)
30362

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
207910920

Investment required (unit currency – as specified in C0.4)
0

Payback period
No payback

Estimated lifetime of the initiative
Ongoing

Comment
Increasing Smelter Efficiency In early 2015, it became apparent that with changing input concentrate feeds, the impurity load projected for the Company would increase and affecting the current Leaching-Electrolysis process. The efficiency of current smelter was increased to 93%. Efforts taken for increasing the efficiency • Stabilisation of leaching parameter • Improved Process Capability Index of Hot Purification • Reduction of sulphates in electrolyte by reduction in Mn, Mg & Na • Spent Temperature maintained between 37 to 39 degree Celsius • Electrode alignment in cells and Anode Grading. • Improvement in quality of electrode header bars in cell house • Double washing of Anodes once in two months. • Upgrade the electrolyte circulation system by increasing the circulation pumps & coolers • Improved OEE of Magnesium removal section. • Optimising the zinc concentration in spent. Overall impact of the Project • A significant increase in production volume by 12700 MT per Smelter • Energy efficiency leading to significant cost reduction of $2.8 million/ 20 crores INR This is the process optimization project no cost involvement was there and hence no payback period is applicable

Initiative category & Initiative type

Energy efficiency in production processes	Other, please specify

Estimated annual CO2e savings (metric tonnes CO2e)
25261

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
154316500

Investment required (unit currency – as specified in C0.4)
145100000

Payback period
1-3 years

Estimated lifetime of the initiative
Ongoing

Comment
EFFICIENCY IMPROVEMENT INITIATIVES IMPLEMENTED IN FY 2019-20 in CPP 1. Vapour absorption machine chiller at CLZS CPP- Power saving of 0.7 MU annually 2. Single cooling water pump at CLZS CPP- Annual power saving of 0.7 MU 3. Converted 9.4 MW back pressure turbine of Hydro-1 to condensing type turbine- Enhanced utilisation of roaster and fumer excess steam, leading to 3 MW increase in power generation 4. Commissioned Variable Frequency Drive (VFD) in induced draft fan in both units at Dariba CPP- Energy saving of 3,600 kWh per day 5. Installed a carbon fibre shaft and Maya make fan blade in the cooling tower fan at Zawar -Reduction of total power consumption by 900 unit per day 6.Completed cleaning of online jet and bullet condenser at Dariba CPP in unit #5- Saving in specific coal consumption by 1.5 gms/kWh at station

Initiative category & Initiative type

Energy efficiency in production processes	Other, please specify (Energy Saving Projects for production process and energy efficiency in building)

Estimated annual CO2e savings (metric tonnes CO2e)
3614

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
357934074

Investment required (unit currency – as specified in C0.4)
710000000

Payback period
1-3 years

Estimated lifetime of the initiative
Ongoing

Comment
There is 17 such projects out of them few projects are 1.Reduction in specific LPG consumption of zinc plant from 1.4 Kg/MT to 1Kg/MT 2. 10% Reduction in specific power consumption for compressor i.e 7.46 Units/MT to 6.7 units /MT 3. HT Compressor automation & leakage arrest,according to Pressure-Zawar group mines 4. Installation of solar panels to reduce power consumption of plant lighting,office lighting and street lights-Zawar Groupof Mines 5. Installation of LED lights by replacing ordinary lights in offices Replace 150 nos. of 2*36 Watt of light fixtures with 39 Watt LED light fixtures in offices 6. Installation of LED lights by replacing ordinary lights in control room/PMCC Replace 300 nos. of 2*36 Watt tube lights with 38 Watt LED tube lights in MCC/control room 7. 220KW VFD installation in CT Pump 8. Cooling tower fan operation automation based on water temp eytc.

C4.3c

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

Method	Comment
Dedicated budget for energy efficiency	HZL has a focus on energy efficiency and cost is the major driver for this. We plan and identify a range of energy conservation projects in the beginning of the financial year and the budget is accordingly assigned. Apart from this there is provision to get budget for additional initiatives identified during the year for technological retrofit and replacement projects which lead to the significant energy reduction.
Dedicated budget for other emissions reduction activities	We are committed to minimize the environmental impact and carbon footprint of its products and manufacturing operations, with Greenhouse Gas (GHG) emissions in particular. The Company is uniquely placed to meet this commitment, with the innovation in the technology and 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 are continuously investing in emissions reduction activities and thereby foster innovation. HZL continues its R & D efforts for efficient use of water and reduction and reuse of waste generated out of its facilities. To be in compliance with the increasing RPO obligation, HZL is investing significantly in RE generation. To adhere to the highest level of the safety standards HZL adhere with the IFC norms.
Internal price on carbon	We follow the 'implicit price of carbon' for setting up internal carbon price per tonne of CO2 equivalent. Internal Carbon Price was calculated based on the abatement method which involved 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' HZL comes out to be INR 1118.46 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
Fly ash is a major waste which is generated from our captive power plant and ISF slag is generated for our pyro process. These are used as a clinker substitute in cement industry thereby saving mineral resources and GHG emissions from limestone. Cement Industry uses Limestone for production of Clinker.

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

% of total portfolio value
<Not Applicable>

Asset classes/ product types
<Not Applicable>

Comment
This year we had sold approx. 293048 MT of fly ash and 101173 MT of ISF slag to cement industries and due to this approx. 9776 tCO2e emission reduction as achieved

---

Level of aggregation
Company-wide

Description of product/Group of products
We have 273.5 MW wind power project installed in 5 states of India. The electricity generated from these project is being supplied to respective state DISCOMs which indirectly reduce the dependency on the conventional sources of power generation as well as emissions.

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
1

% of total portfolio value
<Not Applicable>

Asset classes/ product types
<Not Applicable>

Comment
This year wind power of 437 million units leading to a reduction of 404912 MT of CO2 through green power. Which is 1% of our earning from wind power

---

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 aluminum 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

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
18.5

% of total portfolio value
<Not Applicable>

Asset classes/ product types
<Not Applicable>

Comment
The Company is focusing on increasing the supply of value added products. Share of value-added zinc products up to 18.5% in FY 2019-20 from 16% in FY 2018-19.

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)
4288645

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)
114246

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)
4480887

Start date
April 1 2019

End date
March 31 2020

Comment
Scope 1 GHG emissions in FY20 reduced by 4.76 % from last year. In FY19 the Scope1 GHG Emissions were 4,704,635 tCO2e. Reduction due to increase use of renewable energy , use of PNG and energy saving projects.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)
4704635

Start date
April 1 2018

End date
March 31 2019

Comment
Scope 1 GHG emissions in FY19 reduced by 2.59% from last year. In FY18 the Scope1 GHG Emissions were 4829878 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 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
253756

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
April 1 2019

End date
March 31 2020

Comment
Scope 2 emission for FY 20 has increased over FY19 by 51.7 %. Location based scope 2 emission for FY 19 was 167,239. Increased due to use of state grid energy for increased mine development activities

Past year 1

Scope 2, location-based
167239

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
April 1 2018

End date
March 31 2019

Comment
Scope 2 emission for FY 19 has increased over FY18 by 8.2%. Location based scope 2 emission for FY 18 was 154564.

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

363986

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 form 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

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

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

526140

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, furnace oil/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
27144

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
426001

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 Jerosite, 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
1256

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
2375

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 last year we use to report the data for our 4 marketing offices and 1 liasioning offices and Electricity consumptions at these offices have been considered . This year due to COVID all the offices are closed and we couldnt receive the electricity bill copies from these offices.

Downstream transportation and distribution

Evaluation status
Relevant, calculated

Metric tonnes CO2e
17105

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
280765

Emissions calculation methodology
It is calculated by amount of product sold to different customer (For galvanisation, battery manufactures etc) and emission factor for that organisation 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

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

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
2537409

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

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

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

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

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

Investments

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

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

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

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

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

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
0.00002551

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
4734644

Metric denominator
unit total revenue

Metric denominator: Unit total
185610000000

Scope 2 figure used
Location-based

% change from previous year
9

Direction of change
Increased

Reason for change
Last year the revenue was 208340000000 INR which is higher by 11 % than this year's revenue. Due to this even though the overall scope 1 and scope 2 emissions combined have reduced, the emission intensity has increased as compared to last year.

Intensity figure
5.44

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
4734643

Metric denominator
metric ton of product

Metric denominator: Unit total
869656

Scope 2 figure used
Location-based

% change from previous year
0

Direction of change
No change

Reason for change
Intensity is Same

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)
India *All our operations are based in India only*	4480887

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 CO2e)	Latitude	Longitude
Chanderiya Lead Zinc Smelter with CPP	2215666	24.83	74.82
Dariba Smelting Complex with CPP	1464236	24.95	74.13
Zinc Smelter Debari	28733	24.6	73.83
Rampura Agucha Mine	65522	25.83	74.74
Rajpura Dariba Mine	4490	24.95	74.13
Sindesar Khurd Mine	26538	25	74.16
Zawar Mine Complex with CPP	663488	24.35	73.71
Pantnagar Metal Plant	5020	29.04	79.4
Kayad Mines	7194	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 CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	4480887	<Not Applicable>	We are integrated producer of Lead, Zinc and Silver and no segregated figure is available
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

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 *All our operations are based in India Only*	253756	0	309458	0

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	34482	0
Dariba Smelting Complex	35672	0
Debari Zinc Smelter	49391	0
Pantanagar Metal Plant	46380	0
Rampura Agucha Mines	63410	0
Rajpura Dariba Mine	0	0
Sindesar Khurd Mine	0	0
Zawar Mine Complex	20173	0
Kayad Mine	3334	0
Head Office	732	0
Central Research Development Laboratory	183	0

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
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	252842	0	This figure is excluding the Research laboratory, and Head office and other Admine offices as they are out side the mine and mining production activity.
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

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?

Decreased

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	223747.66	Decreased	5	There is decrese in scope-1 emission by 5% from last year and the figure here is difference of 4704635.00 (scope-1 emission of 2018-19) - 44,80,887 (scope-1 emission 2019-20) The solar power consumption has increased from 0.17 GJ to 0.28 GJ which contributed to 29% in reduction of scope-1
Other emissions reduction activities	12894	Decreased	6	HSD Consumptation reduction-Shaft installation at one of our mines unit to reduce HSD Consumption. Switching from High speed Diesel to Pipe Natural Gas. 6% is reduction in co2 emission due to less use of HSD
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output	137230	Decreased	2.87	Our production reduced by 8% this year as compared to last year, thereby reducing the absolute GHG emissions by 2.87%. This has been calculated by directly subtracting the total scope 1+2 GHG emission of the last year from this years GHG emissions.Since, the project work was being undertaken the percentage reduction is less than expected due to drop in production. Also while production drops, certain activities still continue to consume same amount of power thus production drop and GHG reduction percentage is not linear.
Change in methodology		<Not Applicable>		
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		
Unidentified		<Not Applicable>		
Other	86517.34	Increased	52	The production in FY 19-20 was less than the production in FY18-19 by 8%. However, we had expansion project was being implemented due to which our temporary power requirement increased. This additional power requirement had to be fulfilled with purchased grid power. Hence there is increase in scope -2 emission but there is reduction in combined Scope-1 + Scope-2 emission

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	12401985	12401985
Consumption of purchased or acquired electricity	<Not Applicable>	0	309459	309459
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	223430	<Not Applicable>	223430
Total energy consumption	<Not Applicable>	223430	12711444	12934874

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)	12401985
Consumption of purchased or acquired electricity	<Not Applicable>	309459
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	223430
Total energy consumption	<Not Applicable>	12934874

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	Yes
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
7840

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
7840

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

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
22404

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
22404

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Emission factor
64.2

Unit
metric tons CO2e per GJ

Emissions factor source
2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)
Acetylene

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
151

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
151

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Emission factor
74.1

Unit
metric tons CO2e per GJ

Emissions factor source
2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)
Diesel

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
706997

MWh fuel consumed for self-generation of electricity
0

MWh fuel consumed for self-generation of heat
706997

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Emission factor
74.1

Unit
metric tons CO2e per GJ

Emissions factor source
2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment
About 60 to 70% of HSD is used in heavy duty vehicle and remaining in stationary equipment's.

Fuels (excluding feedstocks)
Coal

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
11664592

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat
11664592

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
<Not Applicable>

Emission factor
96.009

Unit
metric tons CO2e per GJ

Emissions factor source
2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

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	3800000	312000	223430	223430
Heat	12401985	12401985	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	3800000	312000
Heat	12401985	12401985
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
0.49

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
2

Direction of change
Increased

Please explain
Waste matrix is maintained for calculation of scope -3 emissions from hazardous and non-hazardous waste from all our operating units. Reduction in production due to COVID impact in March month , resulted in increase in Metric else the value of the waste generated is lower than last year.

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
12801831

Production, metric tons
720000

Production, copper-equivalent units (metric tons)
298833

Scope 1 emissions
1970969

Scope 2 emissions
106448

Scope 2 emissions approach
Location-based

Pricing methodology for copper-equivalent figure
The copper equivalent value has been calculated by expressing each product's volume as revenue, subsequently converting the revenue into copper equivalent units by dividing by the average market price of copper per tonne in India during 2019.

Comment

Output product
Lead

Capacity, metric tons
2498169

Production, metric tons
197000

Production, copper-equivalent units (metric tons)
63784

Scope 1 emissions
1613858

Scope 2 emissions
5570

Scope 2 emissions approach
Location-based

Pricing methodology for copper-equivalent figure
The copper equivalent value has been calculated by expressing each product's volume as revenue, subsequently converting the revenue into copper equivalent units by dividing by the average market price of copper per tonne in India during 2019.

Comment

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)
913000

Production (metric tons)
688286

Annual production in copper-equivalent units (thousand tons)
299

Scope 1 emissions (metric tons CO2e)
1985162

Scope 2 emissions (metric tons CO2e)
131675

Scope 2 emissions approach
Location-based

Pricing methodology for-copper equivalent figure
The copper equivalent value has been calculated by expressing each product's volume as revenue, subsequently converting the revenue into copper equivalent units by dividing by the average market price of copper per tonne in India during 2019.

Comment

Output product
Lead

Capacity (metric tons)
210000

Production (metric tons)
181370

Annual production in copper-equivalent units (thousand tons)
64

Scope 1 emissions (metric tons CO2e)
1481497

Scope 2 emissions (metric tons CO2e)
7904

Scope 2 emissions approach
Location-based

Pricing methodology for-copper equivalent figure
The copper equivalent value has been calculated by expressing each product's volume as revenue, subsequently converting the revenue into copper equivalent units by dividing by the average market price of copper per tonne in India during 2019.

Comment

Output product
Silver

Capacity (metric tons)
800

Production (metric tons)
610

Annual production in copper-equivalent units (thousand tons)
58

Scope 1 emissions (metric tons CO2e)
288448

Scope 2 emissions (metric tons CO2e)
6037

Scope 2 emissions approach
Location-based

Pricing methodology for-copper equivalent figure
The copper equivalent value has been calculated by expressing each product's volume as revenue, subsequently converting the revenue into copper equivalent units by dividing by the average market price of copper per tonne in India during 2019.

Comment

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	

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	Applied research and development	21 - 40%	2000000	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-Cl 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 b. Weak acid leach residue from Zn hydrosmelter ~ 160,000 ton/annum, metal - metal opportunity – Zn&Pb ~10,000 TPA & Silver ~32 TPA 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.
Waste reprocessing	Applied research and development	61 - 80%	500000	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. 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 from 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.
Other, please specify (Waste Utilisation, Waste to Wealth)	Full/commercial-scale demonstration	81 - 100%	500000	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 centre, 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 along with better utilisation of Fly Ash.
Waste reprocessing	Full/commercial-scale demonstration	81 - 100%	5000000	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 centre, this project was taken at Lab and Pilot scale in number of trials and parameter were optimised to produce bulk concentrate with required grade at significant metal recoveries. This project was implemented at plant scale and is now fully commercial scale ready to run in plants. This project improved overall metal recovery leading to resource conservation and utilisation.

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/ section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/ section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Please select

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
Final GHG Assurance Statement- HZL (FY 2019-20).pdf

Page/section reference
1-3

Relevant standard
ISAE 3410

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
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	ISAE3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C6. Emissions data	Progress against emissions reduction target	ISAE 3410	
C6. Emissions data	Emissions reduction activities	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C6. Emissions data	Renewable energy products	ISAE 3410	
C7. Emissions breakdown	Year on year change in emissions (Scope 1)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C7. Emissions breakdown	Year on year emissions intensity figure	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C7. Emissions breakdown	Change in Scope 2 emissions against a base year (not target related)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C7. Emissions breakdown	Emissions reduction activities	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C7. Emissions breakdown	Renewable energy products	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C8. Energy	Year on year change in emissions (Scope 3)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C8. Energy	Year on year emissions intensity figure	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C8. Energy	Change in Scope 3 emissions against a base year (not target related)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C8. Energy	Emissions reduction activities	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C8. Energy	Renewable energy products	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Year on year change in emissions (Scope 1)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Year on year change in emissions (Scope 2)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Year on year change in emissions (Scope 3)	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Year on year emissions intensity figure	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Progress against emissions reduction target	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Product footprint verification	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Emissions reduction activities	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.
C12. Engagement	Renewable energy products	ISAE 3410	Our emisions data including scope 1, scope 2 and scope 3 emissions has been verified by an external assurance provider using the CDP approved assurance standard i.e. ISAE 3410. Data from all ten units was reviewed during the assurance process and 100% of data was verified. Locations the assurance statement is also attached.

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?

We are not regulated by any regulated carbon pricing systems. However, we anticipate that such a scheme may be applicable to us in future. Though India does not have a regulated carbon pricing system 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. 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 FY19-20 was 380655MWh. We produced 211673 MWh of renewable energy, due to which only 168982 MWh of RECs were bought

To prepare for possible future regulations on carbon pricing or energy, we have identified following as the key areas of focus:

1. Reducing our energy consumption and increasing the 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 22.61GJ/MT in FY 17 to 20.39 GJ/MT in FY20. We undertake yearly energy efficiency targets to make continuous progress.

2. Making provisions for renewable energy consumption

The Company has made significant investment in green energy aggregating to 347.54 MW to reduce greenhouse gas emission and carbon footprint. We have a target to increase our RE generation at our operational sites to 400MW. For its captive use, the Company commissioned a 22 MW solar power project on its waste dumps at Rampura Agucha taking the total to 39.64 MW. All solar power projects have been installed on land that otherwise had no possible use at Rajpura Dariba mine, Debari Zinc smelter and Rampura Agucha mine. The green power generated has reduced carbon footprint by 66049 MT of CO2 emission per annum. In addition, there is 35.4 MW of power capacity through waste heat recovery from roasters and steam turbo generator out of which 9.4 MW/Waste Heat Recovery Boiler project is registered under Clean Development Mechanism along with 21 TPH Low Calorific Value boilers for steam generation project. The Company is planning to further enhance its solar energy footprint by another 35 MW in the coming year. This includes a 1MW floating solar power project at a captive dam near Chanderia, which will not only eliminate 5 acres of land usage, but also reduce water evaporation in a water stressed region. After completion of Fumer Project, it will generate 8.5 MW through waste heat recovery boiler.

3. Increasing the green cover through plantation drives

We undertake plantation for resilience and increasing the carbon sink. This year we have planted more than 1.8 Lac plants around our operations. Around 61,000 saplings were planted at Kayad mine in mass plantation drive. 35000 saplings planted at Zawar mines . During the year, 156,765 saplings were planted to increase flora density in the areas around our operations.

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

At HZL we have developed an internal pricing on carbon and intend to implement it soon.

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)
404912.7

Number of credits (metric tonnes CO2e): Risk adjusted volume
404912.7

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)
10386.24

Number of credits (metric tonnes CO2e): Risk adjusted volume
10386.24

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
Not yet verified

Number of credits (metric tonnes CO2e)
71900.66

Number of credits (metric tonnes CO2e): Risk adjusted volume
71900.66

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)
92694.59

Number of credits (metric tonnes CO2e): Risk adjusted volume
92694.59

Credits cancelled
Not relevant

Purpose, e.g. compliance
Voluntary Offsetting

Credit origination or credit purchase
Credit origination

Project type
Solar

Project identification
Roof top solar project at HZL

Verified to which standard
Not yet verified

Number of credits (metric tonnes CO2e)
1100.36

Number of credits (metric tonnes CO2e): Risk adjusted volume
1100.36

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)
1118.46

Variance of price(s) used
There is no variance as we have taken carbon pricing form overall HZL. It may change in future as we have recently got our approved SBT target and we are in process to develop the action plan to achieve the target.

Type of internal carbon price
Implicit price

Impact & implication
The internal carbon pricing will help 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 target for emission reduction. ICP is used for financial evaluation of projects and CAPEX/OPEX allocation.

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
57

% total procurement spend (direct and indirect)
76

% of supplier-related Scope 3 emissions as reported in C6.5
21

Rationale for the coverage of your engagement
As part of our ongoing efforts on identifying supply chain risks, improving sustainability performance and building in operational efficiency, we carried out a desktop review of our critical suppliers during FY 2019, in association with KPMG India. A detailed supplier sustainability assessment questionnaire was developed, which includes criteria on environmental standards, human rights, occupational health and safety, business ethics, social and governance criteria. 20 Critical suppliers were identified for a detailed sustainability assessment based on the guidelines as per our supply chain management strategy. The assessment criteria and evaluation parameters were categorised as per the nature of risks: • Critical risks: Systems not in place; not meeting legal licences, permits • Major risks: No system, largely non-compliance • Moderate risks: System are in place but observed gaps in formulation of comprehensive policies and SOPs • Minor risks: Systems largely in place but found few evidences We also undertake third party audits and assessments. During last two years we conduced Due deligience of 668 suppliers which is 57% of our total supplier base. Further we have process for engaging with our suppliers on their HSE performance . All our tier 1 suppliers(which includes critical suppliers) have to follow the prequalification criteria and meet the pre-requisites which are followed up with field visits to the supplier's operational site. Suppliers must achieve a minimum score of 75% as per the pre-qualification requirement.

Impact of engagement, including measures of success
This gave HZL an opportunity to build long-term relationships with suppliers and motivated the suppliers to comply with more stringent regulations and industry commitments. Moving forward, HZL aims to empower their suppliers even further to share responsibility and help them build their own management systems and internal controls.

Comment
We maintain strict vigilance on the implementation of the management standards and advise our suppliers to ensure timely assurance.

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
8

Portfolio coverage (total or outstanding)
<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement
Customers are the most important stakeholder to our business and we always engage with our customers to manage and mitigate social and reputation risk. Climate change is integrated into our customer engagements and we usually do not conduct separate engagements on climate change. Our customers' requirements and feedback are of critical importance to us as they determine the quality and pricing of our products. We innovate and develop products based on customer requirements and also collaborate with them. We conduct biannual customer satisfaction survey and take feedback from all our customers where we receive feedback on climate related items as well. We engage with customers through our online processes as well. We evaluate customer feedback and incorporate them in our process. Based on these interaction, 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. 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 organised 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 to 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 in FY 2019. 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. Based on the acceptance of such products HZL focus is on increasing the supply of Value added products to 25% of total Zinc sales in FY 2021 which is 16% in FY 2019. With the major customers the Company carries out customer satisfaction survey periodically. The last survey conducted was in FY 2018. In FY 2018, the Company scored 82 on the total Customer Satisfaction Index as against 75 in FY 2015, with substantial improvement seen on the experience front. We have increased reporting of our climate actions to customers through annual 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.

Structured stakeholder engagement processes are in place at corporate and operational sites to ensure delivery of transparent, timely and fact-based communications to stakeholders. The Company also seeks to identify and minimise potential negative impact caused by its operations and uses any feedback as an input towards economic, environmental and social development. HZL acts transparently and ethically, promotes dialogue with communities and has developed grievance mechanisms at each of its locations. Our stakeholders are our partners in progress and at HZL we consider it our primary responsibility to care for and grow while keeping in mind interests of each of our stakeholder groups. We engage with all our stakeholders on a continuous basis around the year as part of our business operations. Through various interactions and transactions, we identify their requirements and manage their expectations. We have identified our key stakeholders based on the nature of the relationship we share, their key expectations from us, and how critical they are to our business.

Employee Engagement: Our employees are at the heart of our operations. Their productivity, collective knowledge and experience are of great relevance in meeting the objectives of company. Employees are involved and informed about climate change, companies initiatives, and expectations from them. Selected employees also attend training and other programs related to climate change inhouse and externally. Also they are inducted on the top risks (energy and climate change) so that they effectively manage these risks through robust controls and systems by fostering workforce involvement at every level. We also engage employees on climate change by giving the opportunity for them to share the ideas on improving companies climate related performance. There are also monetary as well as non-monetary rewards (recognition, others) for climate change related targets/performance achievement aspects.

Communities: Our harmonious co-existence with our communities is important for disruption free operations and this is also important for our social license to operate. We engage with them through our Social contribution/CSR activities, Public hearings, awareness campaigns (Environmental topics, which may include energy and climate change, in order to inform them about the implications of the same), Community impact assessment surveys, Complaints and grievances mechanisms. Since we operate in water stressed area, climate change has the potential to impact water related concerns of the society.

Government: We believe our business plays a significant role in nation building and our contributions to the local economy complement the governmental initiatives in the region. Through our tax payments, we become a close collaborator for the local government and our CSR programmes strengthen public policies and programmes on development. Key engagement platform with government are advocacy through trade and industry bodies, Close engagement with regulators, local administration, inspection bodies on a regular basis, Regulatory and legal compliance. We engage with them on compliance and regulations related to climate change and energy, participation in industry and government collaborative projects like the forest departments 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. Sewage treatment plant is a unique public private partnership project in association with government which is helping in cleaning the lakes of Udaipur.

Shareholders/ Investors: Our shareholders/investors are the providers of financial capital and their trust in the business is of key importance for the financial health of the Company. We engage with them through financial results declaration (quarterly), Annual General shareholders meetings (annual), Investor Relations events, one-on-one meetings. Our standard disclosure tools are Annual Reports, Sustainability Reports, and our website. Complaints and grievances Key issues or expectations Timely, fair and proper disclosure, fair assessment, ratings and support from capital markets, Key engagement during the year HZL conducts a yearly shareholder gathering, the Annual General Meeting and we present our key performance indicators and the Company's strategy and the way forward. During the year we had 4 earnings call and site visits to our mines and smelters for investors and research houses. During investor communication and interactions, we share our strategy and progress on climate change and related topics.

Engagements with all our stakeholders are collaborative in nature and have led to collaborative work or innovation in the business response which is aligned with our long-term climate strategy. Examples are mentioned in questionnaire.

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 of using 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 and be declared as 'High-Volume Low toxic' waste as it can be used in the cement plant. This will also be a starting point for formulation of such policies in the future. HZL has received the approval for utilizing the Jarofix in road construction
Clean energy generation	Support	HZL engages with coal committee 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 actively participating in the same and provides inputs in various policy amendments and changes
Clean energy generation	Support	Multiple engagement with BIS for approval of use 1% Jarosite in the Cement	We have gained approval from BIS for usage of 1% jarosite in the cement manufacturing.
Clean energy generation	Support	HZL engages with RERC for combination of solar and non-solar RPO 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 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 formulating 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, State Pollution Control Board	We, at HZL, are actively participating 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

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 and its members are committed to the principle of sustainability, and this commitment is embedded in our sustainability charter and guiding principles. We believe that protection of the environment, open engagement on sustainability issues, and supporting sustainable development practices not only drive long-term prosperity for the zinc industry; they enable our customers to become more sustainable through the use of zinc products. The sustainability charter of IZA includes climate change. For IZA Members, the key focus areas of our climate change initiatives include: • 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; and • 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. Our CEO serving as Vice Chairman – International Zinc Association We are also engaging IZA to carry out complete Life cycle assessment for our products which would include all environmental aspects and not just carbon footprint of our product. Additionally we are also engaged with IZA in the creation of the Zinc Sector SDG roadmap. The roadmap was developed by IZA in partnership with sustainable development consultants ERM and participating IZA member companies to create a plan of action addressing some of the world's most prominent environmental, social, and economic challenges. We are also participating in the development of base metal standards to comply with LME responsible sourcing guidelines. Furthermore, the IZA in association with HZL organized the 3rd International Galvanizing Conference in September, 2019 in New Delhi. The conference saw a participation from over 350 delegates from across zinc, steel and alloy industries. IZA and HZL have also been working together to promote Galvanization in AUTOBODY! In this regard a technical awareness seminar was organized with support from our customer (JSW) in 4 major autobody manufacturers in India in the month of February 2020.

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 is increasingly becoming a central topic of debate and strategic decision making by Governments and businesses all over the world. So, it is necessary to identify emission reduction initiatives. This organization is working on this and has taken many initiatives. It is working 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 conference, seminar and workshops organized by them and as a metal industries we share our view with them. We also share our best practices. During the year our CEO appointed as the Chair – CII National Committee on Mining. Sponsoring every year Sustainability Summit , CII ITC Sustainability award , comments on various policies drafts.

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 the policy dialogue on climate change both domestically and internationally, as well as facilitating the carbon market through the Clean Development Mechanism. ICC has been creating stakeholder awareness in India and familiarizing stakeholders with the core issues and challenges confronting them. It also 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 our technology intervention related information with them ICC Kolkata. During the year we participated in award competition organized by them.

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 current activities have resulted in making deregulation and liberalization of mineral production and processing industry a ground reality. FIMI has found that while the Government of India has liberalized the policies, 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 a development facilitating and regulatory body, the Constitution of India provides 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. Towards this end, FIMI is persuading official implementing agencies to bring out the necessary changes in procedures to avoid delays in order to harmonise the policy and practice.

How have you influenced, or are you attempting to influence their position?
As a membership of this association HZL submitted the performance detail on their COC principle every year. We also attain conference organized by them and also provide comments on policy formation and any amendment in rules and regulation. Our CEO is the President of the Federation of Indian Mineral Industries

---

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 creating widespread stakeholder awareness in India and familiarizing stakeholders with the core issues and challenges confronting them. FICCI also facilitates Indian industry presence at and 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 has participated in conference, seminar and workshops organized by them and as a metal industries we share our view with them. We also share our best practices. Provide comments on policy formation and any amendment in rules and regulation.

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 playing a critical role in the policy dialogue on renewable energy sector. IWPA is closely working with MNRE, CERC and state regulatory bodies in the making of policies for renewable projects. IWPA has been creating stakeholder awareness in in India and familiarizing stakeholders with the core issues and challenges confronting them.

How have you influenced, or are you attempting to influence their position?
HZL is actively participating in conference, seminar and workshop organized by them and we are also sharing our views and raised the current issues faced by the industry. We also share our best practices. Provide comments on policy formation and any amendment in rules and regulation.

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 playing a critical role in the policy dialogue on renewable energy sector. RSA is closely working with MNRE, CERC and state regulatory bodies in the making of policies for renewable projects. RSA has been creating stakeholder awareness in in India and familiarizing stakeholders with the core issues and challenges confronting them.

How have you influenced, or are you attempting to influence their position?
HZL is actively participating in conference, seminar and workshop organized by them and we are also sharing our views and raised the current issues faced by the industry. We also share our best practices. Provide comments on policy formation and any amendment in rules and regulation.

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 takes active part in the committees of Ministries of Mines, Steel, Environment, Forests & Climate Change, DST, Central Pollution Control Board, Bureau of Indian Standards, FICCI etc., contributing in their 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 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. Our CEO is the President of ILZDA.

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 voice the industry opinion in terms of climate related policy decisions in India and globally. While doing so we remain consistent of our company's commitments and ensure that responsible practices are encouraged towards climate change management and transformation towards a low carbon society. Our climate policy and related energy and water policy is also framed in consultation of all relevant internal and external stakeholders and is reviewed on a continuous basis in line with the evolving scenarios. We ensure that we take initiative on the issues identified in our climate and sustainability related policy and ensure that a consistency is maintained in our approach for addressing these goals. In case any inconsistency is observed, it is discussed in the board meeting and necessary actions regarding the same 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.

In addition we have a corporate communication policy which guides all communications by the company. Engagement on all risk, sustainability, climate and environment related topics are guided through the group level sustainability framework i.e Vedanta Sustainability Framework.

Climate change and related topics like energy and water are essential for continued 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 topic of climate strategy is not a stand alone subject but it is well embedded into our way of conducting business. Significant policy related interactions are discussed with the CEO and company's board at regular interval.

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, in line with the CDSB framework (as amended to incorporate the TCFD recommendations)

Status
Complete

Attach the document
Integrated -report-2019-20.pdf

Page/Section reference
GHG emission trend: Page 19 High Material issue (Energy and climate change): Page 34 Strategy and trade-off related to climate change: Page 39 and 41 Environment risks: Page 47 Driving efficiency/ Renewable energy portfolio: Page 62-63 Sustainability goals 2025: page 65 Brief on energy and climate change management: Page 69 - 70 Energy Cost: Page 97 Business responsibility report Principle 2 and Principle 6: Page 139 and 142-144

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Publication
In voluntary sustainability report

Status
Underway – previous year attached

Attach the document
HZL SR 2018-19.pdf
Draft Sustainability Review Report 2019-20.pdf

Page/Section reference
Page 96-97- SR 2018-19 Page 146- Scope-1/2/3 data SR 2018-19

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

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.

Integrated report 2019-20

Assurance statement – GHG 2019-20

Draft Sustainability Report 2019-20
Integrated -report-2019-20.pdf
Final GHG Assurance Statement- HZL (FY 2019-20).pdf
Draft Sustainability Review Report 2019-20.pdf

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

Please confirm below

I have read and accept the applicable Terms