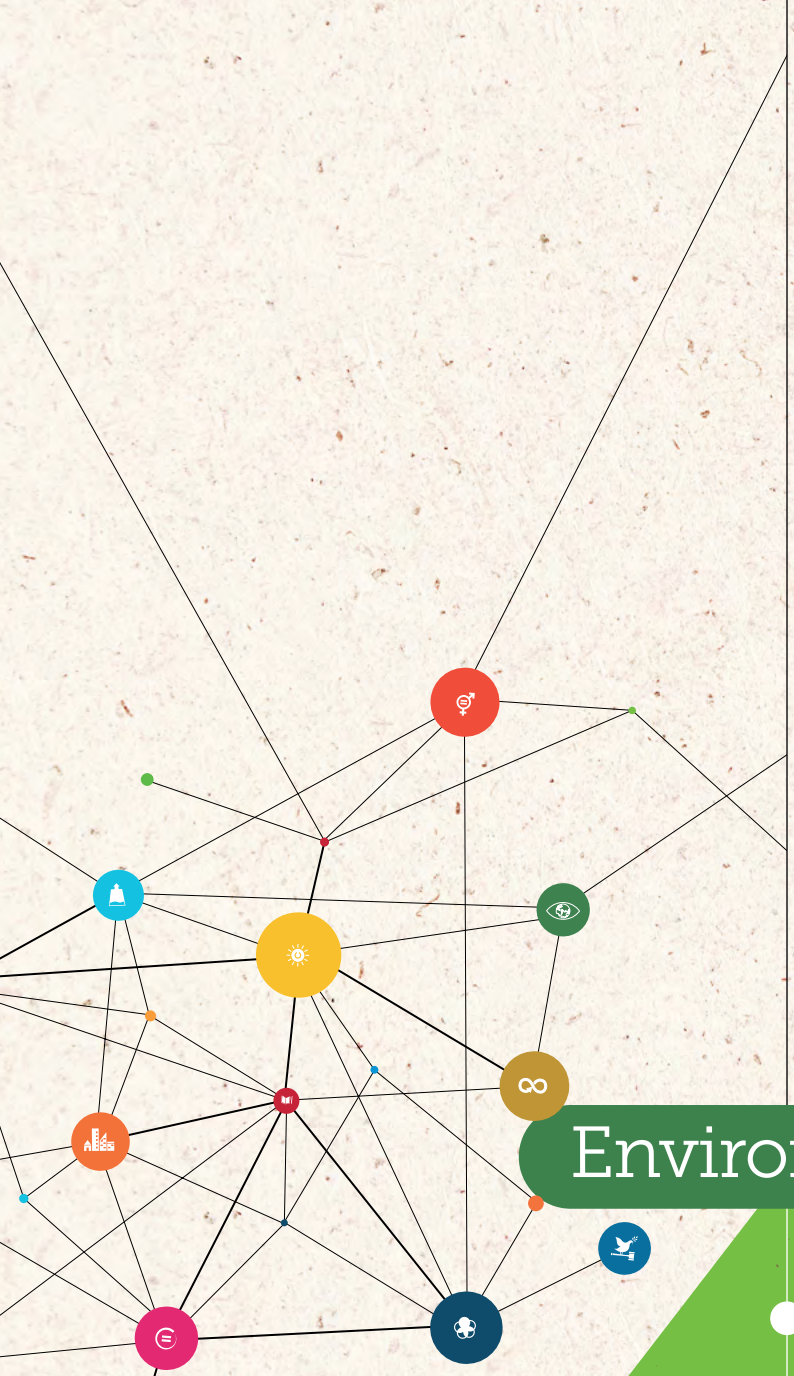


Environment

RESPONSIBLY MANAGING OUR ENVIRONMENTAL IMPACT

Vedanta has a long standing zero waste and zero discharge vision. Through our environmental initiatives we aim to do no harm and achieve zero net impact on our environment by 2025. We fully recognise the environmental footprint of our operations and have put in place systems, procedures and technologies to minimize the adverse effects.

Total % waste recycled

94% High volume low toxicity waste utilised

Total avoided GHG emissions

~14 MMT Co_2

Total % water recycled

30.71%

Total % fly ash utilization

110%

Carbon and Energy

Vedanta is committed towards taking carbon reduction targets in alignment with the Nationally Determined Contributions (NDC) of the Government of India. We recognise climate change science as set out by the United Nations Intergovernmental Panel on Climate Change. We believe that the global response to climate change should pursue twin objectives: both limiting temperatures in line with the goals of the Paris Agreement; and supporting the United Nations Sustainable Development Goals, which include universal access to affordable and clean energy. In keeping with this goal, the group has introduced measures to decrease its GHG emissions. In FY21, the company has revised its GHG emissions intensity targets, which is to reduce our GHG emissions intensity by 20% by FY2025 from a 2012 baseline. Our vision is to produce some of the most low-impact metals and minerals on the planet in keeping with our overall vision of Zero Harm, Zero Waste, Zero Discharge. Addressing our GHG emissions is going to be a critical part of this vision

Governance structure of Carbon and energy management

Tech-led innovations have not just propelled operational efficiency but played a vital role in improving carbon footprints. Our Energy and Carbon Management Policy and Performance Standard commit our operations to adopt and maintain global best practices in carbon and energy management and minimise greenhouse gas (GHG) emissions. In FY2020, we revised our Energy & Carbon policy to include a commitment to substantially decarbonize the business by 2050.

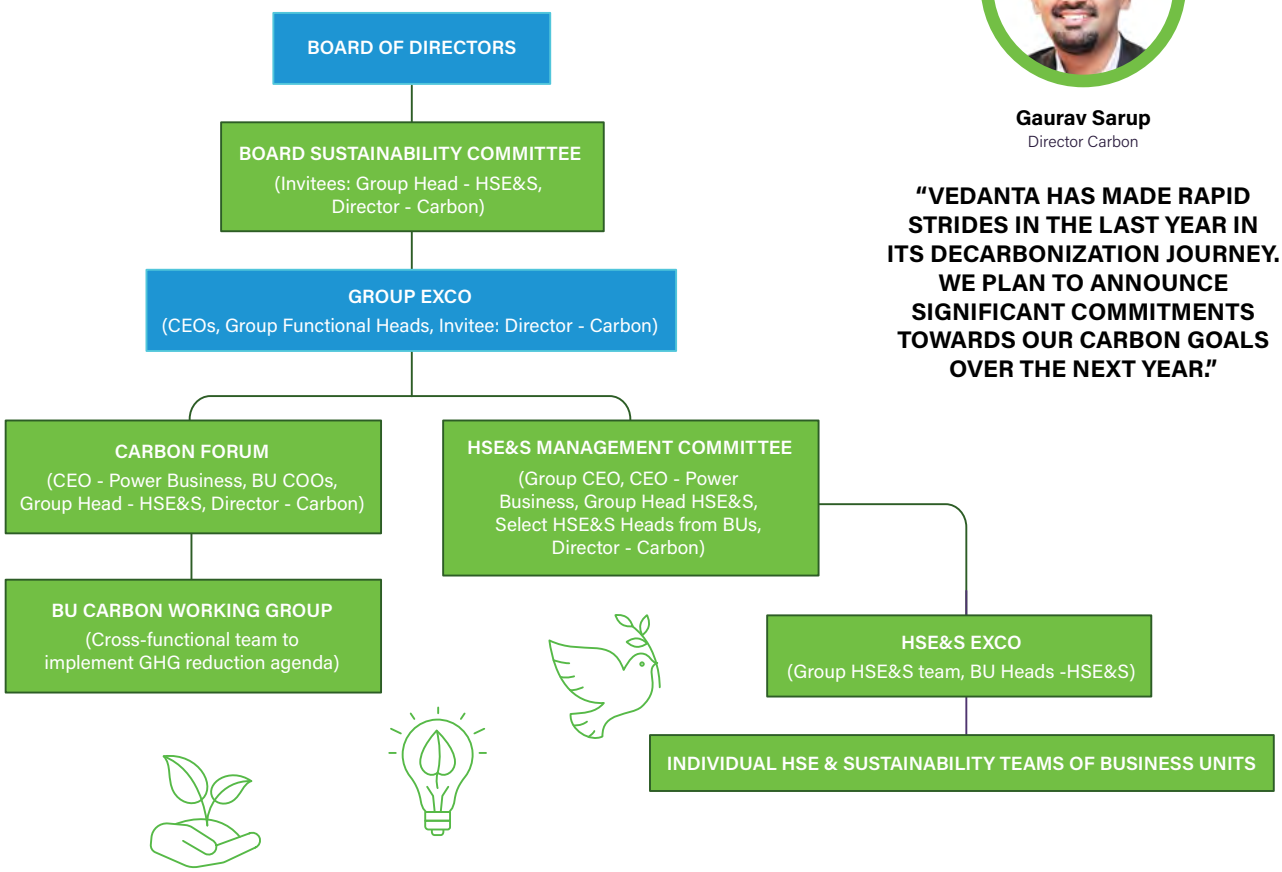
Vedanta recognizes the risk and opportunities of climate change

Carbon Forum at Vedanta: #Race2Zero

We also reconstituted and revised the Terms of Reference for the 'Carbon Forum' – a body of Chief Operating Officers (COOs) of our businesses chaired by the CEO of one of our businesses. The Carbon Forum has been tasked with developing and overseeing the implementation of Vedanta's carbon mitigation and adaptation approach. Apart from this Carbon Forum is also responsible for guiding individual businesses in setting their internal targets, draft and amend policies and standards related to energy and carbon management and provide oversight and advice on the issue, serving as a subject-matter expert to the Board and the ExCo. Included in the forum's work are discussions related to approving Vedanta's carbon management strategy, long-term greenhouse gas (GHG) emissions intensity reduction targets, alignment with investor requirements, emerging regulatory risks and carbon pricing. The carbon forum also informs the Group ExCo, risk management committee, and the Board Sustainability Committee on the best way to manage our carbon footprint.

Our executive compensation is linked to VSAP performance, which means management of our carbon footprint is also indirectly included in the compensation structure. We agree with the recommendations made by the Task Force on Climate-related Financial Disclosures (TCFD) in line with the same we released our 1st TCFD report in the FY 21. With the formation of the Carbon Forum, we have begun the work to align our carbon management and disclosure practices to those recommended by the framework. Vedanta Group Appointed Director - Carbon to oversee Group decarbonization strategy and released a group-wide Carbon Vision.

CARBON MANAGEMENT IS EMBEDDED ACROSS ALL LEVELS OF THE ORGANIZATION



Gaurav Sarup
Director Carbon

"VEDANTA HAS MADE RAPID STRIDES IN THE LAST YEAR IN ITS DECARBONIZATION JOURNEY. WE PLAN TO ANNOUNCE SIGNIFICANT COMMITMENTS TOWARDS OUR CARBON GOALS OVER THE NEXT YEAR."

Carbon and Energy

...Governance structure of Carbon and energy management

At the group level, the climate related matters are managed by Group HSE & Sustainability team. The role of the Group HSE & Sustainability is to ensure that:

- **Group-level targets on carbon management integrated into corporate planning and target setting.**
- **The company aligns its carbon management strategy to emerging global best practices such as the framework suggested by TCFD, setting of carbon prices and scenario planning**

Vedanta also provides incentives for the management of climate-related issues, including the attainment of targets. Each year, all of our business units and site locations are audited to evaluate their maturity levels against the Vedanta Sustainability Framework (VSF), which is a set of policies, standards, and guidance notes related to sustainability management practices. Energy and carbon management is one of the areas that is covered during the audit evaluation. The performance in the audit is part of the performance bonus given to executives and they are thus incentivized to manage proactively on carbon management.

Strengthening biodiversity through R&D

Climate related risks and opportunities

Risk management is critical to overall profitability, competitive market positioning and long-term financial viability, to meet the commitments to our clients and other stakeholders. Vedanta constantly innovates and develops technologies to mitigate risks and challenges involved with providing reliable products and services. Risk Register is monitored by Risk Management Committee on a quarterly basis which is a structured, consistent and continuous process for identification, assessment, monitoring and management of risks. The significant business processes/risks are monitored and controlled through various Key Performance Indicators (KPIs). A brief description of our Carbon related risks is given below.

POLICY AND LEGAL RISKS

Compliance with applicable laws and regulations, is both our responsibility and commitment to environmental stewardship. Our teams recognize that a material breach of any law or regulation could result in costly liabilities. We adhere to the highest standards of corporate governance practices which ensure compliance to all applicable laws and regulations. Our approach of prevention, accountability, engagement and continuous improvement allows us to stay on top of the legal and statutory requirements. Regulatory changes for limiting or reducing GHG emissions could potentially impact the company's operations with increased costs for fossil fuels, levies for emissions in excess of certain permitted levels, and increased administrative costs for monitoring and reporting. With the present scenario of Vedanta's almost 90% energy being sourced from captive coal-based thermal powerplants, any regulation to reduce our GHG or other air emissions can significantly impact

...Climate related risks and opportunities

our operating expenses due to stringent penalties for non-compliance or in the form of increased capital expenditures.

Our Compliance Management System aims to ensure adherence to legal regulations and the Company's internal guidelines.

REPUTATIONAL RISK

In the current business scenario climate change has become a risk of concern for all our investors. All financial institutes across the globe are looking to decarbonise their portfolios to minimize climate related risks. A decline in the company's ESG risk rating – on account of carbon emissions will impact the ability of organization to access the finance due to inability for meeting investor expectations and can result in a loss of reputation. Vedanta is consistently reviewing investor expectations and the required response at various forums such as Group ExCo, Carbon Forum, HSE ExCo and Risk Committee. These are incorporated in our governance and business strategy to achieve success in our overall business performance.

PHYSICAL RISK

Physical impact of extreme weather events may cause temporary disruption to our operations as well as may affect the value of our assets. Depletion of natural resources might impact the cost of acquisition of resources such as water and energy. Vedanta anticipate physical risks related to extreme weather events and changes in the availability of water due to climate change. With changes in the mean precipitation our operations are at risk in water stressed area, as the availability of water could become a challenge. A water risk assessment is carried out to evaluate the risks at 25 of our locations to understand and address these risks. Operations are always at risk due to erratic weather conditions of famines and flood. Moreover, increased intensity and frequency of cyclones poses risk on offshore oil & gas assets at the coastal regions.

Carbon management strategy is aligned to global best practices

Carbon and Energy

...Climate related risks and opportunities


Lanjigarh Alumina Refinery

OPPORTUNITIES

With respect to the opportunities, we are expecting to benefit from the increasing demand of metals like copper, aluminium, zinc in the growing economies. To utilise resource at hand we explored various opportunities to improve our recycling capabilities, backed by significant investment. Along with aluminium, copper, iron, lead and zinc production also forms a major part of our operations and we have taken measures for recycling the residues.

Vedanta has initiated climate scenario planning and stress-testing of the company's projects based on internal carbon prices. We will be inventorying our Scope 3 emissions and where relevant - develop a roadmap to reduce them. We plan to engage long-term, essential Tier-1 suppliers to submit their GHG reduction strategies by 2025. They also have to align their strategies with Vedanta's decarbonization strategy by 2030. While our last set of targets were aligned to India's NDCs, we are deliberating if Science Based Targets (SBT) should be adopted for the entire group, or if we should continue to be aligned to India's emissions reduction goals.

We will be strictly following our carbon management philosophy and we will be initiating carbon due diligence activities at the time of the acquisition process and appropriate budgets will be allocated to ensure that the transition is completed in the allocated time-period. All of our projects are supposed to have a carbon price attached to them by 2025. All of the BUs will be building a roadmap & commit financial resources for infrastructure upgrade to address climate impacts. We are also working with Innovation cells at all BUs to include GHG reduction as a key area of activity.

GHG EMISSIONS PERFORMANCE

YEAR	GHG emissions (million TCO_2e)		TOTAL
FY2021	58.93	1.31	60.24
FY2020	57.48	1.86	59.34
FY2019	55.12	3.51	58.63

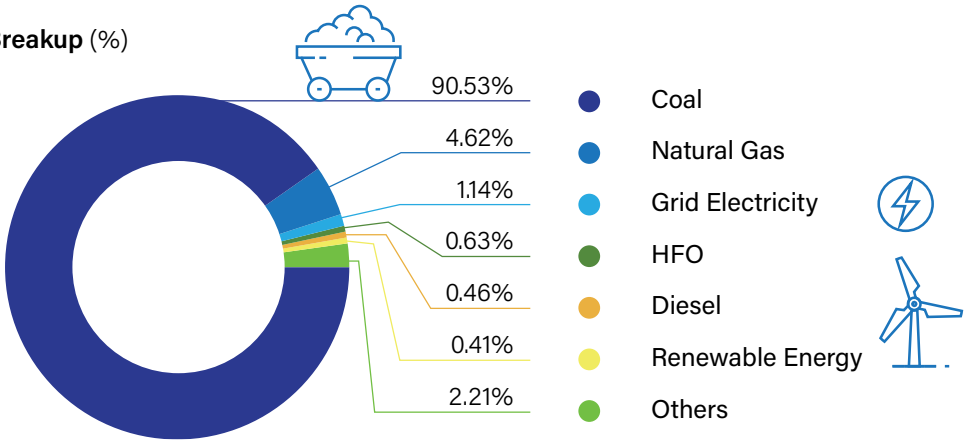
Scope 1 (direct) Scope 2 (indirect)

Responsible energy management

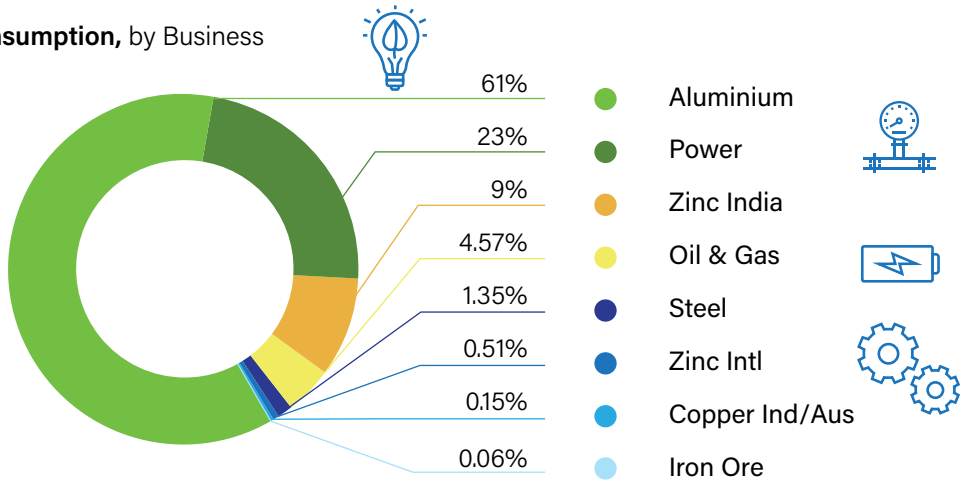
Energy conservation is central to our operational strategies. We understand the exhaustive nature of non-renewable resources and constantly strive to meet our needs through renewable sources throughout our operations. We stay committed with our efforts towards reduction in overall energy consumption, improvement through energy efficiency and integration of clean energy sources. We have adopted a well-formulated strategy to meet our goals of energy management. At our business units, we have well-structured energy and carbon management plans in place.

Vedanta meets nearly 90% of its energy requirement from its captive power plants (CPP). Coal and natural gas are the dominant fuels for our CPPs and the company makes significant effort to ensure that we optimize their performance efficiency.

Fuel Type Breakup (%)



Energy Consumption, by Business



Carbon and Energy

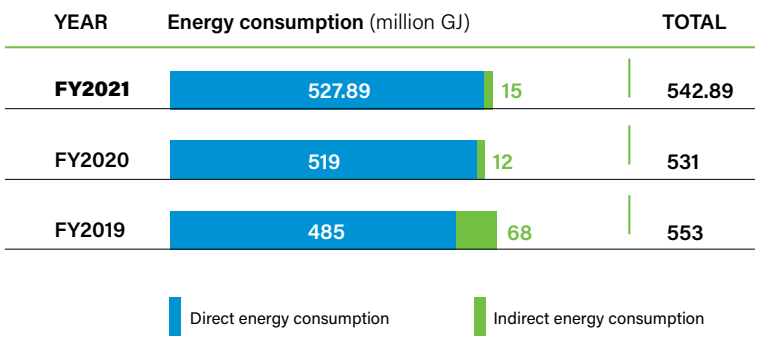
...Responsible energy management

We have adopted a well-formulated strategy to meet our goals of energy management. To reach these goals, we set well-defined targets for energy efficiency, which is followed by regular performance reviews by the top management.

As part of our sustainable mining programme various initiatives are taken to reduce the energy consumption. In FY 2021, the organization undertook energy conservation projects. Energy efficiency holds a significant place in our energy management program. We are constantly taking efforts to enhance our energy efficiency by exploring various methods to integrate in our operational activities.

BUSINESS UNIT	TOP 10 ENERGY/GHG SAVINGS INITIATIVES	ENERGY SAVINGS (GJ)
Jharsuguda	U#3 condenser cleaning & air ingress rectification	315,427
BALCO	120 (PL 1 : 45 pots & PL 2 :75 pots,) 100% graphitized pots installation & Normalization	284,794
HINDUSTAN ZINC LIMITED	Turbine revamping	252,661
BALCO	One CW Pump Operation	218,608
Jharsuguda	Addition of pots with 100% graphitized cathode	148,268
Jharsuguda	U#3 APH, Duct, ESP & FF leakage arresting work to be done to reduce ID fan loading	110,501
TSPL	Final feed water tem & HP heater performance	108,577
BALCO	One CW Pump Operation	88,553
Jharsuguda	Reduction of cooling hoses by process optimization	52,154
Jharsuguda	"Potline Voltage reduction 1. Bolt drop reduction 2. Operational reduction"	36,631
Total		**1,616,173**

ENERGY CONSUMPTION



CASE STUDY

Solar energy deployment at our operations

Hindustan Zinc commissioned 12MW solar plant in Debari, 4MW solar plant in Dariba and 22 MW solar plant in Agucha. All the solar power projects have been installed on waste land/ dump yard at Dariba mine, Debari Zinc smelter and Agucha mine, reducing our land use. In addition, a 1 MW solar power project has been commissioned at Kayad mine, under the net-metering scheme. Rooftop solar projects were also completed taking the total to 40.6MW for captive use.

SOLAR PROJECTS	GEN (KWHRS) FY 21-22
Debari Roof top	94,806
DSC roof top	235,124
SK mine roof top	151,276
CLZD roof top	1,016,807
Zawar roof top	244,276
RAM roof top solar	87,537
Udaipur Head Office	119,480
Total Roof top	1,949,307
Dariba 04 MW	7,622,975
Debari 12 MW	22,780,319
Agucha 22 MW	49,882,938
Kayad 1 MW	1,196,993
Jharsuguda	Mill Loading improvement

SDG 7
Affordable and Clean Energy

SDG 7.2
Increase global percentage of renewable energy

Water and Tailings Dam Management

We have a long standing zero waste and zero discharge vision. We understand the role we playas an organisation in ensuring that we do not have any negative impact on the environment.

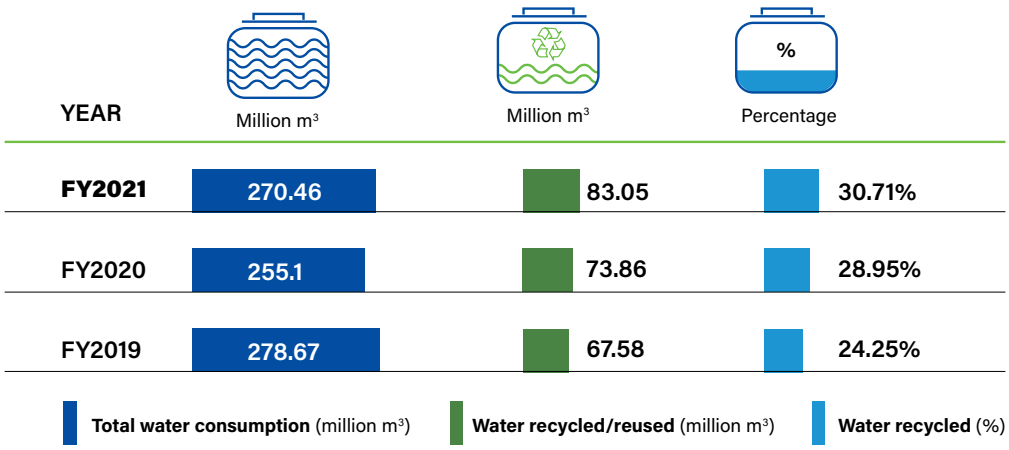
Water management: #Race2Zero

Water is a key resource, which plays a pivotal role in all the metal and mining companies. We often operate in water stressed areas and hence, water security is one our key focus. We have a comprehensive water management strategy in our operations to ensure that fair allocation of water is maintained for key municipal, agricultural and industrial users in the regions where we operate in.

Our group water management standards drive the interventions for improved water management practices across our business operations. We have in place water screening assessment to identify sensitive resources for water bodies, aquatic life, and any known or suspected resource constraints in proximity of our operations. We have made these assessments mandatory by all our business units.

These policies, standards, and SOPs ensure that our operations have built-in measures to evade, curtail, or where required, compensate its effect on water in their respective regions.

WATER PERFORMANCE DASHBOARD



Power plant TSPL

Water and Tailings Dam Management

Vedanta Aluminium-Jharsuguda

We have many positive water initiatives across our business units like Jharsuguda plant has improved its specific water consumption by nearly 90%, this significant improvement is due to the consistent focus on optimal usage of all the natural resource in the region, responsibly. This plant has been recognized as one of the most water-efficient operated business unit in our group.

A robust planning was undertaken to ensure we get the desired results.

- **Waste water elimination throughout the process**
- **100% recycling of effluent water at sites**
- **Strict adherence to 3R principle (Reduce, Reuse and Recycle)**
- **Awareness campaigns around efficient water utilization, was organised by utility team across the shop floor**
- **Promoting water leakage reporting, to undertake preventive steps**
- **Increasing number of water audits with strict compliance closure to findings**

We also observed additional benefits from improved water management including the decline in energy and chemical consumption due to lower operating hours of the pumps, which were no longer processing 'wasted' water for an extended duration. The decreased energy consumption has also lowered the carbon footprint of the operations.

CASE STUDY

Water positive at Hindustan Zinc Limited

As one of the leaders in the Mining industry our group company Hindustan Zinc - has been certified a 2.41 times Water Positive Company based on assurance carried out by DNV GL, a globally renowned risk management and quality assurance company. Operating in a water scarce state like Rajasthan, the significance of water is all the more important. And being the economic engine for Rajasthan, Hindustan Zinc puts a lot of emphasis on conserving water, with strategies focusing on reduction of water at source, recycling of water, exploring alternative sources of water and replenishing water through various structures. Hindustan Zinc has put persistent efforts into water sustainability. Initiatives such as rainwater harvesting, recharge to groundwater and the use of treated sewage water have enabled us to achieve this distinction. The company has State-of-the-Art Effluent Treatment Plants & Recycling Facilities, Sewage Treatment Plant, increased water efficiency and rain water harvesting structures; advancements in which have significantly contributed to this water stewardship drive. This reinforces our commitment to the journey of water stewardship.

The company has prepared a roadmap to further reduce the water footprint while implementing strategies and structures in the coming years. Our sustainability goal 2025 is to become a 5 times water-positive company and achieve 25% reduction in freshwater consumption. We will contribute to positive water impact in the vicinity of our operations through various efforts to enable long-term, sustainable water security for our business and others who depend on water availability. Our focus areas include:

- **Increasing efficiency in water usage and exploring less water-intensive technologies**
- **Using alternative water sources to reduce dependencies on freshwater**
- **Replenish water within local watersheds and rainwater harvesting**

SDG 6
Clean water and sanitation

TARGET 6.4
Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

Water and Tailings Dam Management

Throughout our operations we have also implemented initiatives to reduce our water footprint, a snapshot of the initiatives is captured below.

BU	WATER SAVINGS INITIATIVES	WATER SAVING (CUBIC METER)
HZL	11 lac m^3 quantity of tailing dam reclaim water is used for mill operation as a substitute of fresh water.	1,158,639
ESL	Connecting Pipeline with ETP	444,000
HZL	To make the paste fill running hrs to 9000 hours from 6715 hours	290,000
VAB (Value Added Business)	Rainwater Harvesting in existing settling ponds.	282,706
Vedanta Limited, Jharsuguda	100% utilisation of recycled water in AHP	273,225
BALCO	Clarified blowdown water recycle	227,500
Cairn Oil & Gas	ETP Phase-2 for treatment of reject stream and recycled water will be utilized for reinjection	211,156
TSPL	Reuse of treated wastewater in Fire fighting	166,028
Gamsberg	Convert freshwater intake and replace with process water	114,538
HZL	Reduction of freshwater consumption in Stream-4 dewatering area by 100 m^3/day.	106,517
TOTAL SAVING		**3,274,308**

Sewage treatment Plant, HZL

Water and Tailings Dam Management

Management of high-volume low volume waste (HVLT): #Race2zero

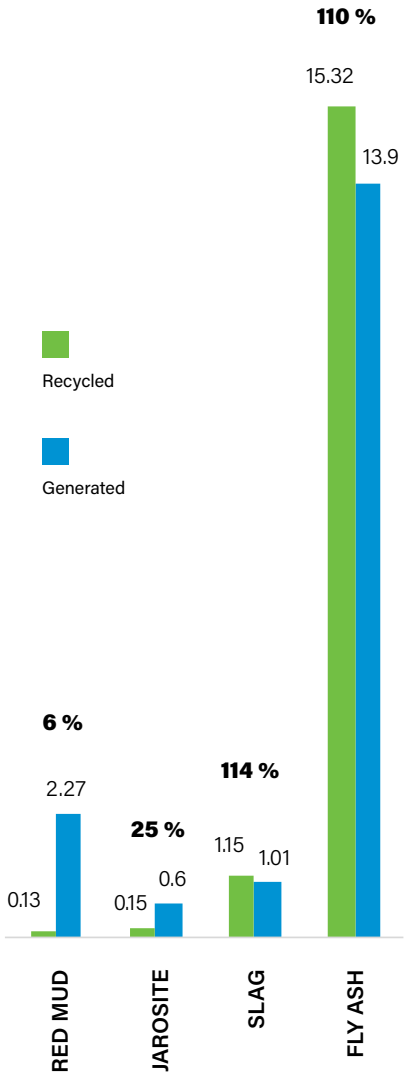
Vedanta's waste management system is built to handle waste in an efficient and responsible manner. The company is guided by 'The resource use and waste management' Technical Standard and supporting guidance notes, which are part of the Vedanta Sustainability Framework. We follow the principle of first reducing the waste, quantitatively as well as qualitatively (reducing the toxicity), and then performing the recovery and recycle (either ourselves or by authorized recyclers). we want to minimize disposal through landfill or by incineration.

The wastes of greatest concern are those categorized as hazardous wastes and those that are present in large quantities – categorized as high-volume-low-effect wastes. The hazardous wastes are sent to government authorized handlers or recyclers. High volume- low-toxicity wastes are stored in tailings dams/ash-dykes or other secure-landfill structures before being sent to other industries as raw materials – thereby recycling the waste stream. Other non-hazardous wastes are sent for recycling, disposed, or incinerated. We are currently focused on developing "waste to wealth" projects to minimize our waste-stream.

WASTE PERFORMANCE DASHBOARD


Tailings, VZI

High-Volume-Low-Effect Waste (million MT)



CASE STUDY

Industrial symbiosis towards responsible waste utilization

Vedanta alumina Ltd (VLL), has a capacity of 2 MTPA metallurgical grade alumina production from its world class facility at Kalahandi district Odisha, since 2009. The refinery feeds Vedanta's Aluminium smelters at Jharsuguda in Odisha and Balco in Korba, Chhattisgarh. VLL produces approximately 3.0 MTPA of red mud (Bauxite Residue) which is extremely rich in iron oxide and alumina. The residual caustic makes disposal of red mud tough, with limited option to stock it in storage facilities. The storage facility needs to be designed to ensure no environmental contamination, which however are not a permanent solution to the increasing quantity with increased production.

In order to ensure responsible utilization of the residue, we undertook studies to further examine the properties of red mud and find alternate modes of utilization. Red mud being rich in additional material after alumina extraction, has a high potential to be utilized in the clinkers in the cement manufacturing industry as a replace for laterite. Also, the residual caustic, which actually made disposal tough, is useful in controlling the emission of sulphur during the cement manufacturing process. The primary substance used in cement manufacturing is limestone which is used in combination with laterite and red mud is a very effective replacement during this process.

Industrial symbiosis is put in place to ensure sustainable utilization of waste, red mud was sent to cement industries. Some latest numbers are available. We have so far dispatched over 18 Kt of Red mud to different companies in Andhra Pradesh and Rajasthan, starting February '21.

COMPANY	QUANTITY OF RED MUD
Wonder Cement	10,884.6
Ultratech	7,504.4

SDG 9
Industry, innovation and infrastructure

TARGET 9.2
Promote inclusive and sustainable industrialization

Water and Tailings Dam Management

Tailings dam management

Tailing dams and ash ponds are integral to Vedanta's mining operations. Effective management of tailing dams is part of our sustainability commitment: Zero Harm, Zero Waste and Zero Discharge. Vedanta remains vigilant to the risks posed by tailing dams.

Vedanta oversees 21 active and one closed tailing management facilities (TMFs). Our principle concern is to ensure the safety of the people who live downstream from our dams. To improve the management of our tailing dams and ash ponds, we have taken some significant measures over the last 24 months.

All our Tailing Dams are lined, hence the contamination of ground water due to seepage of bottom ash is low. We apply stringent steps to comply with all local environmental standards, ensuring that the water contained in this waste is treated and made safe before it can be discharged into local drainage systems.

In FY2019-20, we have hired independent industry experts to audit our tailing management system and advice on the safe design, construction and operation of all our tailings facilities. These audits were the start of an annual audit program that will be put in place from FY2021. The interim period has been used by the business to address the gaps and recommendations that emerged from the audit. Till date we have closed ~84% of the findings and the remaining are work-in-progress.

Additional oversight mechanisms have been put in place, including a monthly sign-off from the CEOs of our BUs, verifying the activities related to audit recommendation closure, monthly monitoring of the structures, monsoon preparedness and other actions to de-risk the facilities are being undertaken.

Tailings, VZI

CASE STUDY

Digitization for responsible tailing dam management

Safe and responsible management of tailing storage facilities is an integral part of mining. We recognize the potential impact of these facilities on the environment, nearby communities and other stakeholders. During construction, operation, maintenance and closure of the tailing's facilities, we take extensive measures to mitigate the risk of tailings dam failures and incorporate the best available technology to minimize the environmental impact. An exemplary case of utilization of digital technology available is at tailing dams in HZL. Continuous operational and stability monitoring plays a major role in ensuring the safety of tailings dam storage facilities, and we are employing best in class technology. Monitoring involves:

1. Regular physical inspections of the structural integrity of the dams, tailings placement compliance with plan and environmental impact.

2. Regular instrumental monitoring:

- ***Geodetic surveys of pillar-prisms placed on the tailings dams to measure surface displacements***
- ***Measurements of pore water pressure within the dam using piezometers***
- ***Measurements of sub-surface deformations within the dam using inclinometers***

The monitoring involves both qualitative and quantitative analysis of actual vs. expected performance. Regular reviews of monitoring information provide an early indication of performance trends that, although within specification, may warrant further evaluation or risk mitigation actions. In 2021 Hindustan Zinc has introduced a novel, satellite based InSAR (Interferometric Synthetic Aperture Radar) monitoring technique to provide early warning of surface ground movements. This technique allows mapping deformation using radar images of the ground surface that are collected from orbiting satellites. It enables high precision surface displacement monitoring at a mine scale. InSAR monitoring is carried out at 13 sites, including Rampura Agucha open pit, all tailings dams and selected waste dumps. InSAR monitoring augments existing stability monitoring systems and provides greater safety and management assurance.

SDG 9
Industry, innovation and infrastructure

TARGET 9.2
Promote inclusive and sustainable industrialization

SDG 12
Responsible production and consumption

TARGET 12.5
Substantially reduce waste generation through prevention, reduction, recycling and reuse

Runaya: Waste to wealth initiative at Vedanta

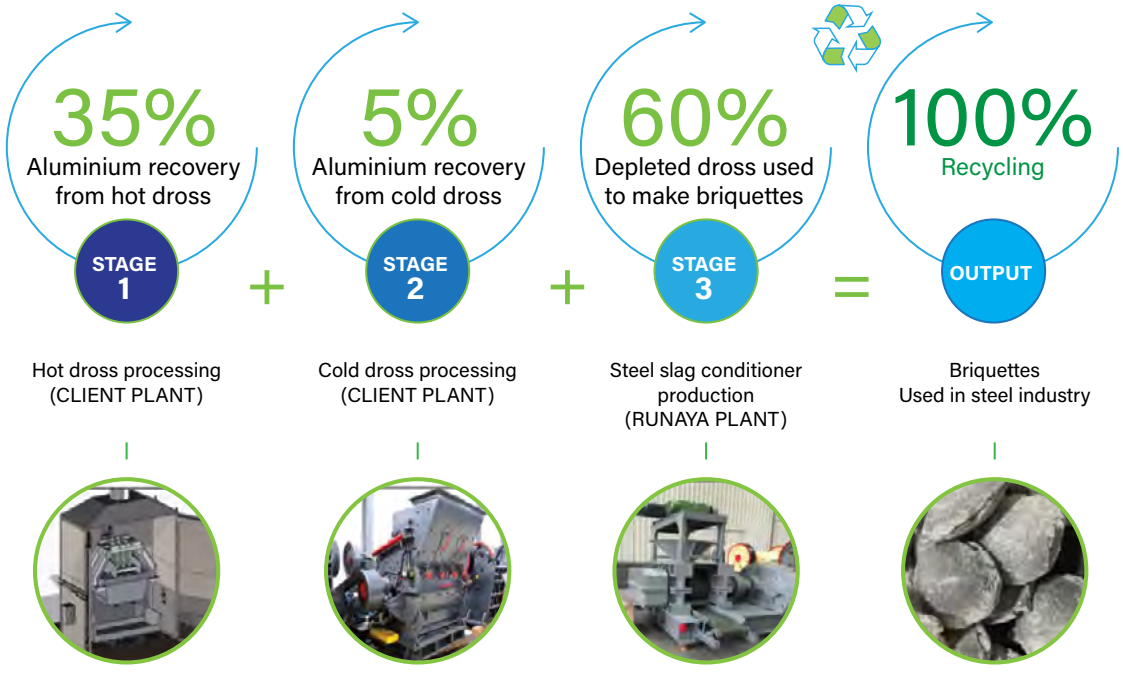
The world produces ~65 million tonnes aluminium annually, but nearly 1 million tonne of the material is lost in the form of a by-product, aluminium dross. In India alone, about 60,000 tonnes of dross is produced every year. A classified hazardous waste, unscientific disposal of dross can have detrimental impacts on people and the environment. Currently, aluminium manufacturers send the waste to authorised recyclers who process the waste as per the CPCB guidelines, most of which end up in landfills.

A key aspect of dross is that it contains valuable material and compounds such as aluminium, aluminium nitrides and oxides, spinel, dimagnesium silicate, gupeite, and sodium titanate. However, traditional recyclers were only able to recover limited amount of material from cold dross, with about 10% recovery rate being the industry benchmark.

At Vedanta's facility in Jharsuguda, where India's largest aluminium smelter is housed, we have turned this around in partnership with Runaya, who are licensed to use Taha's patented dross technology. This ensures a significantly higher recovery rate, while also creating energy savings to the tune of 800,000 GJ and reducing CO_2 emissions in excess of 260,000 tonnes, annually.

The advanced technological process presents four-fold benefits in the form of:

- **Enhanced recovery of aluminium from the dross, to the extent of 90% of the available metal;**
- **Utilizing existing energy in freshly skimmed dross leads to significant savings in energy consumption;**
- **Environmental and people safety due to avoidance of direct disposal of dross in landfills;**
- **Depleted dross is used to manufacture value added products for the steel industry, which reduce carbon footprint of steel manufacturing**



Depleted dross is used to manufacture briquettes that are used in secondary refining of steel, with significant reduction in power consumption and increased refractory life, thus improving sustainability. This circular, end-to-end approach to manufacturing and waste management aligns with our philosophy of 'zero waste, zero discharge', preventing landfills and ensuring better utilisation of waste material. Vedanta Jharsuguda is now a zero hazardous waste smelter, and with BALCO also announcing a partnership with Runaya, Vedanta is well on track to become the first zero hazardous waste company by FY'22.

"Circularity in business is the need of the hour, and I'm proud of the 'zero waste, zero discharge smelter' feat our Jharsuguda team has achieved with Runaya's support. Furthermore, Runaya has broken the mould in manufacturing with a highly diverse workforce, with nearly 50% women running the facility."

- C N Singh, CEO, Vedanta Ltd., Jharsuguda

"Runaya is firmly committed to disrupting the linear economy model currently existing in the industry and ushering in a circular economy model by deploying cutting edge technology and innovation in the resources sector with focus on sustainability solutions. We are extremely proud to partner Vedanta Jharsuguda, India's largest aluminium smelter, on their journey towards becoming a zero hazardous waste smelter."

- Annanya Agarwal, , CEO & Co-Founder, Runaya

"Vedanta's ethos of 'Zero Harm, Zero Waste and Zero Discharge' continues to guide our environmental and social performance. We at BALCO are aligning our energies to stand tall towards ecosystem restoration and nurturing environment conservation efforts across all our areas of operations."

- Abhijit Pati, CEO & Director, BALCO

Air Quality and Emissions Control

Managing our Air Quality Impact and Emissions: #Race2zero

Air quality management issues for the mining industry are centred around particulate impacts and Vedanta is no different, the complexity of the potential source further hinders the management of emissions.

We closely monitor the impact of our operations on the air quality and its impacts on our workforce and communities. As part of our ambient air quality monitoring process, we monitor Suspended Particulate Matter (SPM), SOx and NOx. We also keep in check lead emissions in our zinc operations, fluoride emissions in our copper and aluminium operations, and Polycyclic Aromatic Hydrocarbons (PAHs) in our aluminium operations as per our Environmental Management Standard.

YEAR	**Stack emissions** (in MT)		
FY2021	19,427	210,241	66,305
FY2020	11,215	257,676	67,317
FY2019	8,871	242,236	67,278

Particulate matter **SOx** **NOx**

ESL Steel Limited

CASE STUDY

Asset Transformation

SDG 9
Industry, Innovation and Infrastructure

SDG 15
Life on Land

Development of the Lisheen Mine began in 1997, with production commencing in 1999. Over the life of the mine an annual average of 165,000 MT in zinc metal concentrates and 22,000 MT in lead metal in concentrates were produced within the processing plant on the mine site and transported to various smelters across the world from the Port of Cork. Final operations ceased at the end of 2015.

Globally mine closure has been a challenge for the industry and there are many examples around the world of very poor mine closure, where environmental impact continues to be caused long after an operation has ceased. In many instances the mining companies do not plan or provide for mine closure and operate up until the point where the company is no longer making money, or the resource has been depleted.

Lisheen Mine sought it's closure permitting in the mid 1990's and the Regulatory Authorities were careful to ensure that adequate conditions were included in all permits to ensure that mine closure was properly catered for.

Over the years the plan was reviewed and revised following consultations and workshops that considered substantial environmental and geochemical information that developed a closure framework for directing activities towards successful closure of the mine that became the Closure, Restoration and Aftercare Management Plan, the CRAMP. The mine entered into the Active Closure stage in March of 2014 with the development of the Lisheen Mine Closure Team. Test data and observations were carried out to assess its performance following establishment, which allowed for the implementation of progressive rehabilitation works to commence in advance of the cessation of mining operations. During the Active Closure quarterly reports were submitted to the Regulatory Authorities to provide evidence of closure works completed.

On the 22nd of June 2021 the EPA wrote to Lisheen to confirm that they were 'satisfied that the installation has been closed, decommissioned and rehabilitated in accordance with the approved Mine Closure Plan and that the Aftercare Plan may be put into effect.'

Biodiversity Management

Given the impact that metals and mining industry has on environment, addressing the biodiversity concerns become crucial. Our operations majorly rely on healthy ecosystems like water supplies, protection from storm surges in the coastal regions and others. A poor management of addressing these biodiversity concerns in its business operations can create an irreparable damage to the ecosystems, and hence have a negative impact on climate change concerns and natural disaster impacts.

At Vedanta we have committed to "Do No Harm" and extend our hands to the surrounding environment to protect the biodiversity impacts. We follow the International Council on Mining and Metals mitigation hierarchy - an internationally recognized approach designed to help limit, as far as possible, the impacts of development projects on biodiversity and ecosystem services.

Our biodiversity policy and standard advise us on how disruption to the local ecology should be avoided, minimized and compensated for, from project scoping to site closure and beyond. Our businesses seek consultation from domain experts in identifying biodiversity related business risk and its management. This is an integral part of our commitment to sustainable development.

We are members of the India Business & Biodiversity Initiative. Additionally, HZL is part of IUCN's – Leaders for Nature program and Zinc International has worked extensively with IUCN to ensure that we meet our No Net Loss principles at Gamsberg, which is located in the Karoo Biosphere Reserve

WE STRIVE TO ATTAIN A NO NET LOSS (NNL) OF BIODIVERSITY AT ALL OUR OPERATIONS.

We take appropriate measures to responsibly restore and rehabilitate closed mining areas.

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Chotia coal mines, nearly 332 hectares of land has been biologically restored as part of the progressive mine closure plan. The work was overseen by experts from IIT Kharagpur.	Chitradurga, ~5 hectares of land belonging to a dumping site has been partially reclaimed using geo-textiles and the plantation of native grasses and trees. The work is overseen by the Indian Bureau of Mines.	In selberg mining area of Skorpian Zinc, work is underway to demarcate and restrict access to areas that have instance of high biodiversity – in keeping with our mitigation hierarchy for biodiversity.	At Gamsberg, work is underway to manage the no-go areas as per the conservation management plan for the Gamsberg Nature Reserve.The long-term activity is being overseen by IUCN.
			

CASE STUDY

Enhancing biodiversity value by conservation of threatened species

Ravva offshore block of Cairn has been producing Crude Oil & Natural Gas for over two and half decades serving the energy demands of the country. The block is located on the Krishna Godavari basin and Cairn ensures to responsibly protect the nature by taking environmental initiatives. Ravva is a hotspot for Mangrove plantation which provides excellent roosting site to many avifaunal species and refuge to the smooth coated otter. A total of 16 species of trees, 1 climber, 1 Shrub and 4 herbaceous mangrove associates were enumerated from the mangrove habitats. A total of 33 species have been identified in entire green belt area situated at Ravva.

Recognizing the significance of its diversity, Cairn has developed a detailed Wildlife management plan. Among various wildlife conservation measures, fishing cat is one of the flagship biodiversity initiative to study the Ecology and Conservation prospectus for Fishing Cat. Fishing cats are small wild cats with discontinuous distribution across mangroves, wetlands, rivers, and swamps in parts of South and Southeast Asia. The species was classified as globally endangered in 2008, based on steep population declines (especially in Southeast Asia) over the past several decades (IUCN 2008).

Fishing cats are good swimmers with semi-webbed paws and a relatively short but muscular tail that can be used as a rudder in the water. This is the first study to understand the movement, space use and diet of the fishing cat. These cats spend time in terrestrial and aquatic habitats. The study will be first ever-comprehensive study to understand the species.

The specific outcome of the study will be:

- ***Information on diet of fishing cat and seasonal variation***
- ***Home range, movement, and space use of the fishing cat***
- ***Threats faced by the species***
- ***Conservation planning for the species in Coringa Wildlife Sanctuary***
- ***Facilitation of the 'National Conservation breeding Centre of Fishing cats at EGREE***

Cairn has entered MoU with Andhra Pradesh Forest Department to implement project through Wildlife Institute of India for three years. Total project cost of INR 74 Lakhs for the period of three years started from 2020.

SDG 15
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TARGET 15.5
Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and protect & prevent the extinction of threatened species