



Task Force on Climate related Financial Disclosures

Highlights of 2021-22



Vedanta has committed towards an intermediate target of 25% absolute emissions reductions by 2030 (vis-à-vis 2020-21) and Net Zero emissions by 2050



We aim to spend 5 billion USD over the next 10 years to accelerate transition to net zero operations



Our GHG reduction initiatives have resulted in avoided GHG emissions to the tune of ~14 MMT CO₂ equivalent from 2012 base.



We have reduced our metals and mining production intensity by ~5% in FY22 over FY21 base.



GHG intensity at group level stands at 47.89 tCO₂e/INR Mn in FY2022 as compared to 71.36 tCO₂e/INR Mn in FY2020

Vedanta has been scored at the level of "B" which is a substantial improvement compared to the last year's score of "B-" for its CDP 2020 disclosure

We have signed CII Charter on Climate Change to show our support and partner for efforts by Indian businesses to ensure just, transparent and equitable climate change action

Vedanta Aluminium purchased 3 Billion units of renewable energy from the market thereby avoiding ~2.3 MMT of CO₂ equivalent emissions

Vedanta has launched Restora and Restora Ultra, two green metal products to cater to our sustainability conscious customers

Vedanta has also started biomass firing at HZL and has used ~17,000 MT of biomass in FY22.

HZL completed major efficiency improvement project of Turbine revamping (5 Turbines) thereby improving efficiency and avoiding GHG emissions of ~2,40,000 MT / year

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List of Acronyms

BALCO	Bharat Aluminium Company Ltd.
CBAM	Carbon Border Adjustment Mechanism
CCVA	Climate Change Vulnerability Assessment
COP	Conference of Parties
CSOs	Civil Society Organizations
DRR	Disaster Risk Reduction
ESL	ESL Steel Limited
GCM	General Circulation Models
GDP	Gross Domestic Product
GHG	Greenhouse Gas
HZL	Hindustan Zinc Limited
HSE	Health, Safety and Environment
ICP	Internal Carbon Pricing
INR	Indian Rupee
IOB	Iron Ore Business
IPCC	Intergovernmental Panel on Climate Change
KBOEPD	Thousand(K) Barrels of Oil Equivalent Per Day
LPCD	Litres Per Capita Per Day
M&E	Monitoring and Evaluation
MoEFCC	Ministry of Environment, Forest and Climate Change
MRV	Monitoring, Review and Verification
MTPA	Million Tonnes Per Annum
MMT	Million Metric Tonnes
NDC	Nationally Determined Contributions
NFHS	National Family Health Survey
NGFS	Network for Greening the Financial System
NGOs	Non-Governmental Organizations
PRECIS	Providing Regional Climates for Impacts Projects
RCPs	Representative Concentration Pathways
RE	Renewable Energy
SDGs	Sustainable Development Goal
TCFD	Task Force on Climate-Related Financial Disclosures
tCO ₂ e	Tonnes of carbon dioxide equivalent
Toe	Tonnes of Oil equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VAL	Vedanta Aluminium
VZI	Vedanta Zinc International

NOTE FROM THE CHAIRMAN'S DESK



ANIL AGARWAL
CHAIRMAN,
VEDANTA
LIMITED

It is my pleasure to release Vedanta's 2nd Climate Change Report in line with the recommendations of Taskforce on Climate-related Financial Disclosures (TCFD). This report is many notches above our 1st TCFD report released in February 2020 when we started taking small steps in the direction of climate change work. In last 2 years, we have matured to a new level and we now aware of the quantum of work which lies ahead. This report also makes it clear that Vedanta has taken many a leap forward in its climate journey. We have much to discuss on climate change with our stakeholders regarding the kind of work we have planned and started executing on climate change front. To start with, we have publicly committed 10 commitments on climate change with a target of reducing our absolute emission by 25% by 2030 over 2021 emissions.

India is at the cusp of the next cycle of growth and we, as Vedanta, being a responsible metals & mining company has to rise to the occasion, increase our production of metals critical to the energy transition and help India attain the net neutrality by 2070 while being Net Zero Emission company by 2050 or sooner. Aluminium, Zinc, and Steel will form the backbone of the green, renewable economy. We need to increase the production of these critical materials manifold to cater to their rising demand in order to decarbonize our economies. This way, India can become part of larger solution to decarbonization while being also critical part of global supply chain. While on one hand, government policies will guide and create the atmosphere and incentives necessary for the extraction and manufacturing of these metals and help preserve critical foreign exchange, on the other hand, digitalization of operations and automation of the work will ensure ambitious energy efficiency and energy reduction targets are met thereby reducing the overall energy consumption and reduce wastages.

Vedanta's rise as 1st Asian Green Metal Producer is being noticed globally. Vedanta wants to capture the opportunities being created due to climate change related policies being crafted globally which provides incentives and preferences for sectors like Renewable energy, Green hydrogen, Green metals etc. We are actively looking at these sunrise sectors while we sign PDA for 580 MW RE power which is first amongst many more to come in future. We are also keen to spend USD 5 Bn over next 10 years on our energy transition and improve our performance on climate change front and add to global efforts. The physical risk of climate change are real and we will ensure our assets are ready to weather effects of climate change through adaptation measures through our

“Aluminium, Zinc, and Steel will form the backbone of the green, renewable economy.

We need to increase the production of these critical materials manifold to cater to their rising demand in order to decarbonize our economies”

climate change fund. We are also concentrating our efforts on circular economy and our subsidiary Runaya is a great example as to how waste to wealth can vastly improve circularity of a product while reducing the resources required for creating a product and creating a steady revenue stream. We welcome efforts at all levels to tackle climate change whether it is from government, private sector, social or from international level. We are also committed to provide support to our surrounding communities to tackle effect of climate change. We will ensure our community programmes will cover issue of climate change and ways to adapt to it.

India is a land of youth and their energy will drive the country forward. These youth are creating unicorns of the future and the day is not far when we will see climate change unicorns emerging in India. We are playing our part in incubating startups tackling climate change through our "GreenSpark" programme which is a startup led programme designed to find solutions to various climate change themes and problems being faced by industry.

India will need every help in fighting climate change in terms of technology, policy, finances, collaboration, digitalization, as the solutions are not liner and will require evolved thinking and permutations and combinations of available levers. Vedanta wants to be first port of call for such experiment whenever and wherever it happens.

ANIL AGARWAL

CHAIRMAN, VEDANTA LIMITED

CEO STATEMENT



SUNIL DUGGAL
CEO, VEDANTA LIMITED

Happy that we are rolling out Vedanta's FY22 TCFD report on climate change. Quite a progress has been achieved since we last rolled out 1st TCFD report in March 2021.

Climate change and global warming has been the key focus area of companies worldwide. Vedanta being a large metals and mining company has a role to play in energy transition while transforming as an entity to align its energy and GHG performance. We started our comprehensive carbon portfolio development to work on various aspects of climate change including but not limited to analysis of our GHG and energy performance, levers available for decarbonization, business wise net zero plan, location wise physical risk analysis and business wise transition risk analysis, working on our scope 3 emissions and disclosures of the same.

Vedanta wants to attain a leadership position in ESG and climate change. This has been a key agenda for discussion and deliberations at the highest level. The ESG committee of board has climate change as a standing agenda for its half-yearly meetings. During COP 26 in October 2021, we published our 10 commitments for GHG and climate change and they are one of the most ambitious targets by any Asian metals and mining companies so far. We aim to be net zero emissions company by 2050 or sooner. Our key intermediate commitment is 25% absolute emissions reduction by 2030 from FY21 baseline. To achieve this, we have identified key levers like using 2500 MW of RE RTC power in our internal operations, fuel switch wherever possible, energy efficiency measures across our operations and electrification of LMV and mining vehicles. To ensure this energy transition happens as planned, we aim to spend USD 5 Billion in next 10 years to decarbonize our operations.

Our net zero ambition has spurred a spate of activities within the group companies. We have recently signed a Power Delivery Agreement (PDA) for 580 MW of RE Power on a long-term basis for HZL, BALCO and VAL-Jharsuguda. Vedanta Aluminium was the largest green power buyer in FY22 with almost 3 Billion units of green power purchased on the Indian Energy Exchange (IEX). We have introduced low-carbon green aluminium in the market with brand name Restora and Restora Ultra with lower embedded carbon intensity compared to similar products by other metal and mining companies. We signed an MoU with GAIL for use of natural gas in our alumina calciners and this initiative is expected to reduce the GHG intensity of our Alumina operations by ~20%. We have revamped our entire turbine fleet at HZL thereby reducing GHG emissions per unit of power generated while also increasing the power output of the machines. Hindustan Zinc has also signed an MoU with NORMET for introducing electric mining vehicles in its mining operations. Efforts like these and many other small initiatives gives us confidence to move ahead in our journey.

This decade is very important for the entire world to keep the aim of limiting the temperature rise to 1.5 Deg C. We anticipate several policy and regulatory changes over the decade to enable this outcome. Vedanta stands ready to manage the several physical and transition risk that are emerging as a result of climate change and

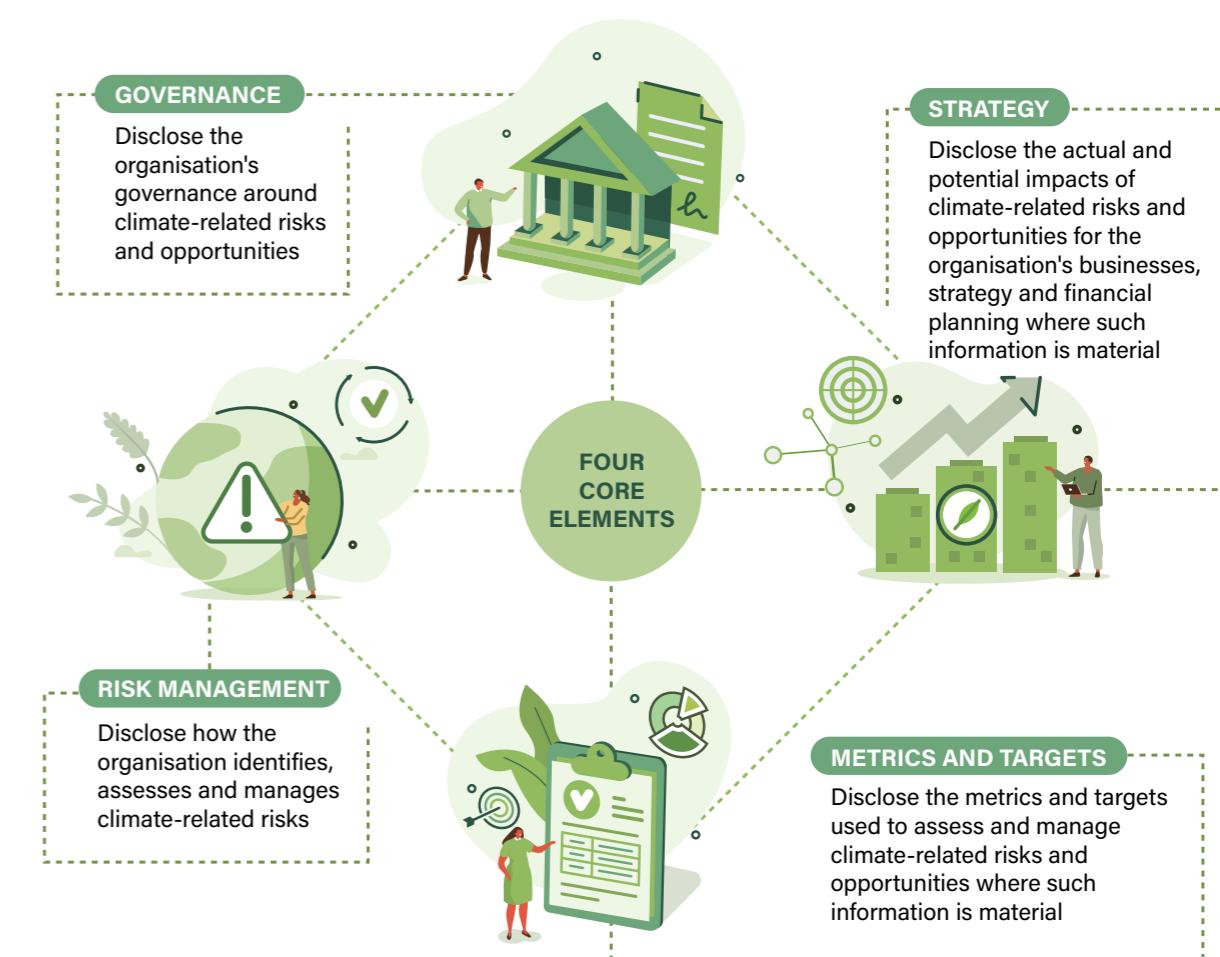
SUNIL DUGGAL
CEO, VEDANTA LIMITED

ABOUT THIS REPORT



Disclosure is one of the key building blocks of Vedanta's carbon vision. In line with this vision, we published our first report on the impact of climate change on our business in alignment with the recommendations made by the Task Force on Climate-related Financial Disclosures (TCFD) in 2020. Since the time of its launch, Vedanta has supported the broader adoption of TCFD reporting. This report is our TCFD report for the Financial Year 2021 (FY 2021) where we elaborate on our commitments to managing climate change and the actions we pursue. We recognize that these disclosures will accelerate decarbonizing efforts among stakeholders and increase accountability and transparency.

The report contains our disclosures against the four core elements recommended by the TCFD for all our operations and businesses in India, South Africa, Namibia, UAE, and Australia. The four elements and the disclosure requirements are illustrated in the Figure below:



ABOUT VEDANTA



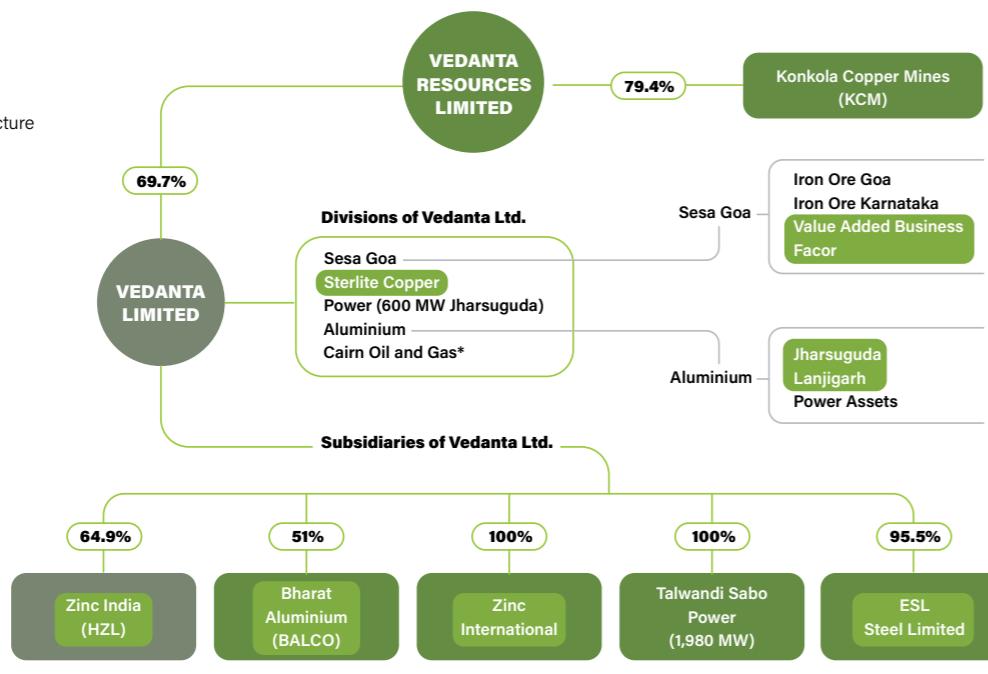
Vedanta is a global diversified natural resource company which engages in exploration, extraction and processing of minerals, oil and gas properties. We cater to diverse consumer markets for their primary materials needs and are leaders in the segments we operate in. Through our activities that generate economic, human, and social value, we responsibly support India in its journey towards self-sufficiency. Our goal is to create long-term value for all our stakeholders through research, discovery, acquisition, sustainable development and utilisation of diversified natural resources.

Our operations are focused on exploring and producing metals, extracting oil & gas and generating power. We extract zinc lead-silver, iron ore, steel, copper, and Aluminium. We produce refined metals by processing and smelting extracted minerals at our zinc, lead, silver, copper, and Aluminium smelters, and other processing facilities. For this purpose, we generate captive power as a best practice measure and sell the surplus power to the grid. It is our constant endeavor to deliver quality products to our consumers while preserving the sanctity of the natural world.

Our Group Structure

Vedanta enjoys leading positions in seven key business segments in India and globally. The group produces Aluminium, copper, zinc, lead, silver, iron ore, oil & gas, and commercial energy, with operations in India, South Africa, Ireland and Australia. Vedanta group includes five business divisions – 1) Sesa Goa Iron Ore 2) Sterlite Copper 4) Power (600 MW Jharsuguda) 4) Aluminium (Odisha Aluminium and Power Assets), and 5) Cairn Oil and Gas. . The subsidiaries of Vedanta include 1) Zinc India (HZL) 2) Bharat Aluminium (BALCO), 3) Zinc International (Skorpion - 100% BMM - 74%), 4) Talwandi Sabo Power (1,980 MW), and 5) ESL Steel Limited. The group structure is illustrated in the Figure 1.

Figure 1:
Vedanta's Group Structure



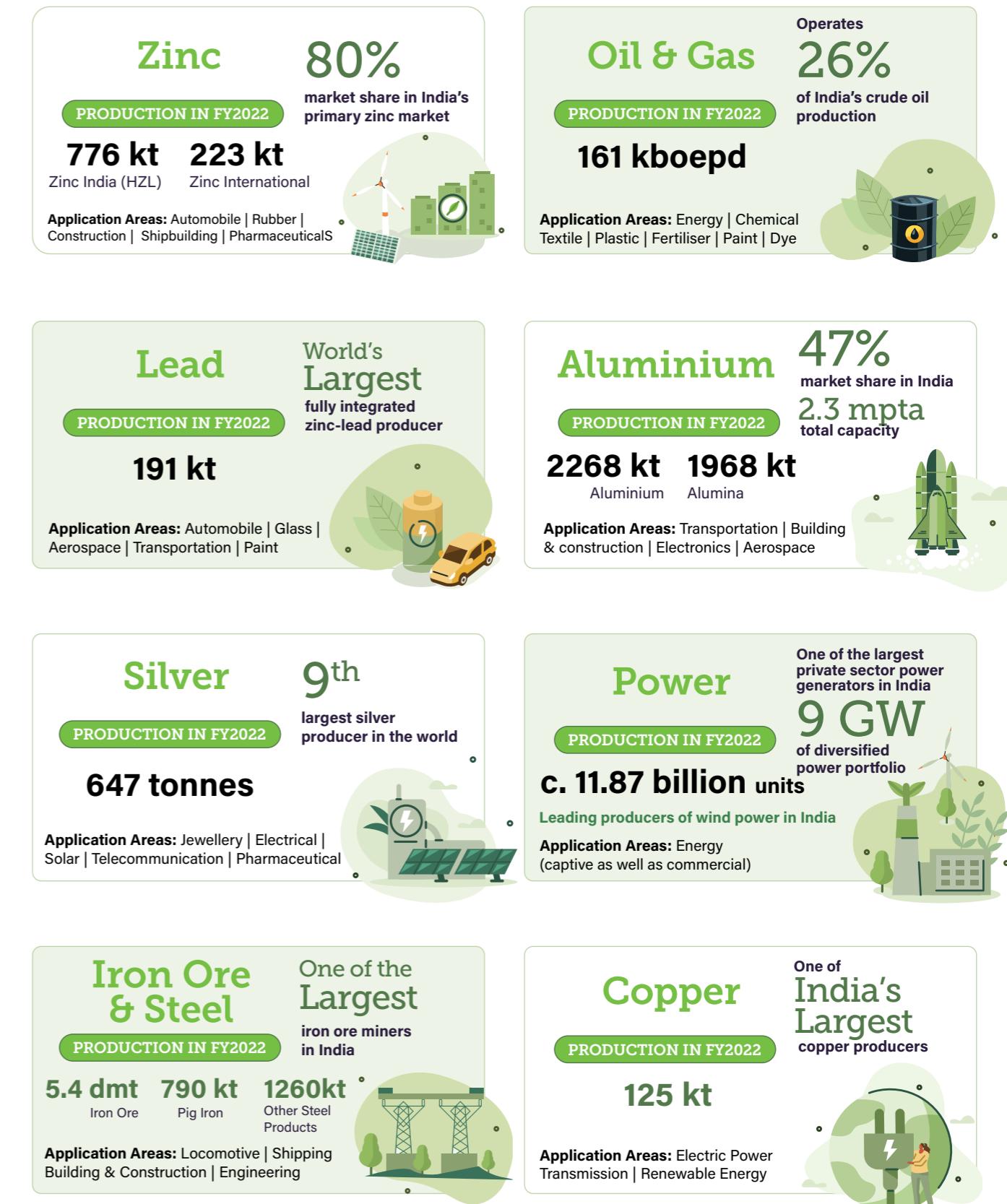
● LISTED ENTITY ● UNLISTED ENTITY ● METAL BUSINESS

Note: Shareholding as on May 01, 2021
*50% of the share in the RJ Block is held by a subsidiary of Vedanta Ltd.

Our production and products

During FY2022, Vedanta continued to perform well across all businesses and lived up to its promises to its stakeholders. Highlights of our performance is presented below:

Figure 2: Vedanta's performance in FY2022



OUR COMMITMENT TO CLIMATE CHANGE



We, at Vedanta, are conscious of the global climate crisis experienced by all today. The pressing need to accelerate collective climate action for reducing the increasing intensity of climate impact is widely recognized by our leadership. As a responsible company involved in the metals and mining sector, we understand that we are an integral part of the growing sustainability initiatives and green growth solution. Our company has been committed to identifying and understanding climate trends and their impact for the territories in which we operate for more than a decade now. We have adopted progressive measures to reduce carbon emissions and increase resource efficiency. With an increasing global focus on climate-change action and increasing transparency, we continue to include climate change as part of our long-term strategies and directional decisions.

- 1 — Net Zero Carbon by 2050 or sooner
- 2 — Use 2.5 GW of Round-The-Clock RE and reduce absolute emissions by 25% by 2030 from 2021 baseline
- 3 — Aim to spend US\$ 5 Bn over the next 10 years to accelerate transition to Net-Zero
- 4 — No additional coal-based thermal power and coal-based power only till end of power plants life
- 5 — Decarbonize 100% of our Light Motor Vehicle (LMV) fleet by 2030 and 75% of our mining fleet by 2035
- 6 — Accelerate adoption of hydrogen as fuel and seek to diversify into H2 fuel or related businesses
- 7 — Ensure all our businesses account for their Scope 3 emissions by 2025
- 8 — Work with our long-term, tier 1 suppliers to submit their GHG reduction strategies by 2025 and align with our commitments by 2030
- 9 — Disclose our performance in alignment with TCFD requirements
- 10 — Help communities adapt to the impacts of climate change through our social impact/CSR programs

“ Favorable policy/regulatory changes and green finance availability will decide the success of climate change efforts. ”

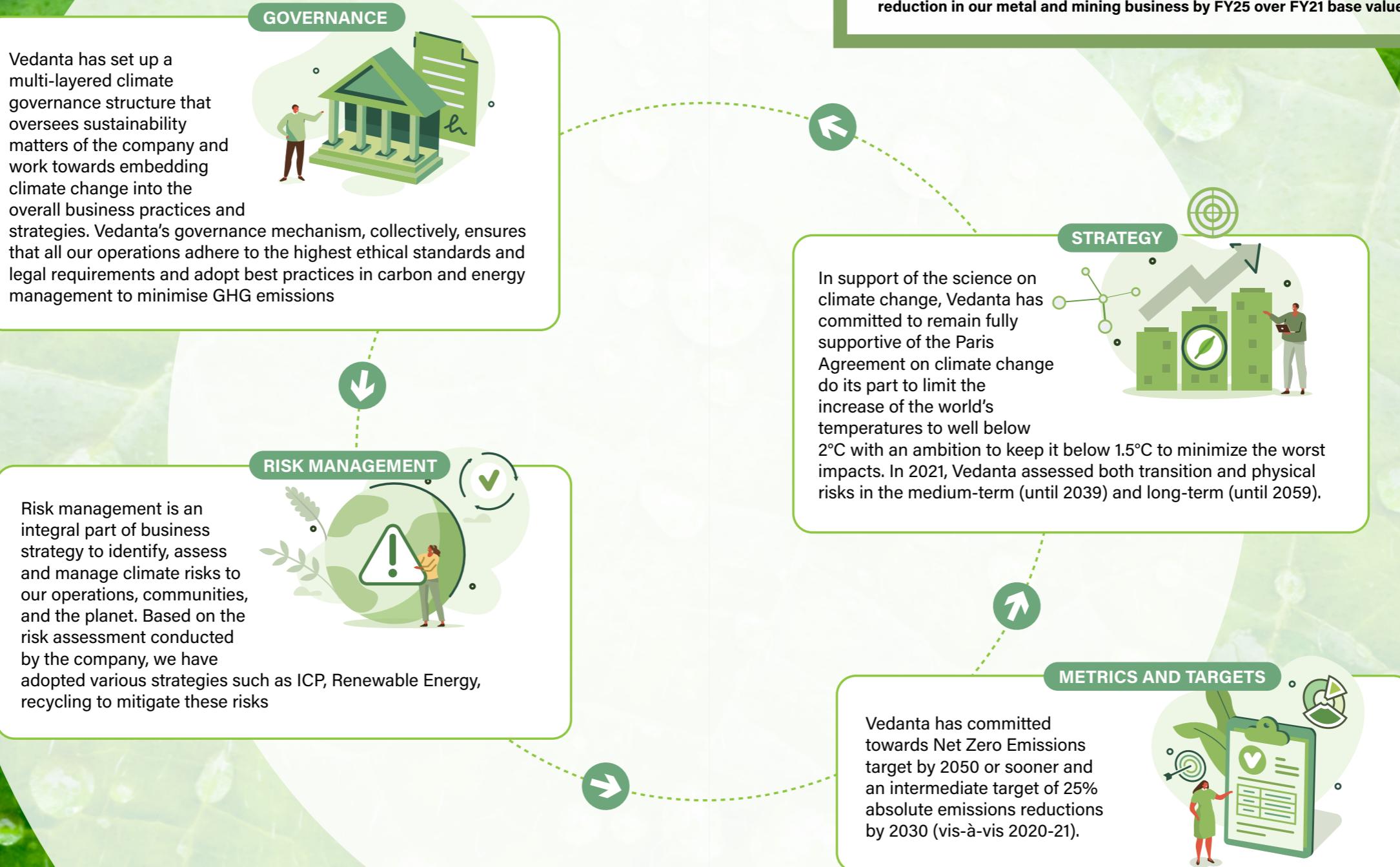




OUR COMMITMENT TO CLIMATE CHANGE

Overview of our approach to climate change management

Vedanta has made significant progress in all the four core elements of the TCFD framework towards managing climate change risks to business. An overview of our approach and actions is presented below:



Vedanta has committed towards a Net Zero emissions target by 2050 or sooner and an intermediate target of 25% absolute emissions reductions by 2030 (vis-à-vis 2020-21) in line with India's commitments as a part of the Nationally Determined Contribution (NDC), under the Paris Agreement, of reducing the country's emissions intensity by 33 - 35% between 2005 and 2030, and its Net Zero ambition by 2070. As, an additional short term measure , we are also targeting 20% GHG intensity reduction in our metal and mining business by FY25 over FY21 base values.

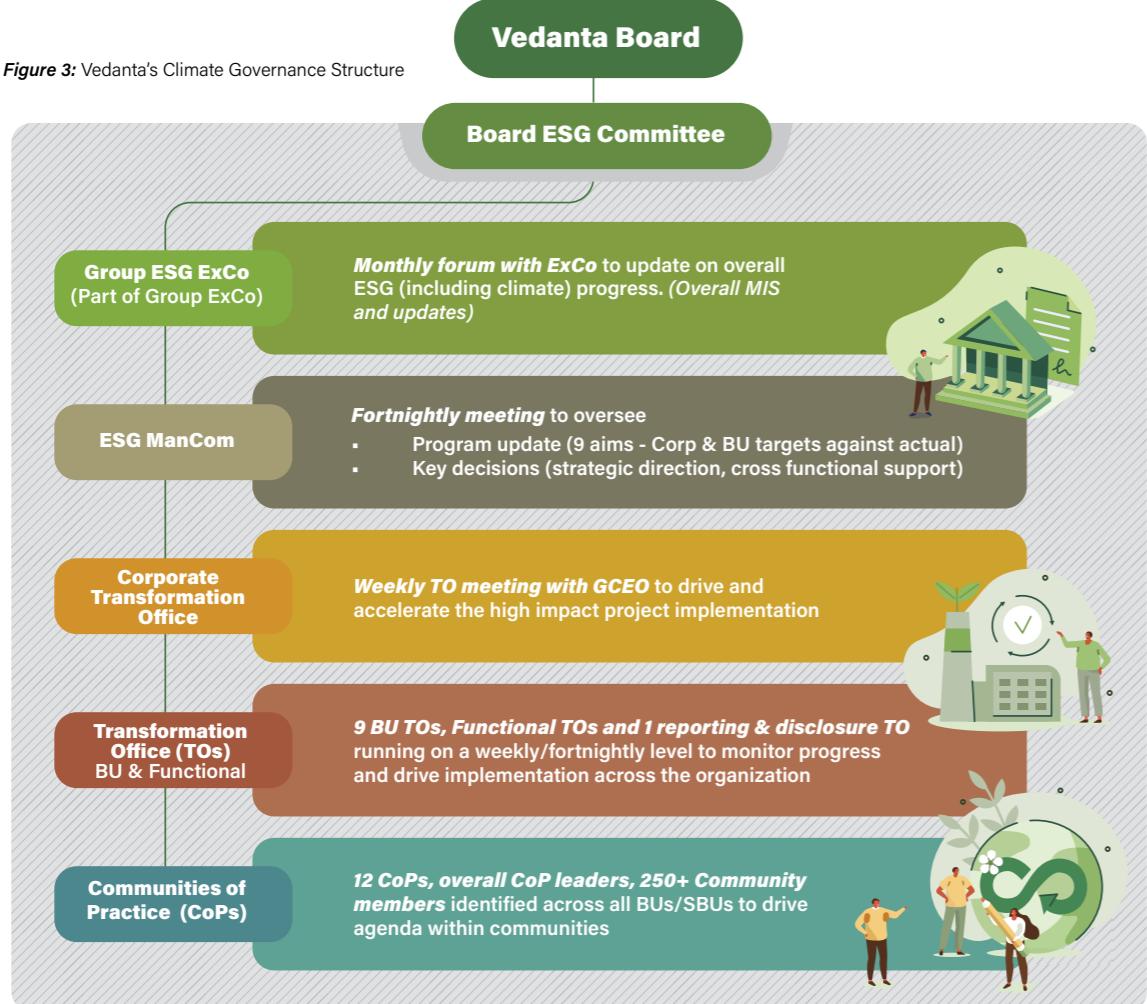
Our disclosure against the four core elements of the TCFD framework is elaborated in the subsequent sections.

CLIMATE GOVERNANCE AT VEDANTA



Driven by our ambition to decarbonize, climate governance is given high priority for decision making and execute actions related to climate change. In this direction, we have set up a multi-layered climate governance structure that oversees sustainability matters of the company and work towards embedding climate change into the overall business practices and strategies. Vedanta's governance mechanism, collectively, ensures that all our operations adhere to the highest ethical standards and legal requirements and adopt best practices in

carbon and energy management to minimize GHG emissions. The company's climate governance structure is described below.

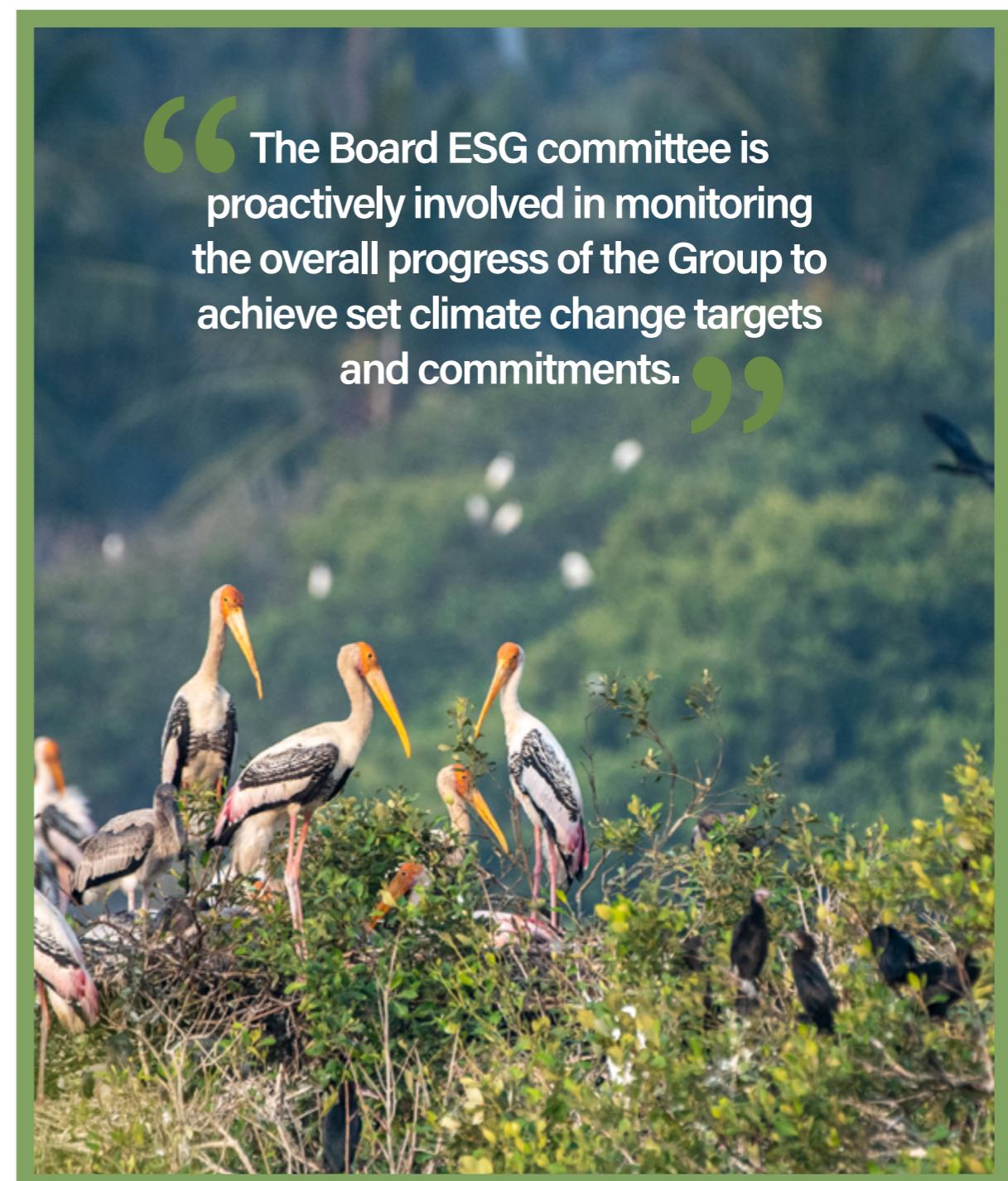


This management of Vedanta's deep Decarbonization agenda is embedded in the structure given above. Specifically, the Energy and Carbon Community of Practice (CoP) is responsible for driving this agenda on a regular basis in the Group. The governance mechanism in Vedanta is structured in a way that encourages flow of information and feedback through all the levels of the company- from highest level of leadership to BU levels. This is a critical feature that ensures robust strategies and transparent decision making.

Governance by the Board

The **Vedanta Board** is at the apex of all decision making related to climate change and sustainability across the Group. The Board acts through the **Board ESG Committee** and is proactively involved in monitoring the overall progress of the Group to achieve set climate change related targets and commitments of the company. The Sustainability Committee formed by

the Group CEO and two independent Directors. This critical body is delegated with the tasks of managing climate risk and reviewing, evaluating, implementing all the decisions taken by the Vedanta Board on climate change. The committee is advised by the Group ESG-Executive Committee (ESG-ExCo), the ESG Management Committee (Man-Com).



Biodiversity at Ravva, Cairn Oil & Gas



Management oversight

The Group ESG Management Committee (ESG ManCom), headed by the Group CEO of Vedanta, is a high-level decision-making body of the company. Its primary responsibility is to execute the decisions made by the Board, allocate resources and report to the Board Committee on key climate-change and overall sustainability risks and the actions being taken. The Group ESG Exco meets monthly to oversee the climate change strategies being undertaken. As the head of the Group ESG ExCo, the Group CEO is responsible for developing and overseeing the implementation of climate change mitigation and resilience measures across our group companies, especially the high investment decarbonization projects along with other ESG projects. The Group and business CEO's supported by the Director - ESG, Carbon & Social Performance are

responsible for delivery of the decarbonization agenda. The management is also advised by three senior global ESG advisors with relevant experience in ESG and climate change management.

The Energy & Carbon Community of Practice (formerly Carbon Forum) - Vedanta's apex body to deliberate upon carbon and climate related matters is chaired by a CEO from one of our Group businesses, the committee is formed by the Chief Operating Officers of our businesses. The CoP is entrusted with the responsibility of developing, overseeing and providing suggestions to ESG ManCom & Group ExCo on the implementation of Vedanta's carbon mitigation approach.

Communities of Practice (CoPs) - Taking ESG & Climate Change work to the shop-floor

In order to translate our ESG and Climate vision into action, we needed an organisational structure that allowed us to embed the policies, standards, and KPIs across all levels of the organisation. We also needed avenues that allowed those on the shop-floor to identify opportunities and best-practices and send them up the organizational hierarchy so that they could be adopted across all Business Units. In this manner, we could accelerate the achievement of our Climate goals, while at the same time give an opportunity to internal subject-matter-experts to play a role in how the organisation drives the climate agenda. Communities of Practice (CoPs) have allowed us to solve this problem. There are 12 subject-area CoPs that are present at the site, BU, sector and Group level, thereby ensuring this dissemination of information and action takes place consistently across the organisation. **The 12 CoPs are:**

	Sector	Climate Relevance
1	Water Management	Water saving measures at our high climate risk locations including our target of being Net Water Positive (NWP) company by 2030
2	Carbon and Energy	All policy related issues, broad direction of climate change work, benchmarking, regular performance discussion, key mitigation and resilience measures are being taken by Carbon & Energy CoP
3	Waste to Wealth	Emission reduction measures including improving circularity of our operations will be driven through this community
4	Biodiversity	
5	Communities	Climate Resilience (including adaptation measures) of our people, biodiversity and communities will be addressed through these practice areas
6	People	
7	Communications	While we address our climate goals, effective communication and capacity building would be required through this practice
8	Health	Our climate risk assessments indicate impacts from physical hazards, these will be reviewed and addressed through the health and safety COP
9	Safety	
10	Supply Chain	
11	Acquisition/Finance	Addressing transition risk through emission reductions while providing value to our customers and investors will be supported by the CoPs
12	Expansion	

Table 1: Communities of Practice

Key climate decisions and actions taken in FY2021 and FY2022

Governance level	Key decisions and actions in FY 21
Board of Directors	Net zero commitment - Reduce absolute emissions by 25% by 2030 and achieve Net Zero by 2050 Aim to spend USD 5 Bn over next 10 years for energy transition
Board Sustainability Committees	Recommended absolute GHG emissions reduction targets, in line with our policy commitment to substantially decarbonize the business. Endorsed the Net-zero roadmap
Group Executive Committee	Ratified the following decisions proposed by the company's Carbon Forum: <ul style="list-style-type: none"> Setting the long-term Carbon Vision for the organization. Setting intensity based and absolute GHG emissions targets as per Science Based Target Initiative. commissioning a study to understand the impact of physical and transitional climate risks on the organization, and Approve Vedanta's Net Zero roadmap
Energy and Carbon CoP	<ul style="list-style-type: none"> Finalized the long-term Carbon Vision. Commissioned a study to understand impacts of physical and transition climate risks' Conducted Scope 3 emission estimation. Developed a Net-Zero roadmap for the organization: and Finalized FY2025 GHG emissions intensity targets.

Table 2: Key climate decisions and actions



Solar Panels, HZL

STRATEGY



Vedanta recognizes that the company must monitor and address a wide range of external factors to be successful. In support of the science on climate change, Vedanta has committed to remain fully supportive of the Paris Agreement on climate change do its part to limit the increase of the world's temperatures to well below 2°C with an ambition to keep it below 1.5°C to minimize the worst impacts.

In line with the TCFD recommendation to study the impact of climate change on the business under different climate scenarios, we undertook a climate risk assessment including scenario analysis in FY 2021. The risk assessment included physical climate risks and transition related risks to the business. Our assessment was informed by the TCFD technical guidelines (June 2017).

Physical risk assessment

As part of the physical risk assessment, acute risks arising out of increasing severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns were studied for our 55 business locations. We studied the historical trends and future projections of various climate hazards such as change in temperature, change in precipitation, floods,

droughts, and cyclones to understand how the changing climate may impact our different business locations. For future hazard trends, two future climate change scenarios based on IPCC Representative Concentration Pathways (RCPs) were used. Scenarios considered for analysis were:

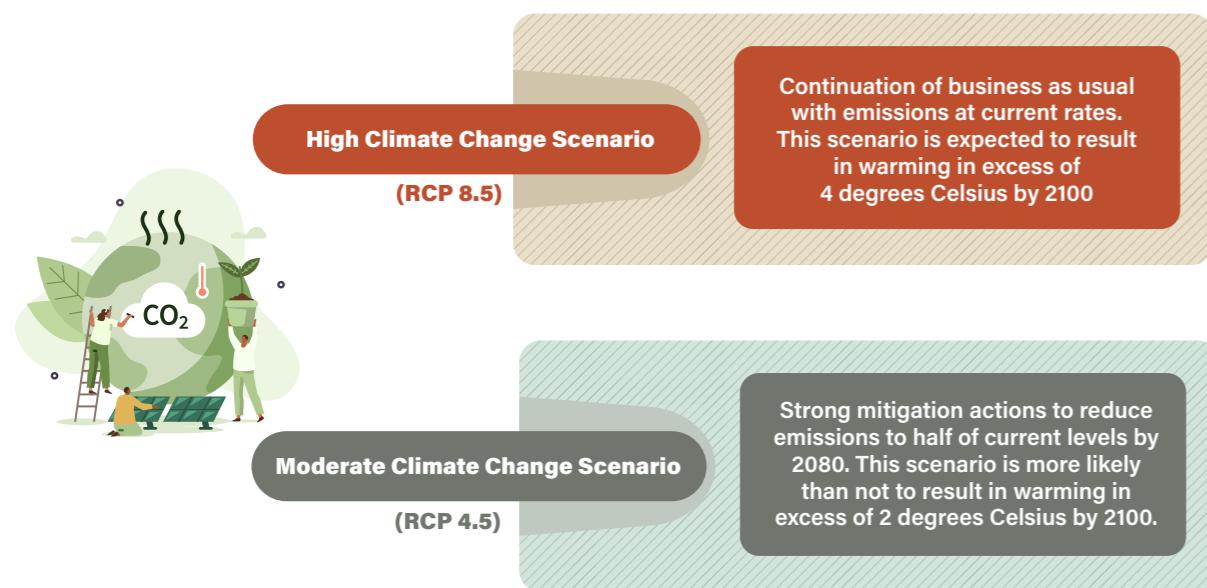


Figure 4: Climate Scenario used for Physical Risk

Considering the RCP 4.5 scenario, over the next decade, we understand that there would be water scarcity at our BALCO and Cairn Oil and Gas units, and a high chance of flooding at our IOB units. Vedanta Aluminium in

Lanjigarh and Jharsuguda already faces a cyclone risk, that will get accentuated in the future. Under RCP 4.5 scenario, how our businesses will face the risk to climate hazards is presented in the table below:



BUSINESS UNITS	CHANGE IN TEMPERATURE	CHANGE IN RAINFALL	FLOOD	DROUGHT	CYCLONE
BALCO	●	●	●	●	●
Cairn Oil & Gas	●	●	●	●	●
ESL	●	●	●	●	●
HZL	●	●	●	●	●
Iron Ore Business	●	●	●	●	●
TSPL	●	●	●	●	●
VAL-L&J	●	●	●	●	●
Sterlite Copper	●	●	●	●	●
VZI	●	●	●	●	●

Table 3: Physical Climate Risk under RCP 4.5 scenario

● VERY LOW ● LOW ● MEDIUM ● HIGH ● VERY HIGH

Under the worst-case scenario (RCP 8.5), many of our Businesses will face extreme climate risks. We will have water stress and scarcity at Sterlite Copper (Thoothukudi), TSPL, BALCO (Korba) and Cairn Oil and Gas. We will also experience very high temperatures at

TSPL and at our units in Namibia and South Africa as compared to the present temperature. A summary of how our various businesses will face the risk to climate hazards under RCP 8.5 scenario is presented in the table below:



BUSINESS UNITS	CHANGE IN TEMPERATURE	CHANGE IN RAINFALL	FLOOD	DROUGHT	CYCLONE
BALCO	●	●	●	●	●
Cairn Oil & Gas	●	●	●	●	●
ESL	●	●	●	●	●
HZL	●	●	●	●	●
Iron Ore Business	●	●	●	●	●
TSPL	●	●	●	●	●
VAL-L&J	●	●	●	●	●
Sterlite Copper	●	●	●	●	●
VZI	●	●	●	●	●

Table 4: Physical Climate Risk under RCP 8.5 scenario

● VERY LOW ● LOW ● MEDIUM ● HIGH ● VERY HIGH



STRATEGY

The change in climate hazards, especially worsening long term trends can damage to assets / infrastructure, induce raw material shortages and input price fluctuations, reduce workforce productivity, cause supply chain disruptions and result in downstream value chain and market disruption. Climate inaction also poses risk to business as there is increasing scrutiny on how businesses are responding to the climate crisis. There could be increased conflicts with communities when faced with the challenge of depleting common resources. Regulators and Investors are introducing

disclosure requirements on how climate risks are assessed and managed.

We assessed the overall climate risk to assets based on IPCC AR5 Risk Assessment Framework¹. According to IPCC AR5, risk (or impact) is a function of hazard, exposure, and vulnerability (adaptive capacity and sensitivity). It is used primarily to refer to the risks of climate-change impacts. The indicative asset value impacted by climate risk was calculated using the following formula:



$$\text{Asset Exposed to Risk} = \text{Exposure} \times \text{Hazard} \times \left(\frac{\text{Sensitivity}}{\text{Adaptive capacity}} \right)$$



Water conservation, Rajasthan, Cairn Oil & Gas

¹IPCC (2014). Emergent risks and key vulnerabilities. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1039-1099.

While exposure represented our physical assets, the hazard index was calculated based on the 5 climate change indicators (Temperature, rainfall, flooding, drought, and cyclone). The sensitivity and adaptive capacity were based on activities and physical pre-disposition of the business units.

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

Table 5: Climate impact on business in short and long term

Business Units	Climate Risk level	Climate Risk Description	Short Term Impact (2020-2039)	Short term adaptation measures (3-5 years)	Long Term Impact (2040-2059)
BALCO	Medium	<ul style="list-style-type: none"> BALCO will face increasing water shortages which will get severe in the long term There will be a medium risk of flooding BALCO has an emergency response plan and regular trainings that increases its resilience to climate risk 	<ul style="list-style-type: none"> Operations: Water shortages will impact CPPs and IPPs in the plant causing disruption of operations Community: Water stress could cause increased conflict with the local community 	<ul style="list-style-type: none"> Increase in recycling capacity Initiation of Rain water harvesting Creation of Farm ponds dug wells and earthen check dams Increasing in HVAC capacity of operations areas to improve working conditions Training for sensitization and awareness on energy and water saving to staff 	<ul style="list-style-type: none"> Health and Safety: Poor water supplies at BU in the longer term will affect worker health, as they may not have access to sanitation services. Business: It can lead to HSE issues Financial Planning: Increased cost of production, if external procurement of water or large-scale solutions for water recycling are required
CAIRN OIL & GAS	Low	<ul style="list-style-type: none"> Cairn onshore locations currently are at a high-water scarcity risk, this will get more severe in the future The offshore sites are in cyclone prone areas, as per the projections heavy winds will increase at the Andhra Coast. There are already actions being taken towards climate change impacts at Cairn reducing its overall risk. 	<ul style="list-style-type: none"> Operations: Water shortages will impact mine cooling and ventilation. This will impact worker health as well as production. Loss of working days Health and Safety: Lives of workers could be at risk due to cyclonic activity at the offshore sites. 	<ul style="list-style-type: none"> Development of greenbelt at operating locations to reduce effect of high temperature Increase in recycling capacity Creation of water security plan (WSP) for communities with help of NGO's Training for sensitization and awareness on energy and water saving to staff 	<ul style="list-style-type: none"> Operations: Poor water supplies at operating locations to reduce effect of high temperature Health and Safety: Increased mine disasters from tailings dams Financial Planning: Increased cost of production, if external procurement of water or large-scale solutions for water recycling are required

● VERY LOW ● LOW ● MEDIUM ● HIGH ● VERY HIGH

Continued...



STRATEGY

Business Units	Climate Risk level	Climate Risk Description	Short Term Impact (2020-2039)	Short term adaptation measures (3-5 years)	Long Term Impact (2040-2059)
ESL	Medium	<ul style="list-style-type: none"> ESL is at risk due to heavy rainfall in short periods of time, this may lead to some level of flooding/inundations. 	<ul style="list-style-type: none"> Operations: Disconnection or disruption of internet and/or phone services, electricity leading to disruption in operations/schedules Health and Safety: Outbreak of diseases at the Business Unit post-flooding due to water stagnation or through pollution of existing waterbodies. 	<ul style="list-style-type: none"> Infrastructure development for dealing with floods Early warning system creation Development of emergency action plan for floods/ flash floods 	<ul style="list-style-type: none"> Financial Planning: Impact on furnaces, and other plant machinery leading complete dysfunction Operations: Disruption of product transport and supply due to roads being impassable
Iron Ore Business	High	<ul style="list-style-type: none"> Heavy rainfall will be a key risk factor for our IOB There will also be rise in maximum temperature in the long term 	<ul style="list-style-type: none"> Health and Safety: Flooding can inundate the mining area, and can represent a risk to workplace safety Operations: Increased inundation of storage rooms, power back up facilities if adequate measures are not taken. 	<p>It is assumed that the flood proofing would cost an estimated 2% of the total building/ asset cost. This is based on the flood proofing costs in India.²</p> <ul style="list-style-type: none"> Creation of early warning system Ensuring of asset integrity of structures Creation of emergency plan for cyclones/ floods 	<ul style="list-style-type: none"> Operations: Could cause absenteeism for employees and disruption of work in cases of heavy rainfall and waterlogging Financial Planning: Complete closure of mines or high risk of lawsuits in case of heat stress or flooding
TSPL	Medium	<ul style="list-style-type: none"> TSPL will face high temperatures and water stress in the short term that will only exacerbate in the future The age of the TSPL plant increases its sensitivity to climate impacts There are multiple measures to save water as well as reduce impacts from sudden climate events 	<ul style="list-style-type: none"> Health and Safety: Difficulty for staff to work in open spaces due to heat. Heat waves are the leading causes of weather-related morbidity and mortality and will directly impact the health of the staff/ community in the vicinity Community: Water stress could cause increased conflict with the local community 	<ul style="list-style-type: none"> Increasing in HVAC capacity of operations areas to improve working conditions Training for sensitization and awareness on energy and water saving to staff Development of greenbelt near working areas to reduce effect of high temperatures Creation of water security plan (WSP) for communities Or creation of water infra for communities 	<ul style="list-style-type: none"> Operations: Rise in temperature can cause damage to BU infrastructure through expansion of metal joints, substructure damage, asphalt deterioration, increased O&M costs including painting, cracks etc TSPL lacking ample water supplies will make it vulnerable to power disruptions from drought Financial Planning: Increased cost of production, if external procurement of water or large-scale solutions for water recycling are required

Business Units	Climate Risk level	Climate Risk Description	Short Term Impact (2020-2039)	Short term adaptation measures (3-5 years)	Long Term Impact (2040-2059)
VAL- L&J	Medium	<ul style="list-style-type: none"> VAL Lanjigarh and Jharsuguda are at risk from high temperatures, water scarcity and cyclonic activity VAL has Emergency Response plan for flooding and extreme events 	<ul style="list-style-type: none"> Operations: Infrastructure failures due to cyclone/wind such as complete collapse of galvalume roofing system, failure of connections, failure of structures, and progressive collapse of roof steel trusses, breakage of windowpanes at the BU Cyclones would impact road, railway lines, sewage systems, power transmission lines Disconnection or disruption of internet and/or phone services, electricity leading to disruption in operations 	<ul style="list-style-type: none"> Early warning system for floods/ cyclones Framework for coordination with administration Emergency plan for flood/cyclones Availability of key equipment for dealing with floods (high capacity pumps etc) Some sort of power back up of small capacity will have to be ensured in case of power outages Training and awareness of employees 	<ul style="list-style-type: none"> Community: Water stress could cause increased conflict with the local community Operations: Water shortages will impact CPPs and IPPs in the plant causing disruption of operations Financial Planning: Increased cost of production, if external procurement of water or large-scale solutions for water recycling are required
Sterlite Copper	Medium	<ul style="list-style-type: none"> Sterlite Copper would experience water shortages along with increase in rainfall variation (heavy rainfall in short periods of time) 	<ul style="list-style-type: none"> Health and Safety: Water scarcity can affect workers health, as well as local community. Can cause HSE issues Financial Planning: The most important factors that the rainfall change expects to affect are structural damage which leads to extra operation and maintenance costs. 	<ul style="list-style-type: none"> Improvement in recycling rate to reduce dependence on freshwater Water security plans (WSPs) provide a systematic and integrated approach to water supply and demand management based on assessment and control of various factors Creation of water retaining infrastructure like ponds, du wells and earthen check dams 	<ul style="list-style-type: none"> Financial Planning: Increased cost of production, if external procurement of water or large-scale solutions for water recycling are required Community: Water stress could cause increased conflict with the local community

● VERY LOW ● LOW ● MEDIUM ● HIGH ● VERY HIGH

² Jeroen C. J. H. Aerts , 2018, A Review of Cost Estimates for Flood Adaptation, Water 2018, 10, 1646; doi:10.3390/w10111646



STRATEGY

Business Units	Climate Risk level	Climate Risk Description	Short Term Impact (2020-2039)	Short term adaptation measures (3-5 years)	Long Term Impact (2040-2059)
VZI	Medium	<ul style="list-style-type: none"> VZI will experience an increasing in its temperature, which will get worse in the long term VZI may also face water scarcity VZI has a Heat exposure procedure in place and has adequate monitoring systems for extreme weather events 	<ul style="list-style-type: none"> Operations: Water scarcity could impact production and operation in mines Health and Safety: Water scarcity can affect workers health Health and Safety: Heat waves are the leading causes of weather-related morbidity and mortality and will directly impact the health of the staff/ community in the vicinity 	<ul style="list-style-type: none"> Increasing in HVAC capacity of operations areas to improve working conditions Training for sensitization and awareness on energy and water saving to staff Development of greenbelt near working areas to reduce effect of high temperatures Emergency preparedness plan for dealing with extreme temperatures/heat waves Creation and maintenance of adequate medical facilities at site 	<ul style="list-style-type: none"> Community: Water stress could cause increased conflict with the local community Financial Planning: High temperatures would prevent working in the mines, and could increase cooling costs

● VERY LOW ● LOW ● MEDIUM ● HIGH ● VERY HIGH

Transition risk assessment

To understand our transition risk, we used the Network for Greening the Financial System (NGFS) Scenarios developed in partnership with an academic consortium from the Potsdam Institute for Climate Impact Research (PIK), International Institute for Applied Systems Analysis (IIASA), University of Maryland (UMD), Climate Analytics (CA) and Eidgenössische Technische Hochschule Zürich (ETH). The transition pathways for the NGFS Scenarios are differentiated by several key design choices relating to long-term temperature targets, net-zero targets, short-term policy, overall policy coordination and technology availability. The following scenarios were used for our analysis:

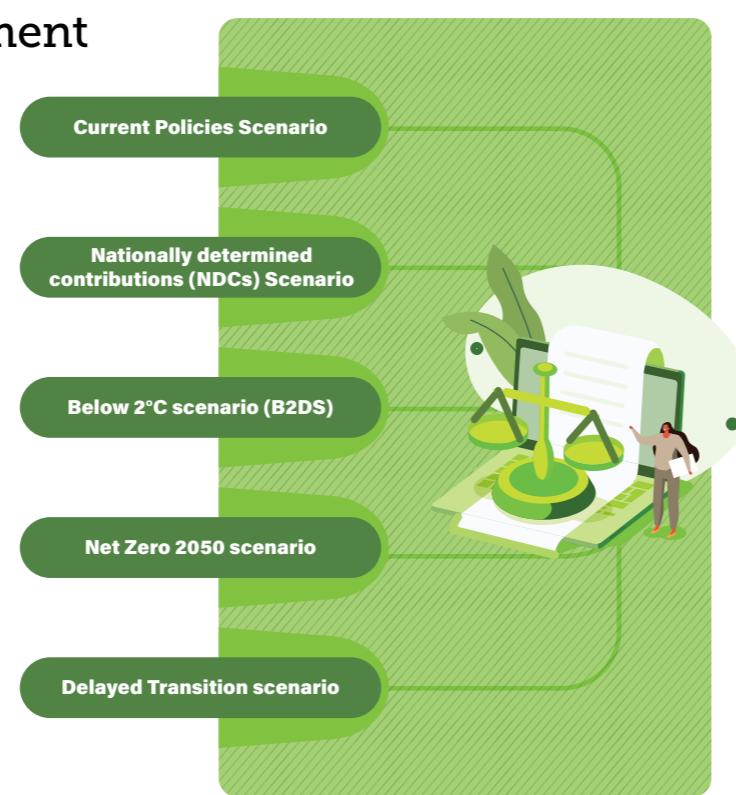


Figure 5: Scenarios used for analysing Transitional Risks

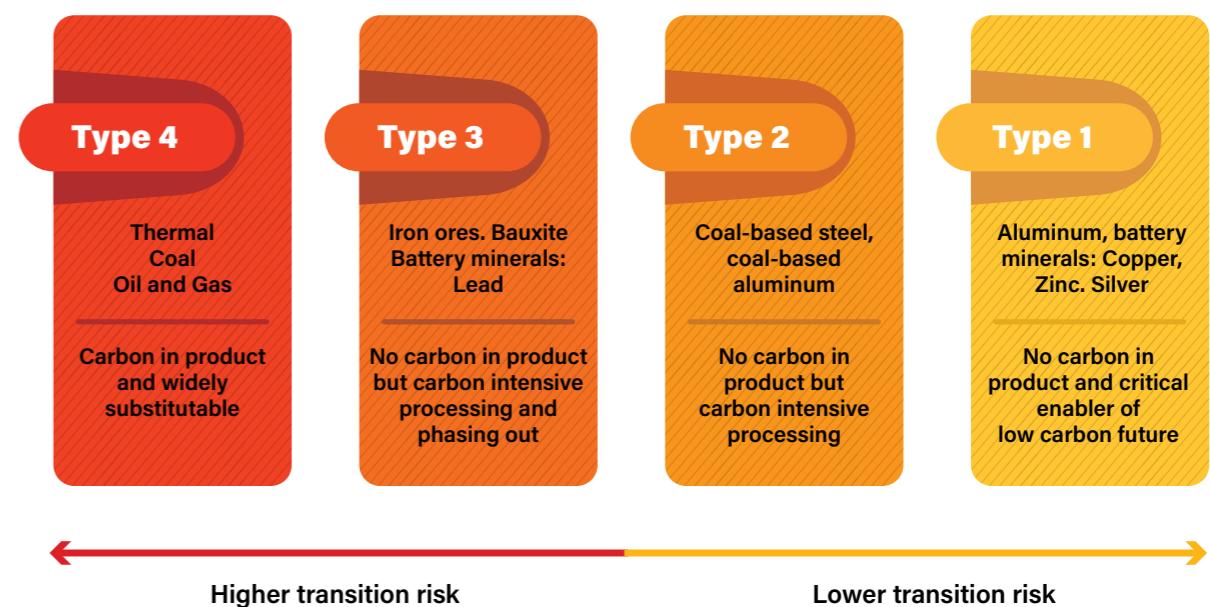
A variety of transition risk factors (as defined by the TCFD) were reviewed for our scenario analysis:

1. Market risk: This could be understood as shifts in supply and demand for certain commodities, products, and services as climate-related risks are increasingly considered.

2. Policy and legal risks: Policy actions attempt to constrain actions that contribute to the adverse effects of climate change or seek to promote adaptation to climate change. Legal risks are likely to increase as the value of loss and damage arising from climate change grows,

Our portfolio could be broadly understood as spread across 4 types, with the Thermal, Oil and Gas at the highest transition risk as there is carbon in the product and currently with RE it can be easily substituted. The least transition risk is to our aluminium, copper, zinc business except through its processing.

Figure 6: Transitional risk to Vedanta's portfolio



The iron ore and higher quality metallurgical coals that Vedanta produces are resilient. The world will need more steel for continued economic growth and to build the infrastructure required for decarbonisation. As the world moves to decarbonise, oil demand will eventually decline. However, at present oil remains essential for human mobility and many of the difficult-to-displace industrial processes and products that support daily life today and we expect it will take some time for erosion of demand.

these maybe translated through increase in carbon taxes or through other carbon pricing mechanisms.

3. Technology risk: Technological improvements or innovations that support the transition to a lower-carbon, energy efficient economic system can have a significant impact on organizations.

4. Reputational risk: The potential source of reputational risk is tied to changing perceptions of customers towards an organization's contribution to or detraction with regards to climate change.

The transition to a low-carbon economy will have immense implications on the commodities we produce, as well as the processes we use to produce them – particularly when considering fossil-fuel-based steel and Aluminium production. This creates considerable opportunities for our business, but also presents clear risks if we fail to align our projects and products with a net zero future. It poses an even greater risk to our thermal power and oil & gas business.



STRATEGY

MARKET RISKS

ALUMINIUM

As per our scenario analysis, there is no apparent short-term risk in terms of reduced demand due to shift in consumer preferences.

Even with a low carbon market transition, Aluminium demand is anticipated to grow across all low carbon future scenarios that we analysed. However, such strong growth projections and a continuous need for primary material make decarbonization of our aluminium business critical to the global response against climate change.

In parallel, considering the demand for low-carbon aluminum already rising, we at Vedanta we have developed India's first low carbon "Green Aluminium". The carbon footprint of our product is lower than the global threshold.



Addressing Market Risks in Aluminium Sector

COPPER

In all the scenarios we analysed, the story is clear for copper: copper demand is set to grow. The key risks our copper business faces are from missing out on recycled copper. The International Copper Association estimates that more than 60 percent of refined copper is used for supporting electricity and heating systems.³

ZINC

We are one of the world's largest producers of zinc. Similar to the scenario analysis of copper and aluminium, zinc demand tied to low-carbon applications are set to grow across all scenarios: the more aggressive the world is in adopting renewables, the greater the demand for zinc. Zinc has multiple applications in the renewable energy and transportation sectors. One of the major uses of zinc in this context is the use of zinc to galvanize steel that is, in turn, used in low-carbon applications. For example, zinc coatings significantly extend the service life of wind turbines.



Addressing Technology Risks in Non-ferrous metals Sector

Demand for our minerals (non-ferrous metals) will increase in any scenario for a lower-carbon pathway. However, mineral mining companies that power their operations with renewable energy, operate electric or hydrogen-powered truck fleets and integrate recycling in their value chains will be best placed to sell low-carbon premium minerals.

We have started using electric vehicles earlier at ESL and now have BEVs at HZL. This is part of a technological transformation as we support India's ambition delivering its internationally agreed target of limiting global warming.

While a transition to a low-carbon economy is positive for zinc demand, there are implications on our business due to carbon taxes. Especially for our business in Namibia and South Africa, where carbon taxation was introduced in 2019. The tax sees companies taxed on direct emissions at a rate of R127 (USD 8.2) per tonne CO₂e emitted, rising to R134 (USD 9) this year, and escalating at 10% per annum over the next five years.⁴

IRON AND STEEL

There is widespread acceptance of the need to shift to low-carbon forms of iron and steel production, but what technology or process change to move to isn't clear. Demand for low-carbon steel is already rising, with manufacturers, particularly in the European industries, seeking to reduce GHG emissions across their value

The NGFS projects a 2x increase in carbon pricing for most low-carbon scenarios. Our analysis of the effect of carbon pricing on VZI operations indicates that while carbon pricing risk exposure exists, it is currently small due to the 10% trade exposure allowance and these likely to continue at least till 2025.⁵ Future growth of carbon pricing risk is highly dependent on South African climate policy in the medium and long-term, which at present is seen by third party organizations as insufficient.

chains. These companies are prepared to pay premium prices for low-carbon steel brands. They are at the cutting edge of a growing trend. Accordingly, iron and steel producers are looking to move towards addressing those needs. It is likely that low-carbon eligibility criteria will be tightened in future as global standards develop.

THERMAL POWER

Under all scenarios we see high transition risk for Thermal Power business at TSPL, even though India is a major force in the global energy economy. As per the NGFS model investment in electricity from coal will sharply decrease unless it is accompanied with newer technologies such as CCS. However, this CCS supported

thermal power may fall beyond 2050 in all scenarios. In the long run, as per policy scenarios with global carbon transitions, thermal power generation is a systemically disadvantaged means of electricity production in a world impacted by global warming.

OIL AND GAS

Predicting how fossil fuel markets will react in a world of declining demand will be exceedingly difficult. This is especially true for global oil and gas markets where supply constraints, geopolitical issues and many regional considerations complicate the analysis. Except for Current policies and NDCs scenario, in nearly all scenarios, we

analysed that our Oil and Gas demand and subsequently our revenue is reducing. In either scenario beyond 2035, the business no longer seems viable. Oil and gas will play a role for decades to come, though they will be gradually replaced by renewable energy sources.

Cambay, Gujarat, Cairn Oil & Gas



³ "Energy and Renewables," Applications, Copper Development Association: <https://copperalliance.org.uk/about-copper/applications/energy-and-renewables>

⁴ <https://home.kpmg/us/en/home/insights/2021/02/tnf-south-africa-carbon-tax-measures-included-budget-2021.html>

⁵ https://www.sars.gov.za/wp-content/uploads/Docs/CarbonTax/Frequently-Asked-Questions-Carbon-Tax_3.0.pdf



STRATEGY

POLICY AND LEGAL RISK

NATIONAL CARBON MARKET

The Government of India is currently developing a carbon market to transition the economy to a low carbon pathway. Bureau of Energy Efficiency has developed a blueprint document that presents a framework for development of the carbon market subsuming existing mechanisms such as Perform, Achieve and Trade (PAT) Scheme and Renewable Energy Certificates (REC).

The Government is also considering setting emission reduction targets in the long term. The implications of these proposed regulation are not clear as of now. As and when information is available, we will take necessary efforts to assess the implications to our business and to comply with the regulations.⁶

CARBON BORDER ADJUSTMENT MECHANISM TAX (CBAM)

The Carbon Border Adjustment Mechanism (CBAM) is a carbon-pricing system for imports into the European Union. It is aimed at adjusting the price of certain imported products to the amount of CO₂ emissions incorporated in them, in order to equalize the cost of carbon between EU products and these imports. India is among the countries that are most likely to be impacted by CBAM.

The CBAM is proposed to be applicable as of January 1, 2023, the price of CBAM tax potentially would be measured based on the price of ETS certificates (EURs) calculated as per the weekly average auction price of ETS allowances expressed in EUR/ton of CO₂ emitted.⁷ We export our Iron and Steel products to the EU, CBAM poses a market risk by increasing the landed cost of our end products.

Vedanta Iron and Steel	Unit	2020	2025	2030	2035	2040	2045	2050
Pig Iron GHG Intensity	tCO ₂ /ton	2.77	2.51	2.33	2.05	2.00	1.96	1.91
Pig Iron Production Cost for Vedanta⁸	USD/ton	127	127	127	127	127	127	127
Hot Metal (Pig Iron) Benchmark for EUETS⁹	tCO ₂ /ton	1.29	1.29	0.58	0.58	0	0	0
EU-ETS European Union Allowance Price¹⁰	USD	38	75	147	225	242	299	346
CBAM Tax**	USD/ tCO ₂	-	91	257	331	483	585	662
Landed cost of 1 tonne Pig Iron***	USD	-	218	384	458	610	712	789

*(1 EUR=1.14 USD) **(CBAM=((Vedanta GHG intensity-EUETS benchmark intensity)*EUA Price) ***(excluding transportation and other costs) **Table 6:** CBAM scenario for Vedanta Steel Business

While currently Vedanta does not have a large EU market, however, if the CBAM price comes into picture, and if our intensity remains the same then the landed cost of aluminium could nearly double for VAL. This is excluding the transportation and other import costs.

This has a potential to make the product uncompetitive for the EU market. However, as per our Net Zero commitment and strategy we aim to reduce the GHG intensity of our aluminium and iron & steel by more than 80% thereby reducing impact of CBAM.

Vedanta Iron and Steel	Unit	2020	2025	2030	2035	2040	2045	2050
Aluminium GHG Intensity	tCO ₂ /t Al	17.46	16.53	14.17	13.16	11.26	6.97	2.67
Aluminium Production Cost for VAL¹¹	USD/t Al	1690	1690	1690	1690	1690	1690	1690
Aluminium Benchmark for EUETS¹²	tCO ₂ /ton	1.46	1.46	0.66	0.66	0.26	0.26	0
EU-ETS European Union Allowance Price*	USD	38	75	147	225	242	299	346
CBAM Tax**	USD/ tCO ₂	-	1124	1987	2811	2660	2007	925
Landed cost of 1 tonne aluminum***	USD	-	2814	3677	4501	4350	3697	2615

*(1 EUR=1.14 USD) **(CBAM=((Vedanta GHG intensity-EUETS benchmark intensity)*EUA Price) ***(excluding transportation and other costs)

Table 7: CBAM scenario for Vedanta Aluminium Business

⁶https://economictimes.indiatimes.com/industry/renewables/india-plans-own-uniform-carbon-trading-market/articleshow/91082527.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

⁷https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661

⁸<https://www.vedantalimited.com/InvestorReports/VEDL%20Results%20Presentation%20FY2020.pdf>

⁹<https://www.vedantalimited.com/InvestorReports/VEDL%20Results%20Presentation%20FY2020.pdf>

¹⁰<https://www.vedantalimited.com/InvestorReports/VEDL%20Results%20Presentation%20FY2020.pdf>

¹¹<https://www.vedantalimited.com/InvestorReports/VEDL%20Results%20Presentation%20FY2020.pdf>

¹²https://eur-lex.europa.eu/eli/reg_impl/2021/447

CARBON TAX (AFRICA)

While a transition to a low-carbon economy is positive for zinc demand, there are implications on our business due to carbon taxes. Especially for our business in Namibia and South Africa, where carbon taxation was introduced in 2019. The tax sees companies taxed on direct emissions at a rate of R127 (USD 8.2) per tonne CO₂e emitted, rising to R134 (USD 9) this year, and escalating at 10% per annum over the next five years.¹³ The NGFS projects a 2x increase in carbon pricing for

most low-carbon scenarios. Our analysis of the effect of carbon pricing on VZI operations indicates that while carbon pricing risk exposure exists, it is currently small due to the 10% trade exposure allowance and these likely to continue at least till 2025.¹⁴ Future growth of carbon pricing risk is highly dependent on South African climate policy in the medium and long-term, which at present is seen by third party organizations as insufficient.

TECHNOLOGICAL RISK

Technological risk is high for sectors like steel and coal-based thermal power as there are no major substitutes for the raw material used in the process of steel manufacturing and thermal power generation. All the major steel manufacturers are undertaking R&D and pilot projects to use hydrogen in the reduction process to convert iron oxide to steel. However, the technological

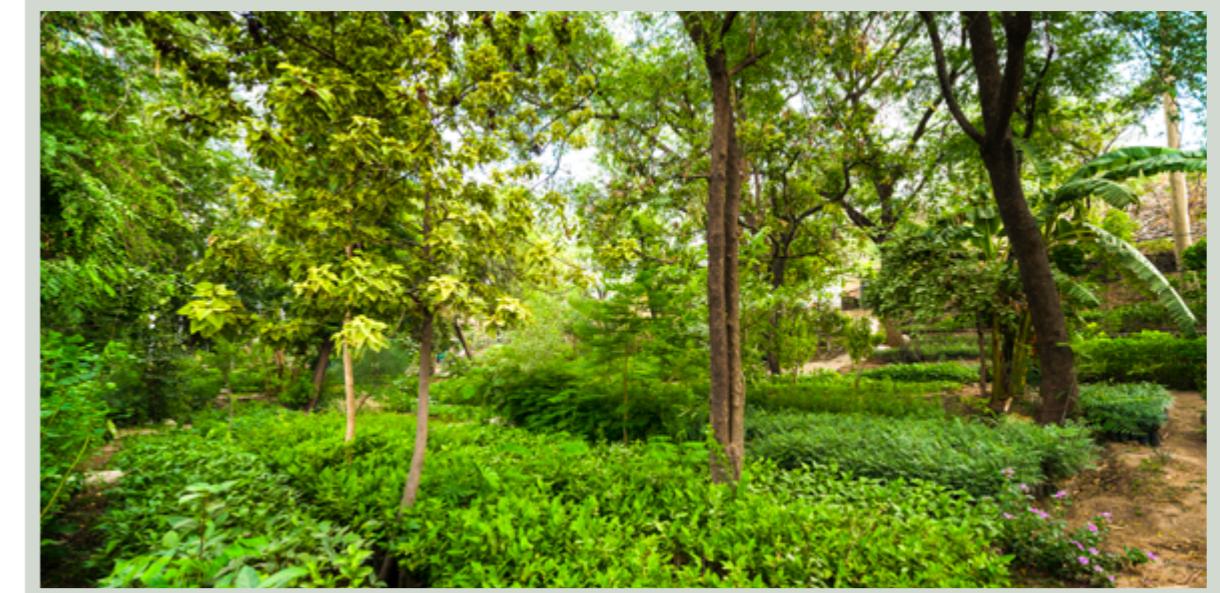
adoption of green hydrogen to replace coke is likely to become a mainstream technological solution after 2030. Coal-based thermal power plants face the risk of being substituted with renewable energy power plants. The use of CCUS or fuel-replacement technologies is currently not viable for these units, resulting in a high technological risk for the sector.

REPUTATIONAL RISK

Reputation risk is not a major risk in the current context as Vedanta is already working on the theme of Zero Harm, Zero Waste, Zero Discharge and through our VSAP (Vedanta Sustainability Assurance Framework) programme for energy and GHG emissions related targets. We have publicly committed action for climate

change which the stakeholders have appreciated. The risk part lies in not being able to aggressively work on decarbonization agenda and on our committed targets that can be seen as negative by investors, rating agencies and other stakeholders considering the large GHG footprint of group and need for the urgent action.

Green Plantation, HZL



¹³<https://home.kpmg/us/en/home/insights/2021/02/trf-south-africa-carbon-tax-measures-included-budget-2021.html>

¹⁴https://www.sars.gov.za/wp-content/uploads/Docs/CarbonTax/Frequently-Asked-Questions-Carbon-Tax_3.0.pdf



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Considering the analysis of all risks across all 5 scenarios, we summarize the potential impacts to Vedanta group as follows:

Table 8: Transition Risk impacts on Vedanta

Business Units	Transition Risk Level	Short term Impacts (2020-2035)	Long term Impacts (2035-2050)
Aluminium	Low	<ul style="list-style-type: none"> Legal: There is no indication carbon price on Aluminium in India. Regulatory implications may arise from international mechanisms such as CBAM Market: There is an increased demand for recycled Aluminium globally. There is risk of coal prices going high and impacting financial viability of our products. Technology: Profitability impacted due to costs for shifting to clean energy sources Reputation: No major impact from reputational risk due to low carbon transition for Aluminium. 	<ul style="list-style-type: none"> Legal: Increase in local and national reporting requirements, carbon price possibly through the national voluntary carbon market mechanism Market: Loss of market share to competitors with greener products Technology: Loss of market share to competitors with greener processes and technologies Reputation: Investor pressure on reducing emissions, EV vehicle manufacturers and other end users avoiding product due to high carbon footprint
Non-Ferrous (Zinc and Copper)	Low	<ul style="list-style-type: none"> Legal: There is no indication carbon price on minerals (copper, zinc). Regulatory implications may arise from international mechanisms such as CBAM Market: Low carbon transition will increase mineral demand. There is risk of coal prices going high and impacting financial viability. Technology: Costs to adopt/ deploy new practices and processes by changing the current processes such as phasing out Pyro metallurgical processes, copper from recycled electronic scrap etc. Reputation: No major impact from reputational risk due to low carbon transition. However, social license to operate the mines may be affected as climate change begins to impact host communities and local environments 	<ul style="list-style-type: none"> Legal: No carbon price in India but increase in local and national reporting requirements. However, there is a possibility that the domestic carbon tax in South Africa, would increase and this would impact overall revenue of VZI Market: Loss of market share to competitors producing more cleaner products Technology: Increased research and development (R&D) expenditures in new and alternative technologies as well shifting of energy sources Reputation: Increased competition for natural resources and tensions between mine operators and local communities
Iron and Steel	Low	<ul style="list-style-type: none"> Legal: There is no indication carbon price on iron and steel goods in India. But Carbon Border Adjustment Mechanism (CBAM) can impose a cost on our iron and steel imported into the European Union. Market: Domestic market for demand for iron and steel will continue to grow. But there is an increasing demand for carbon-reduced/ neutral steel products to decarbonize their own value chain, in combination with a willingness to pay a price premium. This is also driven by recent discussions on Ecolabel approaches by the European Commission.¹⁵ Technology: Costs to adopt/ deploy new practices and processes will incur costs such as EAF etc. Reputation: No major impact from reputational risk due to low carbon economic transition. However, social license to operate the mines may be affected as climate change begins to impact host communities and local environments 	<ul style="list-style-type: none"> Legal: Increase in local and national reporting requirements, carbon price possibly through the national voluntary carbon market mechanism Market: Loss of market share to competitors specifically on recycled steel. Our high dependency on coal/ grid electricity owing to the locations being in India could also impact international import and demand. We do not foresee a domestic market risk. Technology: Increased research and development (R&D) expenditures in new and alternative technologies such as EAF or for recycling technologies etc. Reputation: No major impact from reputational risk due to low carbon transition for iron and steel. Increased competition for natural resources and tensions between mine operators and local communities

Business Units	Transition Risk Level	Short term Impacts (2020-2035)	Long term Impacts (2035-2050)
Thermal Power	Medium	<ul style="list-style-type: none"> Legal: India has no plans to pull out completely from coal and the transition to clean energy will take a couple of decades through "a phase down". We do not foresee any legal or regulatory risks in the short term. Market: The existing coal tax with more ambitious climate targets could be subjected to increase impacting overall profitability and financial viability Technology: No major short term technology implications Reputation: No major impact from short-term reputational risk to TSPL, investment and finance is still available. 	<ul style="list-style-type: none"> Legal: Increased regulations on complying with emerging climate and emission levels. Exposure to litigation including non-compliance with reporting, negative impacts to climate change/ environment. Regulations for phasing out of thermal power from 2050 onwards Market: More RE providers in the grid, with better prices leading to loss of market share. Technology: May no longer be a key electricity option by 2050 due increase in RE technologies Reputation: No investor or government support until paired with CCUS
Oil & Gas	High	<ul style="list-style-type: none"> Legal: There is no indication for a carbon price on Oil and Gas in India in the short term. Market: No short-term impacts on domestic market demand, reduced international demand. Risk of being replaced by cleaner and greener fuels. Technology: Costs to transition to lower emission technology. High costs for investing in CCUS and other emission reduction technologies. Reputation: Impact from reputational risks is among the highest for oil and gas sector internationally. No major reputational risk domestically for our business. 	<ul style="list-style-type: none"> Legal: There could be a national carbon price/ taxation on oil and gas. Bans or moratoria on certain types of new projects such as offshore drilling due high environmental impact. Market: Considerable loss of international market share. Reduced in demand domestically. Fall in price of Oil and Gas impacting revenues Technology: Replaced by biofuels, low carbon hydrogen, other RE sources. Reputation: Reduced revenue from decreased demand for oil and gas as consumers move away from fossil fuels. Shift in interest of the investors due to high-carbon intensity of the products

● VERY LOW ● LOW ● MEDIUM ● HIGH ● VERY HIGH

Plantation research, VZI



¹⁵ <https://www.mckinsey.com/industries/metals-and-mining/our-insights/decarbonization-challenge-for-steel>

Opportunities

With the global energy transition, Vedanta is also optimizing its business portfolio, through capturing the growth in renewables and as well as establishing new market opportunities with low carbon metals and minerals and leveraging newer low carbon technology.

Vedanta's R&D strategy and investments have been

influenced by climate-related issues for many years. Moreover, to achieve our Net Zero goals, we now have ambitious targets within our business to reduce GHG emissions in the production process and to develop products that contribute to a reduction of emissions. This redirects our approach to seeking out opportunities in the global energy transition.



Increasing efficiency and reduced emissions

Our approach to sustainability is embedded in the way we work. We have replaced fossil fuelled heavy vehicles with technologically advanced lithium-ion forklifts at a large scale. 23 lithium-ion battery-powered electric forklifts will be deployed at our Aluminium Smelter in Jharsuguda.

This opportunity allows for GHG emission savings of nearly 690 tonnes of CO₂e and it also enables longer working cycles, thereby improving productivity, while being virtually maintenance-free.



Vedanta Aluminium to Deploy one of India's Largest Lithium-ion Forklift Fleets

Signed MoU with GEAR India for 23 lithium-ion battery-powered electric forklifts to be deployed at our Aluminium Smelter in Jharsuguda.



Table 9: Opportunities for Vedanta's BUs

Opportunities	Business Units	Time Horizon to realize opportunity	Strategy to realize opportunity
Green Aluminium	Aluminium	Short-term	<ul style="list-style-type: none"> Launch of Restora and Restora Ultra is catering to the sustainability conscious customers in Europe. Going forward, we see demand for green aluminium rising Reducing risk of CBAM related penalty
Green Copper	Copper	Medium and Long term	<ul style="list-style-type: none"> Will launch green copper in next few quarters Robust demand, use of renewable energy and increased use of scrap in production will drive this segment going forward
Electric Vehicles	All Business	Medium and Long term	<ul style="list-style-type: none"> Will reduce consumption of diesel Will improve availability of our mining fleet due to less failure chances in general Will reduce harmful emissions (fugitive emissions) from vehicle which will reduce air circulation requirement in underground mines
Renewable Power in operations	Aluminium, Zinc, Steel, Copper	Short and medium term	<ul style="list-style-type: none"> Reduced coal usage in operations Reduced water usage assisting in aim of Net Water Positive (NWP) organization by 2030 Reduced ash generation leading to reduction in ash utilization cost

Use of Electric Vehicle at MPT, Cairn Oil & Gas



MANAGING CLIMATE RISKS



At Vedanta, we understand there is a need to act urgently, with speed and at scale to solve the climate emergency. We should pursue ambitious efforts to mitigate physical and transition risks related to climate change to business. We should leverage climate action as a risk mitigation strategy as well as a business opportunity.

To solidify our climate commitments, Vedanta has increased its ambition by setting a target of becoming net zero by 2050 or sooner. In this direction, we have

pledged 5 billion USD over the next 10 years to accelerate transition to net zero operations. Our interim target is to reduce our absolute emissions by 25% by 2030. Our targets are aligned with the national vision to decarbonize the Indian economy by 2070. They are also in line with our purpose of creating long-term value for our business and stakeholders and satisfies our vision to produce low-impact metals and minerals for Zero Harm, Zero Waste and Zero Discharge.

Decarbonization Strategy

As part of the physical risk assessment, acute risks arising out of increasing severity of extreme weather events and chronic risks resulting from longer-term changes in climate patterns were studied for our 55 business locations. We studied the historical trends and future projections of various climate hazards such as change in temperature, change in precipitation, floods,

droughts, and cyclones to understand how the changing climate may impact our different business locations. For future hazard trends, two future climate change scenarios based on IPCC Representative Concentration Pathways (RCPs) were used. Scenarios considered for analysis were:

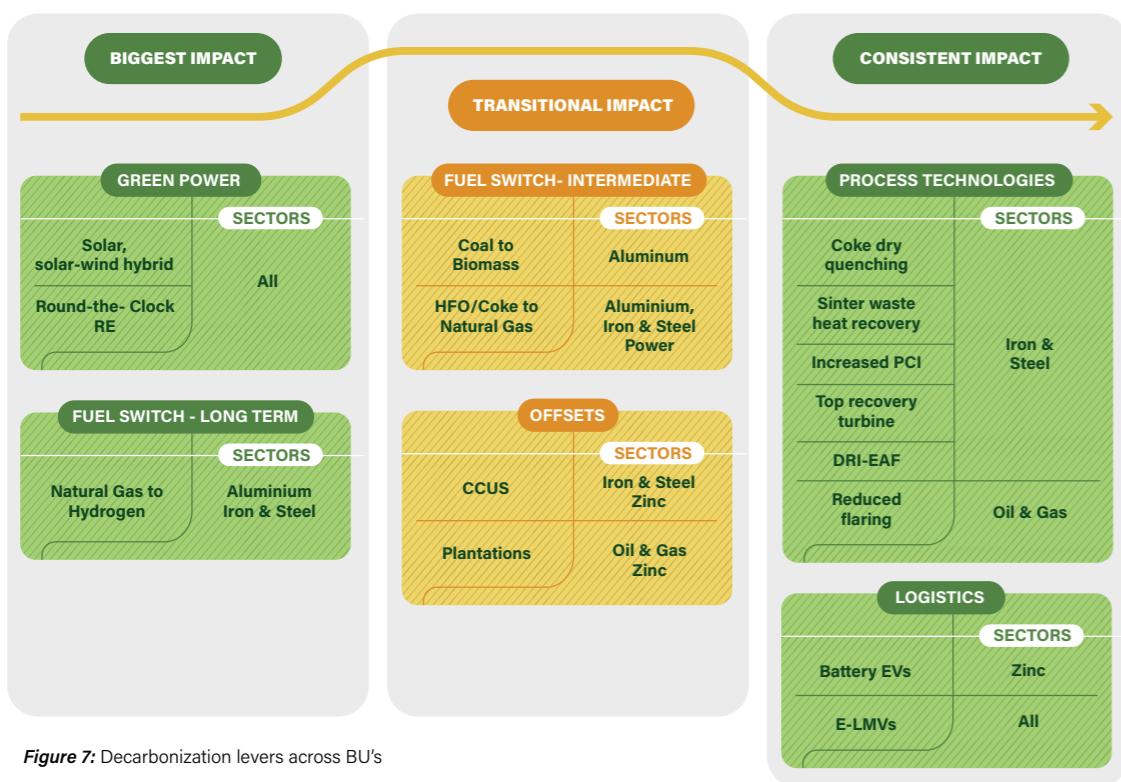


Figure 7: Decarbonization levers across BU's



Decarbonizing our Business

We are undertaking measures that decarbonize and reduce the transitions risks our businesses might face. This includes shifting our current fuel to more greener sources. Vedanta Aluminium has signed a term sheet with GAIL (India) for supply of natural gas/RLNG to Lanjigarh Alumina Refinery. With this arrangement, the refinery operations will switch to natural gas/ RLNG, replacing consumption of Heavy Furnace Oil (HFO)/Light Diesel Oil (LDO). As a result, SOx emissions will potentially reduce by -99.9%, NOx emissions by -83%, and CO₂ emissions by 30% for the refinery operations.

Vedanta Aluminium and GAIL (India) sign term sheet for natural gas/RLNG supply to Alumina Refinery, Lanjigarh



Mr Pankaj Bhagat, Zonal General Manager, GAIL (India) Ltd., and Mr Rahul Sharma, Dy. CEO - Aluminium Business, signed the term sheet on behalf of the respective companies



Aluminium, Lanjigarh



MANAGING CLIMATE RISKS

The table below depicts the key decarbonization pillars for our businesses in short to long term. It is worthwhile to note from the Table 5 below that though the degree and pace of decarbonization varies from one business to the other depending the status of the businesses, readiness, and viability of the clean technologies for adoption in respective sectors of their operation, each business is equally committed to the cause of optimizing their actions towards a low carbon path that is climate resilient and sustainable.

Table 10: Business wise key levers for emissions reduction

Business Units	Decarbonization pillars	Key measures
Zinc	Avoid	<ul style="list-style-type: none"> 100% renewable energy by 2040 100% shut down of coal based CPP by 2040 100% shift to Battery Operated Vehicles/ hydrogen vehicles
	Minimize	<ul style="list-style-type: none"> Carbon capture and utilize - 50% concrete, 50% soil carbon enhancement by 2050
	Offset	<ul style="list-style-type: none"> Plantations – 5 million trees by 20500
Oil and Gas	Avoid	<ul style="list-style-type: none"> Up to 50 MW of renewable energy sourcing by 2030
	Minimize	<ul style="list-style-type: none"> Energy conservation and process optimization Reduced flaring wherever possible
	Offset	<ul style="list-style-type: none"> Plantations – 2 million trees by 2030
Thermal Power	Avoid	<ul style="list-style-type: none"> Up to 25 MW of renewable energy by 2025 Natural Gas to replace HFO/LDO by 2025 Up to 20% acquisition of biomass-based plants
Iron & Steel	Avoid	<ul style="list-style-type: none"> Gradual increase in use of Natural Gas in Blast Furnace 10 MW of solar power by 2030 Use of hydrogen in PCI pilots to start with and then gradual increase of hydrogen use in PCIs
	Minimize	<ul style="list-style-type: none"> Continuous process improvements such as coke dry quenching, sinter waste heat recovery, increased PCI, top recovery turbine etc. Gradual increase in carbon capture, starting with 50 TPD in the short term
Aluminium - smelters	Avoid	<ul style="list-style-type: none"> Phase-wise round- the-clock renewable energy capacity addition, 580 MW of which has already been committed and agreements signed Gradual increments in biomass cofiring in boilers 100% HFO replacement in processes, with Natural Gas by 2035, followed by replacements with Green Hydrogen by 2050
	Minimize	<ul style="list-style-type: none"> Incremental and continuous energy efficiency Starting to invest in Inert Anodes in the short term with an aim to shift to 100% Inert Anodes in the long term
Aluminium refinery	Avoid	<ul style="list-style-type: none"> 50% hydrogen in cogeneration during 2035-2050 Biomass cofiring in boilers 100% HFO replacement in processes with Natural Gas by 2030, followed by green hydrogen by 2050 Phase-wise capacity addition of renewable energy
	Minimize	<ul style="list-style-type: none"> Incremental and continuous energy efficiency



Decarbonizing our Business

Climate change is a global challenge and requires a collective effort. Vedanta has been contributing by accelerating our response to the energy transition. At Vedanta we are undergoing a transformation of how energy is produced, transported and used at our businesses.

On the renewables side, we are now the largest industrial consumer of RE, we have also at a Group level decided to use "2.5 GW of Round the Clock (RTC) Renewable Energy for its operations by 2030"

Vedanta Aluminium is India's largest industrial consumer of Renewable Energy in 2021

- 2 Billion Units of RE power
- 1540 KtCO2e reduction in GHG emission
- 2.8 million RE Certificates





Internal Carbon Pricing

Vedanta's commitment to achieve net-zero carbon emissions by 2050 would require internal repurposing. We recognise the need to integrate climate change into our strategic approach. Therefore, we have decided to include carbon pricing in our investment decision-making.

Vedanta's BUs will be following a differentiated pricing mechanism (a price that varies by region, business unit or type of decision) based on their identified decarbonization projects. The estimated ICP for different business units falls in the range of 10-30 USD/tCO₂. Businesses will review the pricing on an annual basis based on their decarbonization roadmaps.

In FY22, we have developed our Internal Carbon Pricing strategy that will be implemented from H2 of FY2023 onwards. We will implement Shadow price as part of our capital expenditures approval process, with the aim to redirect investments towards clean technologies, lower-carbon solutions, and renewable energy projects across our operations and supply chain. This will help us minimize our climate risks and at the same time explore opportunities to reduce our carbon footprint and associated transitional costs. The carbon price will be used to monetize GHG emissions included in business plans to optimize decision making.

Integrating climate change into internal processes and systems

A key strategy adopted by Vedanta to manage climate risk is through climate KPIs and incentives for employees. Achievements on sustainability parameters to motivate employees to implement measures related to GHG reduction and energy conservation. Few key examples include- ESOP eligibility of employees will be linked to their achievements on sustainability parameters. Similarly, performance of those in the positions of Energy Manager, Environment/Sustainability Manager or those from the Corporate Executive team will be against climate KPIs. This approach creates a positive outlook among employees towards climate risk management.

Vedanta also provides incentives for the management

of climate-related issues, including the attainment of targets. Each year, all 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.

We are undertaking and have planned multiple measures to reduce our climate risk, these have been guided by our study on physical and transition risks.

Table 11: Short medium and long term measures

Objectives	Steps being undertaken
Short Term (1-4 year)	
Policy and Governance	<ul style="list-style-type: none"> a) Draft Climate Resilience response strategy covering identified climate risks b) Develop mandatory mitigation assessment guidelines for all new projects, mergers and acquisitions including mandate to increase RE share, mandating use of BAT etc. c) Integrate decarbonization goals with the annual Business Planning process d) Embed climate KPIs into performance appraisal parameters for executives and managers e) Develop a supplier engagement programme to drive strengthen climate action across the value chain f) Engage with community members to build climate resilience programmes/ integrate climate adaptation into existing CSR programmes specific to the identified risks

Objectives	Steps being undertaken
Risk Management	<ul style="list-style-type: none"> g) Adapt existing enterprise-level and other risk management processes to take account of loss and damages incurred/projected from cyclone events or heat waves h) Plan to use the same quality assurance and compliance approaches for climate-related information as for finance, management, and governance disclosures i) Embed Internal Carbon Pricing into the business decision-making process
Targets and Metrics	<ul style="list-style-type: none"> j) Define a framework to consolidate BU-level targets and achievements to align with and track progress against group level targets - e.g., Net Zero by 2050, 25% absolute reduction in emissions by 2030 k) Strengthen Scope 3 accounting and identification of emission hotspots within the value chain l) Set up specific, annualized targets for use/deployment of renewable energy m) Ensure 5% biomass usage on annual basis across our power plant operations
Objectives	Steps to be undertaken
Medium Term (4-10 years)	
Policy and Governance	<ul style="list-style-type: none"> a) Identify & pilot green business opportunities involving RE storage technologies, electrolyzers etc. b) Identify and carry out policy advocacy on specific areas - e.g., policy towards mitigating technological and contractual barriers of moving away from coal, just transition, removal of infrastructural bottleneck on use of cleaner fuels.
Risk Management	<ul style="list-style-type: none"> c) Develop BU-level adaptation plans based on identified climate risks and the techno-feasibility assessments d) Engage with external key stakeholders (along the supply chain) to manage risks e) Identify/validate business-critical suppliers of goods and services who are exposed to high physical and transition risks f) Assess and quantify the impact of the loss of the critical suppliers in the event of climate disasters, or in case of low carbon transitions
Targets and Metrics	<ul style="list-style-type: none"> g) Work on RE power procurement strategy to achieve target of 2500 MW RE RTC in operations h) Set a target for Scope 3 emissions reduction for material categories i) Decide on the key suppliers, customers to handhold with for reduction of their scope 1 and 2 targets (i.e., Vedanta's scope 3 target) j) Drive adoption of science-based emission reduction targets by suppliers and/or customers k) Define climate change relevance of the CSR programmes – carry out BU wise studies on how and to what extent the CSR programmes are addressing the climate change risks and vulnerabilities as identified
Long Term (+10 years)	
Policy and Governance	<ul style="list-style-type: none"> a) Update the Net Zero plan taking into consideration newer regulatory, market requirements and achievements of short to medium term targets set by the Group b) Develop and implement a Just Transition plan
Risk Management	<ul style="list-style-type: none"> c) Consider insurance or additional climate fund (enhanced ICP) for emergency purpose d) Install measures to reduce exposure to physical climate risks identified
Targets and Metrics	<ul style="list-style-type: none"> e) Revise climate budget, ICP, GHG emission reduction targets according to the revised climate risk assessments f) Set up specific targets on use of clean technologies - RE, CCUS, green hydrogen



MANAGING CLIMATE RISKS

Adaptation Strategy

Our assets, infrastructure, communities, and broader value chains are exposed to the impacts of extreme weather events associated with climate change, as evidenced by our experience of events such as water scarcity, flooding, heat waves as well as our climate risk assessment. Therefore, in addition to the actions we're taking to reduce the effects of climate change by lowering emissions while advocating for progressive climate action strategies, we are focused on managing the potential physical risks and opportunities that may result from the ongoing changes to our climate.

The findings from the climate risk studies also

indicated that interventions are required to address the vulnerabilities in communities where our business are present, and specifically among children and women, to increase their adaptive capacity. Enhancing climate resilience requires a multi-pronged approach that is contextual to the communities and geographies. Therefore, our adaptation planning includes identified climate risks and impacts for business as well as communities. Our existing CSR programmes cover the key climate adaptation strategies required for the communities in our Business Unit Locations.

Table 12: CSR activities addressing community vulnerabilities

Community Vulnerabilities	Climate Impacts	Existing CSR Programmes
In Kabirdham and Surguja districts, literacy rate is a key vulnerability contributing factor (BALCO)	<ul style="list-style-type: none"> Education increases adaptive capacity through allowing for economic growth. Additionally, awareness about issues such as climate change, health 	Subhalaxmi Cooperative
-In Kabirdham and Surguja districts other issues include underweight children, unsafe drinking water, and unimproved sanitation facility (BALCO) -In Jalore (Cairn) vulnerability is due to underweight children and less female literacy -In Rayagada (VAL Lanjigarh) Literacy, malnutrition, and unimproved sanitation facility are some of the indicators that increase vulnerability of communities in Rayagada district.	<ul style="list-style-type: none"> Climate change will enhance the water stress in the region. This will indirectly impact female education. In the absence of water availability, young girls accompany women in travelling long distances to get water for the household, causing school absences. Water scarcity also impacts the hygiene and sanitation issues for the girl child. 	Nand Ghar Child Care Centre
Unemployment rate is an issue in Korba district. (BALCO)	<ul style="list-style-type: none"> Unemployment would mean limited income opportunities for basic needs, the absence of social protection systems and high dependency on climate sensitive resources such as local water and food supplies. This increases the overall vulnerability to climate change. 	Vedanta Skill School
At Barmer (Cairn) is among the most vulnerable locations where Vedanta is present. Unsafe drinking water, and unimproved sanitation facility are some of the drivers of climate vulnerability for communities	<ul style="list-style-type: none"> The vulnerability in this location is among the highest and requires a comprehensive plan in addition to short-term interventions. 	Cairn Foundation Project E-kaksha



Community development at Barmer, Rajasthan, Cairn Foundation

METRICS AND TARGETS



Our GHG emissions profile

Vedanta Group has set a long-term goal of achieving net-zero emissions by 2050 consistent with the Paris Agreement. Achieving this objective requires reducing the operational emissions (Scope 1 and 2) as well as Scope 3 emissions (indirect emission sources in value chain).

In FY2022, the total Scope 1 and Scope 2 emissions from our operations was 62.83 million metric tonnes CO₂e, a slight increase of 4.2% from the previous year. From the previous reporting year (FY2021), we have started accounting our Scope 3 emissions. We achieved GHG intensity reduction of ~5% in FY22 against FY21 for metals and mining businesses (part of our short-term target)

Scope 1 emissions

Our absolute emissions in FY2022 were 59.49 million MtCO₂e, which has increased by 0.9% since last reporting year. The increase in the emissions is associated with post pandemic growth in this financial year.



Figure 8: Scope 1 emissions for last four years

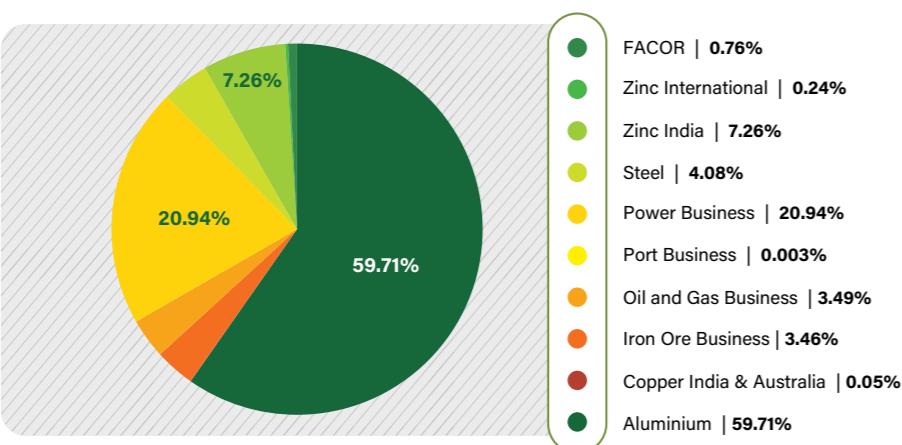


Figure 9: BU Scope 1 emissions for FY 2021-22

Scope 2 emissions

Scope 2 emissions for this reporting year (FY2022) is 3.34 million MtCO₂e, which has reduced by 4% as compared to 2018-19.

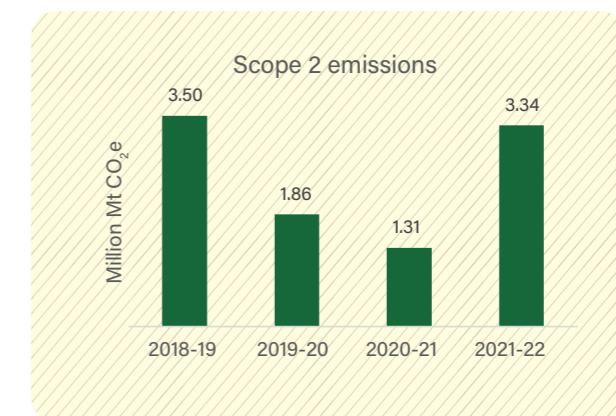


Figure 10: Scope 2 emissions for last four years

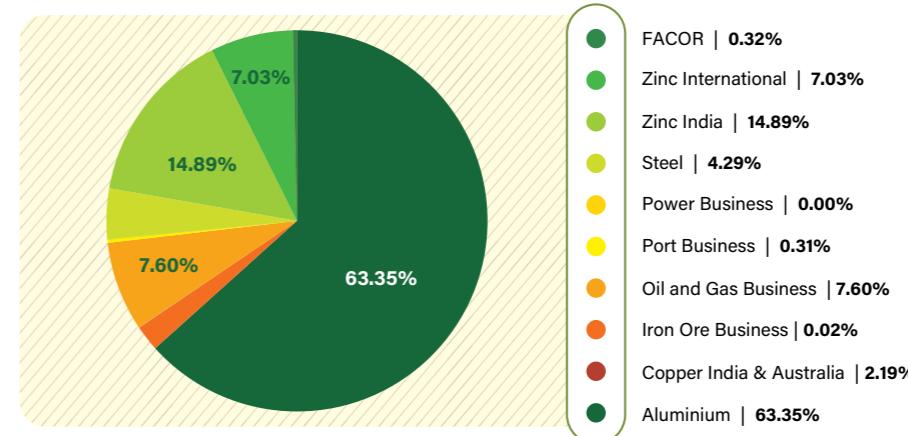


Figure 11: BU Scope 2 emissions for FY 2021-22



Green plantation, HZL



METRICS AND TARGETS

Scope 3 emissions

Given that Vedanta's operates in the natural resource sector, scope 3 emissions could be higher as there are many activities which occurs beyond the business boundaries. In our efforts towards fulfilling our last year's commitment to account for our Scope 3 emissions, we have completed inventorizing emissions of this category for 10 BUs in this FY 2021. The Scope 3 accounting was prepared based on the GHG Protocol's Scope 3 Value Chain Accounting and Reporting Standard. For Oil & Gas and Steel sectors, sector specific standards were referred to.

As Scope 3 Value Chain Accounting and Reporting

Standard has 15 categories (Upstream and Downstream), as first step to scope 3 value chain accounting – a materiality assessment for different Scope 3 categories was conducted for different Business Units under Vedanta group. The outcome of the materiality assessment was to identify the applicable and relevant categories for each business unit depending on their operations and activity. The materiality assessment was undertaken basis following criteria – magnitude, influence, stakeholder interest, sector guidance and risks. The following is summary of applicability of different Scope 3 categories across the different group business.

Category	Applicability	Remarks
Category - 1 - Purchased Goods & Services	The Category 1 is material and emissions are estimated for all BUs	The category is applicable to all Business units and all major material consumption (raw material) is accounted.
Category 2 - Capital Goods	The Category 2 is not material and not estimated	As Vedanta group is undergoing expansion there could be emissions resulting from procurement of capital goods. The BUs will evaluate this category on regular basis and estimate the emissions.
Category 3 - Fuel & Energy Related	The Category 3 is material and emissions are estimated for all the business units	-
Category 4 - Upstream Transport	The category 4 is material and emission are estimated for all the business units	-
Category 5 - Waste Generated in Operations	The category 5 is not material, but emissions are estimated for major waste processing. Also transport emission (which is optional to report in Category 5) associated with Waste transport is also estimated.	Across BUs – Waste such as (fly ash, SPL, red mud, etc.) are reprocessed and used as alternate raw material/fuel in other industries. The emissions from transport are estimated for waste transport, but as these waste substitute fossil fuel or other material the emissions from or avoided are not estimated for recycling/coprocessing.
Category 6 - Business Travel	The category is not material and emission are estimated for business units.	-
Category 7 - Employee Commute	The category is not material and emissions are estimated for business units	The emissions reporting under this category is not comprehensive as many of the BUs are not having the data in required format to estimate the emissions. However, data gaps will be addressed in subsequent inventory and comprehensive reporting will be targeted under the category. But the current gaps will not have significant impact on the inventory.

Table 13: Scope 3 value chain accounting details



Sunrise, Ravva, Cairn Oil & Gas

Category	Applicability	Remarks
Category 8- Leased assets	The category 8 is not applicable and not estimated	The category is not applicable to business units.
Category 9 - Downstream Transport	The category 9 is material and emission are estimated for all the business units	-
Category 10 - Processing of Sold Products	The category 10 is material for – Oil & Gas sector, steel sector and VZI which produces intermediate products (Crude Oil, Natural Gas, Copper and Zinc Concentrates and pig iron) which would require further processing downstream.	For Alumina business this category would be applicable, but as all alumina produced is consumed within same group companies the emissions for alumina to Aluminium conversion is not reported under this category. For other business this category would not be applicable as the final products are either used directly with minimum or no further processing.
Category 11 - Use of Sold Products	The emissions are material and estimated for Oil & Gas business and Coke production (at value added business)	The category 11 is applicable to the Oil & Gas and Value-Added Business (VAB) of Vedanta Group. The emissions from processing of crude and further use of refined products are estimated for Oil & Gas business and Coke usage (as reducing agent) is estimated for VAB business.
Category 12 - End of Life Treatment of Sold Products	The category 12 is not applicable and not estimated	The group produces/manufactures metal products which do not result into any emissions during the disposal or end of life treatment.
Category 13 - Downstream Leased Assets	The category 13 is not applicable and not estimated	-
Category 14 - Franchises	The category 14 is not applicable and not estimated	-
Category 15 – Investments	The category 15 is not applicable and not estimated	-



METRICS AND TARGETS

The following is the summary of Scope 3 emissions for Vedanta Group during the year FY 2020-21:

Table 14: Scope 3 emissions at group level FY 2020-21, FY 2021-22*

Scope 3 - Inventory Group		
Total Scope 3 Emissions (million t CO ₂)	2020-21	2021-22
Categorization	2020-21	2021-22
Scope 3 - Upstream	7.23	8.04
Scope 3 - Downstream	26.40	26.49
Total	33.62	34.53
Scope 3 - Inventory Group (Category wise)		
Total Scope 3 Emissions (million t CO ₂)		
Category 1 - Purchased Goods & Services	4.16	4.99
Category 2 - Capital Goods	Not Applicable	Not applicable
Category 3 - Fuel & Energy Related	2.15	2.63
Category 4 - Upstream Transportation	0.46	0.37
Category 5 - Waste Generated in Operations	0.45	0.0386
Category 6 - Business Travel	0.00	0.0006
Category 7 - Employee Commute	0.01	0.0118
Category 8 - Leased Assets	Not Applicable	Not applicable
Category 9 - Downstream Transport	0.23	0.49
Category 10 - Processing of Sold Products	1.00	1.53
Category 11 - Use of Sold Products	25.16	24.47
Crude Oil	22.30	21.63
Natural Gas	2.63	2.47
Coke	0.23	0.26
Credit due to Slag Recycling/Reuse	(0.56) ¹⁶	(0.34)
Category 12 - End of Life Treatment of Sold Product	Not Applicable	Not applicable
Category 13 - Downstream Leased Assets	Not Applicable	Not applicable
Category 14 - Franchises	Not Applicable	Not applicable
Category 15 - Investments	Not Applicable	Not applicable

(*unassured)

¹⁶ The credit due to slag (applicable for Iron & Steel) has been highlighted in overall Scope 3 inventory, but are considered as avoided emissions and thus not adjusted in overall inventory.

Among the different BUs – Cairn Oil & Gas accounts for 75% of group's Scope 3 emissions, Aluminium business accounts for 14% of group's Scope 3 emissions and the other BU contribution is around 11% of overall group's Scope 3 emissions. Please refer figure 12 for BU wise Scope 3 contribution

Scope 3 - Distribution - BU

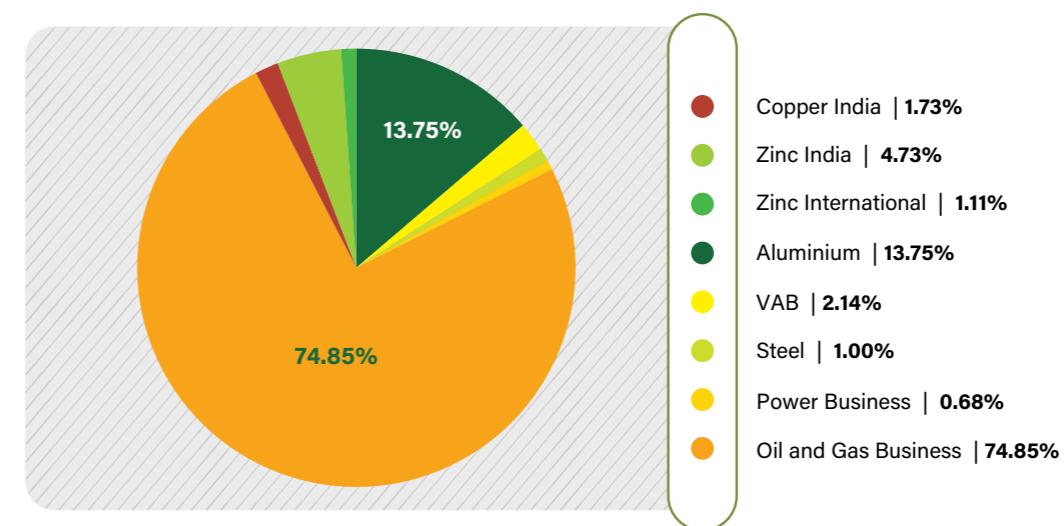


Figure 12: BU Scope 3 emissions FY 2020-21

Among the different categories of Scope 3- the major impact is from Category 11 – Use of Sold Products and is 75% of the group Scope 3 emissions. For the Oil & Gas busines – the emissions associated with refining of crude and subsequent combustion of refined petroleum products is accounted the category 11. Please refer Figure 13 for category wise profile of Scope 3 emissions for Vedanta Group.

Scope 3 - Category Wise Distribution

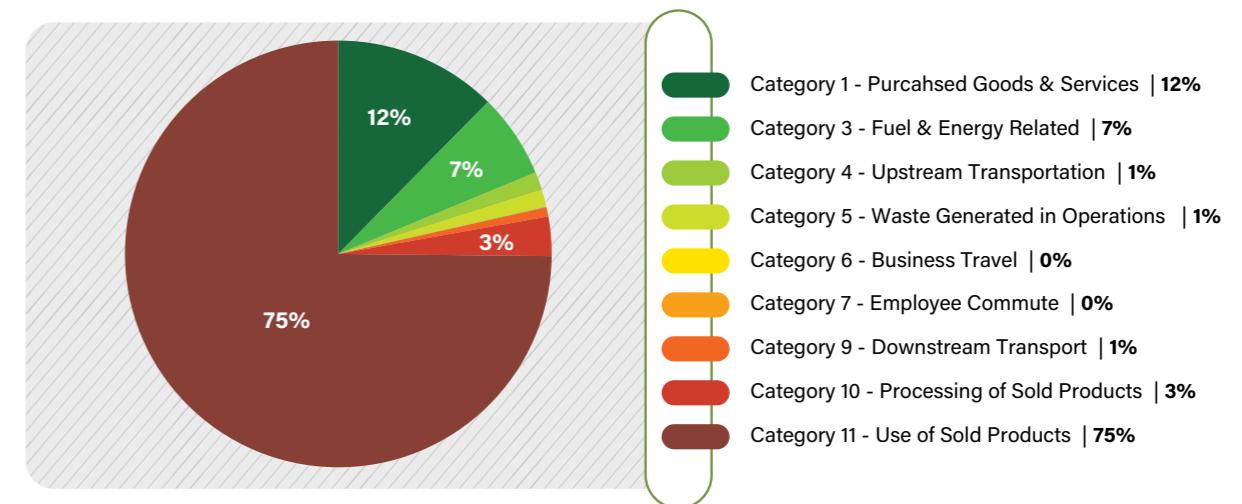


Figure 13: Category wise Scope 3 emissions FY 2020-21



METRICS AND TARGETS

Our performance

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.

A list of top 10 energy/GHG savings initiatives is presented below:

Business Unit	Top 10 Energy/GHG Savings Initiatives	Energy Savings (GJ)	Avoided emissions
VAL- J Metal	● Addition of 332 pots with 100% graphitized cathode	11,15,339	
HZL	● Chanderiya CPP Unit 2 Turbine Revamping	4,06,555	
BALCO Metal	● Conversion of 120 pots with 100% graphitized cathode	3,03,581	
HZL	● Chanderiya CPP Unit 3 Turbine Revamping	2,94,453	
VAL-J IPP	● Unit 3 condenser cleaning & air ingress rectification	2,82,861	
TSPL	● Improved Unit 3 HPT performance	2,41,953	662,201 tCO ₂ e for FY22
HZL	● Chanderiya CPP Unit 1 Turbine Revamping	2,10,380	
HZL	● Dariba CPP Unit-2 Turbine Revamping	79,610	
VAL- J Metal	● Unit 6 CT fills replacement	66,848	
HZL	● Dariba CPP Unit-1 Turbine Revamping	65,363	
TOTAL		3,797,436	

Table 15: Vedanta's Top 10 Energy/GHG saving projects

Our GHG reduction initiatives have resulted in avoided GHG emissions to the tune of 662,201MT CO₂ from FY21 excluding RE power purchase and ~3.6 MMT CO₂e if we include purchase of RE power. We have achieved ~13.6 million tonnes of avoided GHG emissions since 2012. The GHG intensity at group level stands at 69.35 tCO₂e/INR Mn in FY2021 and 47.89 tCO₂e/INR Mn in FY2022 as compared to 71.3 tCO₂e/INR Mn in FY2020. In FY2022, we significantly increased the share of renewable energy in our energy mix from 67 MW in the previous fiscal to 465 MW in

FY2022. The purchase of RE by the aluminium sector drove this rise in consumption. This has allowed our GHG intensity at group level to reduce by at least ~5%. In the recently announced CDP Leadership Scores (2021), Vedanta has been scored at the level of "B" which is a substantial improvement compared to the last year's score of "B-". The current score is better than the global average for the metals and mining sector (C) as well as the global average (B-) for all private sectors.



Increasing efficiency and reduced emissions

Our approach to sustainability is embedded in the way we work. We have replaced fossil fuelled heavy vehicles with technologically advanced lithium-ion forklifts at a large scale. 23 lithium-ion battery-powered electric forklifts will be deployed at our Aluminium Smelter in Jharsuguda.

While this allows for GHG emission savings of nearly 690 tonnes of CO₂ equivalent it also enables longer working cycles, thereby improving productivity, while being virtually maintenance-free.



Vedanta Aluminium to Deploy one of India's Largest Lithium-ion Forklift Fleets

Signed MoU with GEAR India for 23 lithium-ion battery-powered electric forklifts to be deployed at our Aluminium Smelter in Jharsuguda.





METRICS AND TARGETS



Advocacy & Partnerships

Climate Change work in India demands collaboration from all the stakeholders concerned (private sector, governments, regulatory bodies, financial institutions). Vedanta is always willing to help and provide input in all the policy matters and other initiatives on climate collaboration. We regularly work with government bodies, ministries and industry forums on various issues concerning climate change and related work. We are also part of CII Climate Action Charter which has been created for climate action by private sector in building resilience, mobilize green finance for energy transition, work on supply chain and take actions to reduce GHG emissions from operations in just, transparent and effective manner. This kind of platform provides opportunity to share knowledge and can help in industry wide adoption of best global practices in planning, execution and disclosures of climate change work.

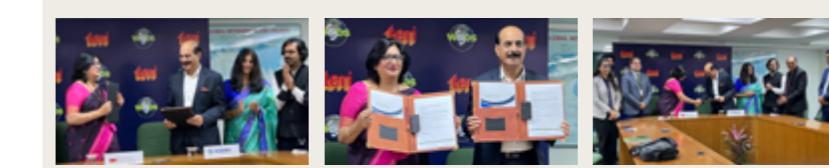


Vedanta has also signed an MoU with TERI to look at opportunities to work on common areas of interest until 2050. The partnership will provide a platform to promote individuals and organizations to adopt sustainable practices by creating Vedanta-TERI ESG awards and building a sustainable supply chain.

Vedanta Partners with TERI to Accelerate ESG Goals

REITERATING OUR COMMITMENT TO A SUSTAINABLE FUTURE

Vedanta, signed a Memorandum of Understanding (MoU) with TERI (The Energy and Resources Institute), to forge a long-term partnership in creating a sustainable business.



The MoU was signed today by Mr. Sunil Duggal, Group CEO Vedanta Ltd and Dr. Vibha Dhawan, Director General, TERI on the sidelines of the World Sustainable Development Summit (WSDS)

Furthering our circular economy agenda, zero harm, zero waste, zero discharge, we have entered into a partnership with three research institutes namely CSIR-National Metallurgical Laboratory, Jamshedpur; Institute of Minerals and Materials Technology, Bhubaneswar; and Jawaharlal Nehru Aluminium Research, Development & Design Centre, Nagpur for research and development of REE (Rare Earth Elements) extraction from red mud, the waste generated during bauxite to alumina conversion.

AWARDS AND ACCOLADES



In 2021, our group companies received more than 60 awards in the sustainability, safety, sustainable development, CSR, and HR categories. Some of the selected awards are as follows:

BALCO

- 1200MW won **Energy Excellence award** for Chhattisgarh State for the 14th CII Encon Awards 2021
- Excellent Energy Efficient unit by **CII National Awards for Excellence in Energy Management -2021**
- **Most Useful Presentation** by CII National Awards for Excellence in Energy Management-2021

Hindustan Zinc Limited (HZL)

- Hindustan Zinc ranked globally 5th, 1st in Asia Pacific and 1st Globally in Environment dimension of the **Dow Jones Sustainability Index 2021 in the Metal and Mining sector**
- Hindustan Zinc awarded '**Most Sustainable Company in Mining Industry for 2021**' by World Finance Magazine
- Hindustan Zinc's Rampura Agucha Mine wins at **Rajasthan Energy Conservation Awards 2021**

Cairn Oil & Gas

- **Frost and Sullivan & TERI Sustainability Award:** Sustainability 4.0 Award 2021 : Leaders' Award Under Mega Large Business Sector
- Cairn's Cambay asset – CB/OS-2 won the **16th CII (Western Region) Safety, Health and Environment (SHE) Excellence & Innovation Award 2021.**

ESL and Iron Ore Business

- IOB awarded in the **field of HSE by Green Triangle Society**
- Sesa IOB, Goa received '**ICC Social Impact Award 2021**' by Indian Chamber of Commerce under the category "**Empowering the rural population**"
- ESL received '**ASSOCHAM National CSR Awards - 2020**' for three sectors namely Education, Skill Development and Healthcare by The Associated Chambers of Commerce and Industry of India.

Sterlite Copper

- Sterlite Copper (Silvassa) wins the "**Challengers Award**" at the **Sustainability 4.0 Awards 2021** under Mega Large Business Metals Category.

VAL Jharsuguda

- **CII Health, Safety and Environment Excellence Award** at CII Odisha Annual Meet 2021-22
- **Excellence in Energy Efficiency Awards 2021:** To recognize the best practices in power plant O&M for Net Heat Rate
- **SEEM National Energy Management Gold Award** for Smelter-I, smelter-2 and CPP 1215 MW

Forward Looking Statement

Projecting future emissions and other factors that influence climate change is a work in progress. It is recommended by TCFD that we use a range of scenarios with various assumptions about future economic, social, technological, and environmental conditions to estimate possible ramifications of global climate change. However, there are limitations for assessing the business implications of climate change at the local or industry sector level. Additionally, the absence of precedents for most of the climate change events makes them particularly difficult to estimate or use in economic models.

The report uses non-financial metrics (for adaptive capacity, sensitivity, transition risks) that are subject to measurement uncertainties resulting from limitations inherent to such data. The forward-looking statements in this document are subject to numerous assumptions and uncertainties, which may change over time. The actual impacts on our business could differ materially from those anticipated in the future in this report.

VEDANTA LIMITED

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