Module: Introduction

Page: Introduction

CC0.1

Introduction
Please give a general description and introduction to your organization.

Hindustan Zinc is the world's second largest integrated producer of Zinc-Lead as well as leading producer of Silver in the world. With the ownership of major zinc ore mines of India, we have a market share of 70% in zinc and 53% in lead as of FY 2016. We are one of the lowest cost producers in the world and are well placed to serve the growing demand of Asian countries. Hindustan Zinc is a subsidiary of the BSE and NSE listed Vedanta Limited (ADRs listed on the NYSE; earlier known as Sesa Sterlite Limited), a part of London listed diversified metals and mining major, Vedanta Resources plc. We are on the track to become one of the world's top Silver producers at 500 tonnes and have a world-class resource base with total reserve & resource of 404.4 million MT and average zinc-lead reserve grade of 11.0%.

Hindustan Zinc Limited was incorporated from the erstwhile Metal Corporation of India on 10 January 1966 as a Public Sector Undertaking. In April 2002, Sterlite Opportunities and Ventures Limited (SOVL) made an open offer for acquisition of shares of the company; consequent to the disinvestment of Government of India's (GOI) stake of 26% including management control to SOVL and acquired additional 20% of shares from public, pursuant to the SEBI Regulations 1997. In August 2003, SOVL acquired additional shares to the extent of 18.92% of the paid up capital from GOI in exercise of "call option" clause in the shareholder's agreement between GOI and SOVL. With the above additional acquisition, SOVL's stake in the company has gone up to 64.92%. Thus GOI's stake in the company now stands at 29.54%. Later on SOVL was merged with Sterlite Industries India Ltd in April 2011, which in turn merged with Sesa Goa Ltd to form Sesa Sterlite Limited in August 2013. Sesa Sterlite was renamed to Vedanta Limited in April 2015. Hindustan Zinc is now a direct subsidiary of Vedanta Limited.

Hindustan Zinc's 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 Chanderiya and Dariba, all in the state of Rajasthan in India. Our Company has a track record of consistently growing its reserve & resource base since 2003 and currently has a mine life of over 25 years.

Headquartered at Udaipur, we are an integrated mining and resources producer of zinc, lead, and silver operating with a workforce of 17,223. 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 Company is self-sufficient in power with an installed base of 474 MW coal-based captive power plants. Additionally, we have green power capacity of 325 MW including 274 MW of wind power and 35 MW of waste heat power and 16 MW solar

power. We have also initiated efforts for harnessing 16 MW solar power for captive usage. Our long mine life of over 25 years ensures the long-term sustainability of our business when combined with our strong financials, executional excellence and strategic business management capabilities.

CC0.2

Reporting Year

Please state the start and end date of the year for which you are reporting data.
The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.
We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.
Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Fri 01 Apr 2016 - Fri 31 Mar 2017

CC0.3

Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
India

CC0.4

Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

INR(Rp)

CC0.6

Modules

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.
If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.
If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

Group sustainability committee of Vedanta provides the overall guidance on sustainability. At HZL level, - Sustainability Business Management Group, headed by HZL's CEO Mr. Sunil Duggal, provides overall guidance on the climate change, which is identified as key ESG issue. The overall responsibility of climate change management and initiatives lie with HZL's corporate head- Environment and Occupational Health & Safety (EOSH), Mr. V. Jayaraman, who reports to the CEO, Mr. Sunil Duggal. The Corporate head- EOSH is supported by Environmental head (Mr. Sachin Samar) and Sustainability & safety head (Mr. V.P. Joshi). Dedicated departments are available at each site for handle and manage the environmental issues and responsible person at each site are identified for managing sustainability and climate change related initiates

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Energy managers	Monetary reward	Emissions reduction project Energy reduction project 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' are organized on an annual basis, at the unit level, to invite innovative ideas leading to significant reductions. Best ideas out of the received ones are rewarded to encourage the employee engagement.
Corporate executive team	Monetary reward	Emissions reduction project Emissions	Sustainability team in HZL is headed by, EOHS head, Mr. V. Jayaraman, who reports to the CEO. HZL has set a target of 5% reduction in the emissions from the base year of 2016. Guided by the 'Vedanta Sustainability Framework', team is responsible for the achievement of the target by implementation of

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
		reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target	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. Environment safety, sustainability 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 and the threshold achievement to become eligible for pay-out is 70%. Assessment of performance against Environment sustainability and safety is measured by following indicators and reflects in the VSAP Score: -It is one of the KRAs for CEOs to make HZL become a zero-harm organization. -It is one of the KRAs of COO-Mines to make HZL a zero incident, which includes environment and safety, and zero injury organization to achieve Zero fatality. Performance against this KRA reflects in the VSAP score.
All employees	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	Employees who design and implement projects leading to the benefits in terms of resource conservation, energy efficiency and emission reduction are awarded under the 'Quarterly Reward Scheme' and annual 'CEO Kitty' programme.
Other: CDM Cell	Monetary reward	Emissions reduction project Emissions reduction target	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.
All employees	Recognition (non-monetary)	Emissions reduction project Energy reduction project Efficiency project	Improvement initiatives leading to resource conservation and consequent reduction of CO2 emission intensity and financial impacts of which are difficult to establish due to process complexity due or to change in other baseline parameters, contribution to awareness building, knowledge sharing etc. are recognized through non-monetary means such as certificates, recognition at public forums etc.

Further Information

Page: CC2. Strategy

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Board or individual/sub-set of the Board or committee appointed by the Board	India operations	> 6 years	We assess the climate change risks relevant to any investment and our business portfolio management. Our risk management framework assesses 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. 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. 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 also meets monthly to ensure timely assessment of the climate change related risks and actions being taken to manage them.

CC2.1b

Please describe how your risk and opportunity identification processes are applied at both company and asset level

Board is responsible for overseeing our risk management framework. At HZL, there is a formal risk monitoring process at unit and company level, wherein new risks are identified, categorized as per impact & likelihood, mapped to key responsibilities of select managers and managed with appropriate mitigation plan. We use our internal sustainability risk management tool - Vedanta Sustainability Assurance Programme for setting key sustainability targets and regularly review our progress. Sustainable development risks, including climate change, form a substantial part of our organizational risk profile. At the company level, we have identified Climate Change risk, which is a part of risk assessment done under the topic of "water, energy and land", as an enterprise level risk as a part of our formal Risk Management Frame work. Climate change risks are assessed with the following check: 1) Study of Climatic data viz.; rainfall intensity, total precipitation and temperature. 2) Impact of temperature and precipitation patterns on availability of water. 3) Impact of climate change regulation on operations
At asset level, the risks are mitigated by the facility management on day to day basis. Functional heads and Sustainability review team at the asset level reviews the climate change mitigation measures and performance. Asset level risks are generally those that are anticipated to occur with regular or high frequency, but have an overall low impact on the company and thus, it is deemed likely to be absorbed with the contingency plan of the company. 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. Lessons learned are incorporated into future site planning, supplier selection process, and risk mitigation planning and strategic development. We have established environmental risk assessment as part of our ISO14001 Environmental Management System

CC2.1c

How do you prioritize the risks and opportunities identified?

At HZL, Risk Management Mandate is driven at board level with the structured risk management process providing the guidelines for effective identification and management of the risks. Identified material risks are prioritized based on the occurrence, frequency, its impact on the business operations and its influence weighed with the history. We mandate the criteria to identify risks and take into consideration the health, safety, environment, social, reputation and financial aspects. The severity of the particular risk is based and the degree of harm adjusted to the mitigation in place. Based on the high impact risks are defined as Principal Risks (based on its inherent and residual risk profile).

Our Risk Management framework ensures that:

- Impact of the identified risks on the company objective and plans is assessed and support for its mitigation to be provided with clear accountabilities and adequate resources.
- Risk are prioritized, ranked by proper methodology (as mentioned above), mitigated, planned and tracked
- Material risks are tracked and reviewed across the organization on the regular basis.
- Risks controls are evaluated, designed, implemented and reviewed periodically.
- Internal Assurance process reviews the risks and controls to ensure risks are effectively controlled.

The committees at Group Level, Company Level and Unit level, keep track of the emerging climate change risk and opportunities throughout the year. Sustainability Committee at Group meets quarterly, Sustainability Business Management Group at Company Level meets monthly and Sustainability Review at Unit/ Operation level also meets monthly to ensure timely assessment of the climate change related risks.

CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment

CC2.2

Is climate change integrated into your business strategy?

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

Vedanta Sustainability framework is an integral part of our strategy and comprises commitments, roles and responsibilities related to environmental and social sustainability and is externally audited. At HZL, energy conservation and greenhouse gases emissions reduction are an integral part of business strategy. The compliance with the Vedanta Sustainability Framework is ensured through an internal audit process called the Vedanta Sustainability Assurance Programme (VSAP), which also assures compliance with the EMS.
One of the biggest challenges our organization faces today as a regulatory, environmental and social challenge is the impact of climate change. These risks pan across changes in regulatory environment, physical climate parameters and other climate-related developments. We realize that GHG performance has a direct correlation with energy consumption. We understand the impact of climate change on the availability of water and since our mining operations are highly water-intensive and expand into more water-stressed areas, HZL plans to ensure preparedness for uncertain challenges of climate change. At HZL, we have Energy and Climate change management Policy, Water Management Policy and Biodiversity Management Policy (http://www.hzlindia.com/policies.aspx) that helps us achieve a balanced energy-carbon cycle.
In our effort to integrate new climate change challenges and opportunities into our business strategy and planning, we continue to make coordinated efforts towards enhancement of energy efficiency, increase in share of renewable power generation and reduction in emissions. Our long-term strategy for addressing climate change issues consists of diversifying the energy portfolio. We are working on our renewable energy source portfolio by investing in green and clean energy. As a part of our short terms strategy, we have defined the target of 5% reduction in carbon emissions over the baseline of 2016 by 2020 and have also started with the implementation of the identified initiatives to achieve desired emission reductions and mitigate impact of the climate change specific to our operations.
Improving our energy performance will lead to reduced input costs and increased operational efficiency. At the same time, it will also help us with the strategic

advantage over our competitors by enhancing our brand equity and thereby help us gain increased access into the Carbon sensitive markets. During the reporting year, our office at Udaipur became Rajasthan's first Platinum Green Building. It achieved energy savings by 27% and water use reduction by 37%. Given below are a few of the initiatives of 2016-17:

Waste

We are investing INR 5700 million in 'Fumer Technology' which involves shift from hydrometallurgical process to pyrometallurgical in the leaching circuit has been adopted for elimination of the of Jarosite formation, generated during the zinc refining process. This leads to a production of a Fumer slag which can be sold to cement producing companies. The formal order has been processed by China Non-Ferrous Metal Industry's Foreign Engineering & Construction Co. Ltd. (NFC) and the first Fumer is likely to be commissioned by mid-2018 at Chanderiya. In the future, the company plans to replicate the technology at its other smelting complexes. Using this technology would yield a 97.5% recovery of zinc, along with lead and silver, which cannot be obtained through the jarosite process. This initiative benefits HZL's sustainable environmental sustainability as well as community.

Alternative uses of jarosite are also being studied; advanced studies are being conducted by IIT Roorkee to establish replacement of cement with jarosite in mortar and concrete. We are in discussion with the cement industry / Wolkem regarding trials, after seeking approvals from the RSPCB. Simultaneously, we have also initiated trials for vermi-remediation of jarosite and ETP sludge to convert it into a suitable substitute for fertiliser. The NABL report has confirmed that the outcome of the process can be used as manure.

- Two major wastes generated at our smelting and power units, fly ash and ISF slag, are supplied to the cement industry, where they are used as a replacement for virgin material.

Energy Efficiency

- RAM Mill Stream-3 wins National Energy Conservation Award – 2016 for the successful implementation of various power-saving projects, thus reducing the specific energy consumption by 4.81KWH/MT of ore treatment.
- 819 GJ/month of energy savings have been achieved at Sindesar Khurd Mine by replacement and retrofit measures.
- "Yashad Bhawan", Hindustan Zinc's Head Office at Udaipur, has achieved the honour of becoming Rajasthan's first platinum-rated green building, awarded by the CII-Indian Green Building Council (IGBC). The project has achieved energy savings of 27% and water use reduction of 37%.
- Shift has been made from Open cast mining operations to underground mining operations leading to the significant reduction in the HSD consumption.
- Engagement with the logistic providers to increase carrying capacity of trucks and monitoring travel route and time through installation of GPS installation has been formalized.
- Seals have been installed with the turbine which have lead in the decrease of auxiliary consumption by 0.5%

Renewable Energy

- We have commissioned two solar power projects – one at the Dariba mine (4 MW) and the other at Debari Zinc smelter (12MW) for captive use.
- We have also installed two solar rooftop projects with a capacity of 200kW and one solar water heater with a capacity of 1000LPD
- Solar Farm of 100 MW has also been planned for the year 2017-18.
- We have 274MW wind farms in Gujarat, Karnataka, Rajasthan, Maharashtra, and Tamil Nadu, which are registered under the Clean Development Mechanism (CDM) Programme by the United Nations Framework Convention on Climate Change (UNFCCC).
- We also generate about 34.4MW of power through waste heat recovery from roasters and a steam turbo generator (STG). From this, a 9.4MW WHRB project is registered under the CDM Programme, along with 21TPH LCV boilers for steam generation
- We are also planning to install the solar roof top projects at all location of the company to enhance the green portfolio of the company as well as reduce the dependency on the non- renewable power resources.
- We are also working on the pilot floating Solar Power project to reduce the water evaporation loss as well as increase the green energy generation. It will help the organization as well as community in sustainable development.

Biodiversity

- 99391 saplings have been planted in 2016-17, as a part of plantation initiative by HZL. We have planted more than 1.5 million plants around our operations.
- 6500 trees have been planted as a part of the CSR project in Ratnagiri, Kayad and Debari.

CC2.2b

Please explain why climate change is not integrated into your business strategy

CC2.2c

Does your company use an internal price on carbon?

No, but we anticipate doing so in the next 2 years

CC2.2d

Please provide details and examples of how your company uses an internal price on carbon

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

Direct engagement with policy makers
Trade associations

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Clean energy generation	Support	Engagement with CPCB and SPCB for getting approval for running pilot program of using Jarosite in the cement plant as input material.	Removal of Jarosite from Hazardous waste and declared as High-Volume Low toxic waste has open way for use of jarosite in the Cement plant which opened the way for future trend and formulation of such policies in the future.
Clean energy generation	Support	HZL engages with coal committee and non-coal committee of MoEF on time to time basis continuous interactions 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	Engagement with RERC for combination of solar and non-solar RPO to make it convenient for entities to meet their obligations.	RERC made 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: Policy and Regulations	Support	HZL supports the National Committees which are involved in formulating policies and regulations for improvement of environment including GHG reduction, throughout the country such as: 1) Ministry of Environment and Forest 2) National Committee on Environment 3) Central Pollution Control Board 4) 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.

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
ILZDA (India Lead Zinc Development Association)	Consistent	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.	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.
Confederation of Indian Industry	Consistent	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.	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.
Indian Chamber of Commerce, Kolkata	Consistent	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	HZL shares process emission and our technology intervention related information with them ICC Kolkata. Recently we have also participated in award competition organized by them.
Federation of Indian Mineral Industries	Consistent	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	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.

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		persuading official implementing agencies to bring out the necessary changes in procedures to avoid delays in order to harmonise the policy and practice.	
Federation of Indian Chambers of Commerce and Industry(FICCI)	Consistent	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.	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.
Indian Wind Power Association (IWPA)	Consistent	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.	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.
Rajasthan Solar Association (RSA)	Consistent	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.	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.

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

CC2.3e

Please provide details of the other engagement activities that you undertake

CC2.3f

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?

Our position on climate change is directly guided by our group level 'Vedanta Sustainability Framework' which define mandatory performance requirements for all our Businesses and units which has energy and climate change management policy as a part of it. Our evaluation of emerging trends and company-wide risk review processes provide us with information that underpins the regular review of our climate change position.

We continuously engage with various policy makers on matters related effective waste management, renewable energy generation and environmental friendly operations, all of which are directly linked with our climate change strategy and facilitate in meeting our CO2 emission reduction goal. In our effort to enhance energy efficiency in the operations we have spent INR 22.8 million on energy saving initiatives and has spent INR 7.46 crores on R & D for water and waste utilization related areas. HZL engages with CPCB and SPCB on a regular basis on various policy matters. We have taken the initiative to advocate for the usage of Jarosite in the cement industry and working with research institute to explore the ways for utilization of the Jarosite. Further In this efforts to do away with this category of waste HZL has initiated the Fumer project for shifting from Hydrometallurgical process to Pyro metallurgical in their leaching circuit of CSC Hydro-2. This leads to a production of a Fumer slag which is eco-friendly slag can be sold to cement producing companies. R&D process has also been undertaken to explore the usability of previously generated Jarosite in the construction sector. HZL has shifted from an opencast mining operations to underground mining operations which significantly reduce its HSD consumption and emissions. HZL planted 5000 trees out of the total 7100 planted as a part of the CSR initiative at Ratnagirihill Udaipur. Mass Plantation was carried out in 75 Ha forest area (23500 plants) through Van Suraksha Evam Prabandh Samiti. 800 saplings planted along the road side of Tidi Zawar Mines road

We believe in disclosing our performance and also take time to discuss risks and opportunities for the company. We engage with stakeholders through many different forum including our Annual General Meetings which are open to all shareholders. We also work with our Forum on Corporate Responsibility (FCR) that was established in 1999 and includes civil society leaders who engage with our Executive Leadership Team (ELT) and Board on material sustainability issues. We engage with investors on sustainability issues including through annual sustainability briefings and investor roadshows held in Australia, US, UK and South Africa. We undertake individual engagement with investors and analysts via meetings or correspondence on issues of interest, including climate change risk management, our actions to adapt to the physical impacts of climate change, reduce our own emissions and invest in low emissions technology. We accept opportunities to speak at technical and other conferences to ensure that we engage a broad range of stakeholders.

CC2.3g

Please explain why you do not engage with policy makers

Further Information

Green building - Platinum rating for HZL's office at Udaipur, India.

Attachments

https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Green building certificate.jpg

Page: CC3. Targets and Initiatives

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Intensity target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1+2 (location-based)	100%	5%	Metric tonnes CO2e per metric tonne of product	2016	5.15	2020	No, but we anticipate setting one in the next 2 years	Targets is for 5 years, considering 2016 as a base year and five years have been divided taking 1% for each year. The total of scope 1 and scope 2 metric tonnes CO2 emission per MT of production in 2015-16 was 5.15 tCO2/tonne of metal production. We have also committed to Science based Target initiative and shall set our SBT within next 2 years.

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Decrease	5	No change	0	HZL has set the target to reduce emission intensity by 5% by year 2020 considering 2016 as a base year and five years have been divided taking 1% for each year. It is not deemed to have any impact on scope 3 emission.

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment

CC3.1e

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Int1	20%	0%	There has been decrease in the production by 94221 MT which lead to increase in the intensity by 4.74% (Intensity for 2015-16 was 5.15 tonnes of CO2/ metric tonnes of metal production while in 2016-17 it is 5.39 tonnes of CO2/ metric tonnes of metal production.

CC3.1f

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

CC3.2

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

CC3.2a

Please 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	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Company-wide	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.	Avoided emissions	Other: Replacement of raw material and reduction in fuel consumption use for excavation of Lime stone	0.2%	Less than or equal to 10%	During the process, it emits CO2. This year we had sold approx. 279734 MT of fly ash and 46019 MT of ISF slag to cement industries and due to this approx. 80787 tCO2e emission reduced.
Company-wide	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.	Avoided emissions	Other: Reduction in emission of the Grid	0.93%	Less than or equal to 10%	This year, we have generated 466860 MWh electricity and avoided 382825 tonnes of CO2 emissions.
Company-	We provide zinc to customers directly in alloy	Low carbon	Other: Direct supply of	2.4%	Less than	This year we had sold about

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
wide	form, which reduce their energy consumption and cost required for conversion of zinc in to alloy and improves bath management during galvanizing at customer's premises.	product	CGG zinc alloy reduces energy and cost at consumer's end		or equal to 10%	23205 MT of CGG.

CC3.3

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

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	29	2281
Implementation commenced*	17	4119
Implemented*	58	5266

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Not to be implemented	0	0

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy installation	Stoppage of Adiabatic Cooling Tower 52 after taking Cooling Tower-1 in line	1472	Scope 1 Scope 2 (location-based)	Voluntary	6035060	0	<1 year	<1 year	Cooling tower optimization leading to the energy savings.
Low carbon energy installation	Optimization of Transformer tap setting leading to reduction in the power consumption.	118	Scope 1 Scope 2 (location-based)	Voluntary	1152000	0	<1 year	Ongoing	Electric Arc Furnace (EAF) Transformer is used In Blast Furnace area for maintaining slag temperature and settled down carryover lead in slag. Since plant commissioning EAF transformer was running at No. 4 tapping at which daily power consumption was around 10000 units/day. Reduction in power

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
									consumption from 10,000 units to 9,000 units has been achieved by changing tap setting to No. 5 without compromising process parameters.
Low carbon energy installation	By replacing existing LPG burners for preheating with electrical energy launders will reduce heat as well as carbon emission significantly.	67.44	Scope 1 Scope 2 (location-based)	Voluntary	2070000	10000000	4-10 years	1-2 years	In the effort to conserve LPG, electrically operated top heaters were designed wand used.
Low carbon energy installation	Automation of Compressor Operation.	433	Scope 1 Scope 2 (location-based)	Voluntary	840000	0	<1 year	Ongoing	Compressor operation has been automated in order to save energy and reduce emission
Low carbon energy installation	Increase the throughput of grinding circuit from 160 to 172 TPH	742.1	Scope 1 Scope 2 (location-based)	Voluntary	3258000	7700000	1-3 years	Ongoing	Project aimed to reduce the specific energy consumption of grinding circuit at 172 TPH by optimizing size of input material from 25mm to 20mm feed to grinding circuit. Size of cyclone vortex finder is also optimized from 160mm to 150mm to get consistent mesh of grind at higher throughput.
Low carbon	Power saving by Lead rougher	155	Scope 1 Scope 2	Voluntary	190080	30000	<1 year	3-5 years	Modifying discharge line from 5" to 8" size.

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
energy installation	pumps discharge line modification [6202 A & B]		(location-based)						
Low carbon energy installation	Reducing dual pumps running of Lead cleaner - 1 [6206 A & B]	68.06	Scope 1 Scope 2 (location-based)	Voluntary	142560	10000	<1 year	1-2 years	Increasing pump RPM to 1250 from 1056 RPM by pump pulley replacing.

CC3.3c

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.

Method	Comment
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.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

Further Information

We have declared our commitment to SBTi.

Attachments

https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC3.TargetsandInitiatives/SBTi commitment letter.pdf

Page: CC4. Communication

CC4.1

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	Status	Page/Section reference	Attach the document	Comment
In voluntary communications	Underway - previous year attached	Page 107	https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/CC4.1/HZL-Sustainability-report-2015-16.pdf	We declare the scope 1 and scope 2 emission in our sustainability report.
In mainstream reports (including an integrated report) in accordance with the CDSB Framework	Underway - previous year attached	Page 37 to 44	https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/CC4.1/HZ_Final_Annual_Report-15-16.pdf	Please refer to Sustainability section of our Annual report.

Further Information

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation
Risks driven by changes in physical climate parameters
Risks driven by changes in other climate-related developments

CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Renewable energy regulation	Renewable Power Purchase Obligation for mandatory purchase or produce of renewable energy to the extent of a fixed % of the total energy generation, as per Rajasthan Electricity Regulatory Commission, Jaipur. Currently RPO of 14.25% is applicable for the HZL which is anticipated to get revised to 20.25% by 2022. HZL has planned installation of 100 MW of Solar power for 2017-18.	Increased operational cost	Up to 1 year	Direct	Very likely	Medium	To assure the compliance their RPO obligation by Rajasthan Electricity Regulatory Commission/Central Electricity Regulation Commission, HZL purchased 11.40% of the renewable power in 2015-16 which has incurred INR 42.77 crores. For the next year we would require to have 14.25% power consumed by our plant generated from Renewable sources. Costs incurred for the purpose is increasing on year to year basis.	HZL has complied with the mandatory Renewable Power generation through its 35.4 MW Waste Heat Recovery power plant. Additional capacity installation of 10MW has been planned by 2018. HZL has also planned for installation of 100 MW solar farm for the year 2017-18 been exploring the possibility for the development of the solar farm in its units for mitigating the risk due to RPO obligation. Expansion on installation of Solar power (upto 116MW) has been planned by the end of FY 2017-18	Budget of INR 2000 crores has been sanctioned for the installation of 116 MW of solar power. Out of which 16 MW has been already commissioned (costed INR 80 crores) in the year 2016-17 and the feasibility study for development of 100 MW solar farm in the state of Rajasthan is underway. Installation of the additional capacity is planned to be completed by the end of FY 2017-18.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other regulatory drivers	Government of India has imposed the: - - clean energy cess - - Water cess for use in production - - Electricity duty for other than renewable - - Import duty on coal These additional cess and duties results to increase in the cost of energy production	Increased operational cost	Up to 1 year	Direct	Very likely	High	Risk of increase of cost of electricity production due to the duty on coal and the other charges. HZL has paid INR 96.97 Cr as custom clearance and related statutory approvals for imported coal and INR 8893.5 lacs as the electricity and INR 104.3 lacs towards the water cess.	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 WHR by 10 MW by 2018 along with our target installation of 100 MW of solar firm.	HZL board of directors has approved INR 2000 crore for the development of the solar farm in the state of Rajasthan.
Uncertainty surrounding new regulation	HZL has voluntarily opted to shift from Open cast mining to underground mining due to the plausible government norms in terms of open cast mining.	Inability to do business	>6 years	Direct	More likely than not	High	Business operation can be closed in order non-compliance of this statuary approval in the scenario where the open cast mining is ban by any plausible future regulation. Risk of non-compliance poses serious threat to business. Closure of operations cause loss in the production and the revenue of INR of approx. 40-50 Lakhs/unit/day.	HZL is proactively shifting from open cast mining to underground mining for all our mines. Currently, our mines are of approximately 800 to 900 meter depth. The shift to underground mining will result to significant saving in diesel due to	Budget of INR 1800 crores has been sanctioned for the shifting of the open cast to underground mine.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								replacement of trucks, used for material transfer, with shafts.	

CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in mean (average) precipitation	HZL has majority of its mining operation located in the Rajasthan. 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 densifies	Increased operational cost	>6 years	Direct	Very likely	High	Operations in the mining industry are heavily dependent on water availability. Inadequate supply of water may lead to the closure of operations by causing loss in the production and the revenue of INR of approx. 40-50 Lakhs/day.	In order to manage these risks, we have well established system in place for water conservation that includes business plan for specific water reduction initiatives and identification and implementation of action plan followed by periodic monitoring at operational and company levels. Various multi-pronged strategy is institutionalized within	During FY 2017-18, INR 2.27 crore has been spent on the water harvesting project of SKM mines

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	the problem.							the operations and also various strategic actions / initiatives that are initiated and undertaken in FY 2016-17 includes: • Ground water recharge through Rain water harvesting. • After successful implementation of 20 MLD, HZL is planning to increase the capacity of STP to 60 MLD. STP by 40MLD.The treated wastewater from the STP is utilized in our operations and thereby reducing our freshwater demand. • Water harvesting project of 277575 M3 of capacity has been implemented • In order to enhance the water retention capacity of the areas where operations are located in we have planted more than 1.5 million plants in total. Out of which 99391 have been planted in 2016-17. Mass planting was carried out in a forest area of	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								75Ha (23,500 plants) through Van Suraksha Evam Prabandh Samiti. 800 saplings, with tree guards, were planted along the roadside of the Tidi Zawar mines, and 10,000 saplings were distributed for planting in nearby villages. During FY 2016-17, the specific water consumption was 13.78 cum/MT of MIC, which is has seen a reduction of 5% from the last year.	

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	Potential for reputation risks with Socially Responsible Investors if our	Inability to do business	>6 years	Direct	Likely	High	Loss of business resulting from loss of social license to continue	In order to increase focus on various Sustainability issues, including Climate Change impacts,	Amount of INR 7.46 crores has been invested for undertaking the R & D for effective

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	performance and policy commitments towards climate change issues fall short of expectations in terms of management of effective management of waste & waster						business. Closure of operations cause loss in the production and the revenue of INR of approx. 40-50 Lakhs/unit/day.	company has constituted Sustainability Councils at unit levels to drive various actions towards mitigating Sustainability Risks including the Climate Change issues. Also, we have identified material issues at company levels Various actions through the Sustainability drive addresses the Stakeholder concern and Expectations, thus is expected to increase the Social License to operate and mitigate any reputational risk to the company brand. Waste (Jarosite) generated out of the leaching circuit has been moved away from the landfill due to shift in the production process from Hydrometallurgical process to Pyrometallurgical). This leads to a production of a Fumer slag which can be sold to cement producing companies as input material. The	waste and water management initiatives which includes nanotechnology for water and construction of Paver blocks using Jarosite waste. HZL has incurred an expenditure of INR 2 crores for installation of rooftop solar in Anganwadi centers.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								fumer slag has lime and iron content which reduces the virgin material consumption and avoid energy consumption in the respective mining process. R&D process has also been undertaken to explore the usability of previously generated Jarosite in the construction sector. HZL is planning to add power generation capacity of 10 MW to its existing 34.4 MW waste heat recovery plant by using heat recovery technology towards Fumer Slag generated with the new procedure. HZL has undertaken the Installation of solar roof tops in the Anganwadi centers with total capacity of 500KW	

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Page: CC6. Climate Change Opportunities

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Opportunities driven by changes in regulation
Opportunities driven by changes in physical climate parameters
Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Cap and trade schemes	The introduction of the proposed PAT (Perform, Achieve and Trade Scheme).	Reduced operational costs	3 to 6 years	Direct	More likely than not	Low-medium	We have observed a significant reduction in our energy consumption over the year which has helped us in creating a new benchmark in energy performance in our sector. Thus, any mandatory cap and trade scheme may serve us with revenue generation opportunities owing to our excellent energy performance in comparison to other major players in the sector.	We have implemented performance targets for energy management and climate change, and have taken many steps like energy saving projects to ensure energy security and improve performance. Not only to be in compliance with the revised RPO obligation of requirement of 14.25%, but to be ahead of it, HZL has planned an installation of 100 Mw of solar in addition to its previously installed 16 MW. There is also a plan for	During the year 2016-2017 year we have spent approx. INR 2.28 crores on energy saving projects

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								expansion in WHR capacity by 10 MW.	
Emission reporting obligations	Increased accuracy of emission reporting subscribing to international standards of GRI / CDP.	Investment opportunities	Unknown	Direct	Virtually certain	Low	Voluntary reporting on our GHG emissions and addressing the concerns of the stakeholders on our efforts towards climate change mitigation, has a potential to improve brand perception that can attract financial investment opportunities.	Till date we have published our efforts in Vedanta Sustainability report & we also continue to improve our disclosure on climate change in CDP through coverage of all relevant risks and opportunities.	Approx. INR 35-40 lacs have been incurred in complying with reporting obligations which includes the cost of the assurance and verification in addition to the cost for the man power involved in development of the report
General environmental regulations, including planning	Compliance with Water act, Air act and existing waste management rules.	Wider social benefits	Up to 1 year	Direct	Very likely	High	Wider social acceptance which means increase in market share by ~ 5-10%	Different initiatives on waste reduction and reuse are underway. HZL is exploring ways to use Jerosite waste in the construction of the pavers block. Fumer slag, generating due to process change to avoid	Amount of INR 7.46 crores has been invested for undertaking the R & D for effective waste and water management initiatives which includes nanotechnology for water and construction of Paver blocks using Jarosite

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								Jerosite generation, is used in cement industry.	waste.

CC6.1b

Please describe your inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	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 regional/ zonal impact of climate	Reduced operational costs	3 to 6 years	Direct	Very likely	Low	The positive impact due to climate change would be enhanced availability of water would continue smooth running of our operations and harmonious relationship with stakeholders. HZL is benefitted in terms of the lower amount of water cess, currently of amount INR	HZL Implementation of 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. In order to enhance the water retention capacity of the areas where are operations are	Total amount of Approx. INR. 3.39 crore has been spent on developing Rain water harvesting capacity of 433275 cubic metre. After successful implementation of 20 MLD of Sewage Treatment Plant, HZL is looking at the increase in the capacity of the STP to 60 MLD by addition of 40 MLD by the end of the

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	change on water is required to be assessed. Any increase in precipitation will be a favorable change.						104.3 lacs which is paid against the water consumption.	located in we have planted more than 1.5 million plants in total. Out of which 99391 have been planted in 2016-17. Mass planting was carried out in a forest area of 75Ha (23,500 plants) through Van Suraksha Evam Prabandh Samiti. 800 saplings, with tree guards, were planted along the roadside of the Tidi Zawar mines, and 10,000 saplings were distributed for planting in nearby villages. During FY 2016-17, the specific water consumption was 13.78 cum/MT of MIC, which is has seen a reduction of 5% from the last year.	year 2017-18.
Induced changes in natural resources	Due to changes in natural resources we are expecting rise of energy (electricity and	Reduced operational costs	1 to 3 years	Direct	Very likely	Medium-high	Risk of increase of cost of electricity production due to the duty on coal and the	The Company has always been conscious of the need for conservation of energy and has	INR 2.28 crore amount has been spent on the implementation of energy efficiency related measures.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	fuel) prices which is impact our operations. The opportunity we see here is associated the cost savings associated with optimization of energy use at all production sites.						other charges. HZL has paid INR 96.97 Crores as custom clearance and related statutory approvals for imported coal and INR 8893.5 lacs as the electricity and INR 104.3 lacs towards the water cess.	been sensitive in making progress towards this initiative. Various energy conservation measures have been taken at all the Reduction in the Energy consumption. by 23894 GJ has been achieved in FY 2016-17 and reduction of 30970 GJ is anticipated for the year 2017-2018 in lines with the initiatives planned.	

CC6.1c

Please describe your inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	Improving of company perception with key	Investment opportunities	3 to 6 years	Direct	Virtually certain	Low	We are yet to determine the financial implications of	Our efforts in improving water, energy efficiency, minimizing jarosite	Budget of INR 2000 crores has been sanctioned for the installation of 116

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	stakeholders, especially those concerned with energy and water intensive processes associated with mining sector						revenue enhancement for our business as it is difficult to quantify stakeholder perceptions. We expect a market share increase of 5% - 10% due to wider acceptance by the stakeholder	waste generation in zinc smelting and enhancing energy security through renewable energy generation help us in managing future risks from climate change. It also allows us to enhance our reputation and perception of our businesses by our key stakeholders. HZL has undertaken the Installation of solar roof tops in the Anganwadi centers with total capacity of 500KW. Further to this 16 MW of solar has been installed on Jarosite landfill site.	MW of solar power. Out of which 16 MW has been already commissioned (costed INR 5 crores/MW) in the year 2016-17 and the feasibility study for development of 100 MW solar farm in the state of Rajasthan is underway HZL has incurred an expenditure of INR 2 crores for installation of rooftop solar in Anganwadi centers.

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Wed 01 Apr 2015 - Thu 31 Mar 2016	4470196
Scope 2 (location-based)	Wed 01 Apr 2015 - Thu 31 Mar 2016	218265
Scope 2 (market-based)	Wed 01 Apr 2015 - Thu 31 Mar 2016	0

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Not applicable.

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Fifth Assessment Report (AR5 - 100 year)
CH4	IPCC Fifth Assessment Report (AR5 - 100 year)
N2O	IPCC Fifth Assessment Report (AR5 - 100 year)
HFCs	IPCC Fifth Assessment Report (AR5 - 100 year)
PFCs	IPCC Fifth Assessment Report (AR5 - 100 year)
SF6	IPCC Fifth Assessment Report (AR5 - 100 year)

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Sub bituminous coal	96.1	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Diesel/Gas oil	74.1	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Residual fuel oil	77.4	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Liquefied petroleum gas (LPG)	63.1	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Petroleum coke	97.5	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Propane	64.2	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories

Fuel/Material/Energy	Emission Factor	Unit	Reference
Other: Low Sulphur Heavy Stock (LSHS)	74.1	Other: Metric tonnes of CO2 per TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Electricity	0.82	metric tonnes CO2 per MWh	CO2 Baseline Database for Indian Power Sector, version 11, April 2016

Further Information

Page: CC8. Emissions Data - (1 Apr 2016 - 31 Mar 2017)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

4288645

CC8.3

Please describe your approach to reporting Scope 2 emissions

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure	We have no operations where we are able to access electricity supplier emissions factors or residual emissions factors and are unable to report a Scope 2, market-based figure	Scope 2 is calculated location based and market-based is not applicable

CC8.3a

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
114246	0	Scope 2 is calculated location based and market-based is not applicable

CC8.4

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

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 2% but less than or equal to 5%	Data Management Other: Defaults factors.	The default values of calorific values and emission factors of the fossil fuels have been sourced from IPCC 2006 guidelines on national GHG inventories for all locations around the country. IPCC 2006 guidelines on national GHG inventories provides the upper value and lower value of the data at 95% confidence level. The lower limit value of the 95 percent confidence interval is 0.95 times the point estimate and the upper limit value of the 95 percent confidence interval is 1.05 times this value. Thus, the default value, as used by HZL, is considered to be on 95% confidence level.
Scope 2 (location-based)	More than 2% but less than or equal to 5%	Data Management Other: Default grid emission factor	The main source of scope 2 emission is electricity consumption, sourced from NEWNE grid. The grid emission factor is sourced from CO2 database by CEA, Version11. CEA's CO2 database is calculated as per ACM0002 and 'Tool to calculate the emission factor for an electricity stream – Version 4' published by UNFCCC. The database uses IPCC default emission factors for primary energy sources. As per IPCC 2006, the lower limit value of the 95 percent confidence interval is 0.95 times the point estimate and the upper limit value of the 95 percent confidence interval is 1.05 times this value. Thus, the default value, as used calculating the gird emission factor by CEA, is considered to be on 95% confidence level.
Scope 2 (market-based)			Not applicable.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/CC8.6a/GHG Assurance Statement to Hindustan Zinc Limited.pdf	1 to 3	ISAE 3410	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/CC8.7a/GHG Assurance Statement to Hindustan Zinc Limited.pdf	1 to 3	ISAE 3410	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Other: Production data	Production data has been verified in addition to the emission figures reported

Additional data points verified	Comment
	under Scope 1 & Scope 2.

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Apr 2016 - 31 Mar 2017)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

No

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By facility

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Chanderiya Lead Zinc Smelter with CPP	2059134	24.83	74.82
Dariba Smelting Complex with CPP	1316079	24.95	74.13
Zinc Smelter Debari	66039	24.60	73.83
Rampura Agucha Mine (Open cast mine)	147721	25.83	74.74
Rajpura Dariba Mine	3230	24.95	74.13
Sindesar Khurd Mine (Operation)	18223	25.00	74.16
Zawar Mine Complex with CPP	664735	24.35	73.71
Haridwar Zinc Plant	0	29.96	78.06
Pantnagar Metal Plant	6236	29.04	79.40
Maton Mines	0	24.55	73.78
Kayad Mines	7249	26.53	74.69
Head Office, Udaipur	0	24.57	73.69
Central Research Development Laboratory	0	24.95	74.13

CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)

Further Information

Page: CC10. Scope 2 Emissions Breakdown - (1 Apr 2016 - 31 Mar 2017)

CC10.1

Do you have Scope 2 emissions sources in more than one country?

No

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By facility

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Chanderiya Lead Zinc Smelter with CPP	19829	0
Dariba Smelting Complex with CPP	5877	0
Zinc Smelter Debari	25999	0
Rampura Agucha Mine (Open cast mine)	13583	0
Zawar Mine Complex with CPP	2520	0
Haridwar Zinc Plant	0	0
Pantnagar Metal Plant	37570	0
Maton mines	0	0
Kayad mines	8079	0

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Central research and development lab	204	0
Head Office	585	0
Rajpura Dariba Mine	0	0
Sindesar Khurd Mine (Operation)	0	0

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)

Further Information

Page: CC11. Energy

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

More than 15% but less than or equal to 20%

CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Heat	0
Steam	0
Cooling	0

CC11.3

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

11522546

CC11.3a

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Residual fuel oil	151602
Liquefied petroleum gas (LPG)	5543
Propane	70949
Diesel/Gas oil	762742
Bituminous coal	10524899
Other: Pyrolysis Oil	6811
Other: Low Sulphur Heavy Stock (LSHS)	0

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
No purchases or generation of low carbon electricity, heat, steam or cooling accounted with a low carbon emissions factor	0	0	Scope 2 emission calculated on location based approach.

CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
3429247	690805	3247685	142210	142341	There has been a decrease in production in the year 2016-17 from year 2015-16 by 10.34% as well as various initiatives on energy saving. Due this the electricity consumption in year 2016-17 has reduced by 7.69% from 2015-16.

Further Information

Page: CC12. Emissions Performance

CC12.1

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

Decreased

CC12.1a

Please 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

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities	4.06	Decrease	Scope 1 emission have reduced. The total fuel consumption in year 2016-17 was 41.48 million GJ which 4.26% lower than 43.33 million GJ in 2015-16. Primary reasons for decrease in the fuel consumption are because of the reduction in the total production and implementation of energy conservation measures. During 2016-17, we have saved approximately 23119 Gj of energy through our various energy efficiency initiatives.
Divestment	0	No change	No divestment has happened.
Acquisitions	0	No change	No acquisition is applicable during the reporting period.
Mergers	0	No change	No merger is applicable.
Change in output	6.09	Decrease	The total production in 2016-17 has reduced by 10.34% from 2015-16. In 2015-16, the total production was 910973 whereas in 2015-16, the total production has reduced to 816762 tonnes. This led to decrease in the gross emissions (Scope 1 and scope 2 combined) from 4688461 in 2015-16 to 4402856 in 2016-17 i.e. by 6.09%.
Change in methodology	0	No change	No change in the methodology of calculation is applicable
Change in boundary	0	No change	No change in the reporting boundary is applicable
Change in physical operating conditions	7.8	Decrease	The shift from open cast mining operations to the underground mining operations has led to the significant saving in terms of the HSD consumption. This has resulted to approximate carbon emission reduction of 22330 tCO2 or 301350 GJ in 2016-17, which is 7.8% of the gross scope 1 and scope 2 emission reduction

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
			in the year 2016-17.
Unidentified	0	No change	Not applicable
Other	0	No change	Not applicable

CC12.1b

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.000023422	metric tonnes CO2e	187979900000	Location-based	22.45	Decrease	CO2 emission per revenue has decreased by 22.45% due to the various measures taken up by HZL for reducing energy consumption and thereby reduction in relative GHG emission. The total revenue in 2016-17 is INR 187979.9 million which is

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
						higher than the total revenue of HZL in 2015-16 of INR 154631.3 million. CO2 emission per revenue in 2015-16 was 0.000030203 tCO2/INR

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
5.39	metric tonnes CO2e	unit of production	816762	Location-based	4.74	Increase	The total production in 2016-17 has reduced by 10.34% from 2015-16. In 2015-16, the total production was 910973 whereas in 2016-17, the total production has reduced to 816762 tonnes. This had led to the increase in intensity by 4.74%from 5.14 tCO2e/unit production in 2015-16 to 5.39 tCO2e/unit production in 2016-17.

Further Information

Page: CC13. Emissions Trading

CC13.1

Do you participate in any emissions trading schemes?

No, but we anticipate doing so in the next 2 years

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

We are currently participating in the UNFCCC Clean development mechanism scheme. In future, we would be participating in Renewable Energy Certificate scheme and PAT scheme. We will increase our renewable energy generation portfolio also to reduce the RPO obligation on the company and generate the RECs.

HZL has complied with the mandatory Renewable Power generation through its 35.9 MW Waste Heat Recovery plant. Additional capacity installation of 10MW for 2017-18 has been planned. HZL has also been exploring the possibility for the development of the solar farm in its units for mitigating the risk due to RPO obligation.

Expansion on installation of Solar power (upto 116MW) has been planned by the end of FY 2017-18. Budget of INR 2000 crores has been sanctioned for the installation of 116 MW of solar power. Out of which 16 MW has been already commissioned (costed INR 80 crores) in the year 2016-17 and the feasibility study for development of 100 MW solar farm in the state of Rajasthan is underway. Installation of the additional capacity is planned to be completed by the end of FY 2017-18.

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
Credit origination	Wind	273 .5 MW Wind power project by HZL.	CDM (Clean Development Mechanism)	389015	389015	Not relevant	Other: Credit selling.
Credit origination	Energy efficiency: own generation	9.4 MW Steam Turbine Generator project by HZL	CDM (Clean Development Mechanism)	18848	18848	Not relevant	Other: Credit selling.
Credit origination	Energy efficiency: own generation	Electricity Generation from Waste Heat Recovery boilers at different locations of HZL	Other: Verified by Energy Auditor on yearly basis	96061	96061	Not relevant	Voluntary Offsetting
Credit origination	Energy efficiency: own generation	Utilization of Low Calorific Value waste gas for energy generation project at Chanderiya, Rajasthan	CDM (Clean Development Mechanism)	9997	9997	Not relevant	Other: Credit selling
Credit origination	Solar	200 kW Solar Roof Top Project at HZL	Not yet verified	48	48	Not relevant	Voluntary Offsetting
Credit origination	Solar	16 MW solar project at Dariba and Debari	Not yet verified	1431	1431	Not relevant	Voluntary Offsetting

Further Information

Page: CC14. Scope 3 Emissions

CC14.1

Please account for your organization’s Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	158655.17	IPCC guidelines and GHG protocol have been used for the calculation. Quantity of cement, soda ash and lime has been factored with relevant emission factor.	0.00%	Emission calculation has been performed as per the 2006 IPCC guidelines. The 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	Not relevant, explanation provided	0	Not applicable	0.00%	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	Relevant, calculated	395931.54	This includes the emission due to coal and inter-organization transportation of materials.	24.00%	Emission from production and transportation of coal is included in this category. Emission

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
(not included in Scope 1 or 2)			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..		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	Relevant, calculated	1539.96	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.	100.00%	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	Relevant,	442272.68	IPCC guideline on emission calculation from	0.00%	IPCC guideline and default values have been

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
in operations	calculated		waste has been used for landfill and reuse/recycle of zinc dust. DEFRA guideline has been used for metal (silver) and tyre recycle		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	Relevant, calculated	803.31	Passenger kilometer travelled has been multiplied with the relevant emission factor to calculate the total emission due to business travel by air	100.00%	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	Relevant, calculated	2296.25	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.	100.00%	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	Relevant,	36.15	Total electricity consumption has been	100.00%	We have 4 marketing offices and 1 liasioning

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
assets	calculated		multiplied with India grid emission factor.		offices. Electricity consumptions at these offices have been considered for the reporting year. No diesel consumption is applicable. 3 of the offices are shared with other companies of Vedanta group and thus, apportioning of CO2 emission have been performed for these 3 offices.
Downstream transportation and distribution	Relevant, not yet calculated	16735.4	Total distance travelled multiplied with respective vehicle emission factor.	100.00%	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	Not relevant, explanation provided	0	Not applicable	0.00%	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	Not relevant, explanation provided	0	Not applicable	0.00%	Since our product is metal, zinc, lead and silver, the usage of metal does not have any significant CO2 emission.
End of life	Relevant,	1758638.86	Quantity of each type of product sold during	0.00%	Since all our products, namely, zinc, lead and

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
treatment of sold products	calculated		the reporting year has been multiplied with respective emission factor for recycling.		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	Not relevant, explanation provided	0	Not applicable	0.00%	HZL does not have any asset given on lease and thus, no emission from downstream leased assets is applicable to us.
Franchises	Not relevant, explanation provided	0	Not applicable	0.00%	HZL does not have franchises and thus, no emission from this is applicable to us.
Investments	Not relevant, explanation provided	0	Not applicable	0.00%	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)	Not relevant, explanation provided	0	Not applicable	0.00%	Our upstream emissions are from transportation and distribution and upstream leased assets which are been covered under the said scope 3 parameters.
Other (downstream)	Not relevant, explanation provided	0	Not applicable	0.00%	Our downstream emissions are from transportation and distribution and downstream leased assets which are been covered under the said scope 3 parameters.

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance process in place

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/70/8370/Climate Change 2017/Shared Documents/Attachments/CC14.2a/GHG Assurance Statement to Hindustan Zinc Limited.pdf	1 to 3	ISAE 3410	100

CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Business travel	Change in boundary	586.7	Increase	This year, we have included all the sites and head office (HO) within our emission from business travel reporting boundary. Thus, the overall emission from business travel has increased.
Employee commuting	Change in methodology	88.37	Decrease	The process of calculation of emission from employee commute has been revised as per the GHG protocol. The total diesel consumption has been calculated based on the mileage of the vehicle and total distance travelled by the HZL dedicated bus. The revising has removed the instances of double counting of distance travelled and thus, the emission has reduced.

CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

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

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

At HZL, we believe Suppliers and vendors are a key part of the excellence journey by ensuring Zero defects, Zero waste by active contribution in joint innovations and sustainability efforts. We have a Procurement Policy, Supplier and Contractor Sustainability Management Policy and Supplier Code of Conduct that meticulously govern our relationship with our partners.
We work with our suppliers and vendors to assess and improve on their sustainability in their operations while minimizing their impact to environment, emissions, energy usage, generation of waste and water consumption. Our Tier 1 suppliers and A class vendors are of utmost importance to us. Our supplier and vendor prioritization is done based on revenue percentage and risk associated. We engage with our suppliers and vendors through three main platforms:
a) Pre-qualification assessment:- Pre-qualification assessment is the first and foremost process of engaging with our value chain partners. Screening is conducted to evaluate suppliers and vendors based on their performance on social and environmental parameters. Vendors/service providers and significant third-party manufacturing facilities are encouraged to follow procedures detailed under ISO 14001 and HZL Environment Health and Safety (EHS) Guidelines.
b) On-site visit: Site visits are organized for our critical (A class) vendors and critical Tier 1 suppliers to assure that there is no violation of environmental and social

norms. Engagement process defined within the organization makes it mandatory for commercial heads of the procurement department and even the CEO to meet few of the suppliers.
c) Suppliers and vendors meet: We conduct regular suppliers and vendors meet to exchange ideas and concerns. In the FY 2016-17, 'Strategic Supplier Day'- Vendor and supplier meet has been organized for top 50 (Indian and global) suppliers. During the meeting Vedanta's commitment to sustainable supply chain and supplier's responsibility to ensure zero non-compliance was emphasized. HZL shared its growth plans and set the expectations to suppliers on Productivity, Quality, Reliability and Sustainability. HZL took the opportunity to showcase its key CSR initiatives i.e.: Nandghar & Khushi. Top performing suppliers were also rewarded across the Operation Excellence, Supply Chain Alignment, Innovation Project and Debut Vendor category.

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
Active engagement	90	0.2%	A total of 40 suppliers and vendors are engaged through site visits conducted for assessment. This helps suppliers by identifying the environmental gaps in their operations and facilitates improvement. HZL held its Strategic supplier meet in Udaipur on 1 Feb '17. About 50 top suppliers participated from across India & the World Supplier and vendor meet which happens annually. Direct interaction with the vendors helped them understand the future plans and targets of HZL which helped them in aligning themselves to partner and deliver on planned growth in terms of sustainability, productivity, Innovation and automation. On being recognized and rewarded for their efforts vendors felt motivated and are striving for the continuous improvement.

CC14.4c

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Sunil Duggal	Chief Executive Officer	Chief Executive Officer (CEO)

Further Information

CDP 2017 Climate Change 2017 Information Request