

TCFD

TASK FORCE ON
CLIMATE-RELATED
FINANCIAL
DISCLOSURES

2021 SUMMARY REPORT



GREENER
STRONGER
SMARTER



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Overview

The TCFD structured its recommendations around four thematic areas that represent core elements of how organizations operate: governance, strategy, risk management, and metrics & targets. These thematic areas are designed to interlink and inform each other.

Governance: This pillar covers organization's governance for climate-related risks and opportunities

Strategy: This pillar covers potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.

Risk Management: This pillar covers mechanisms used by the organization to identify, assess, monitor and mitigate climate-related risks.

Metrics and Targets: This pillar covers company's disclosure on commitment or ambitions taken by the company to assess and manage relevant climate-related risks and opportunities.

In this document, we intend to disclose the information on each of these four pillars and how we have integrated the TCFD Recommendations in our overall business strategy and risk management



Governance

Governance is one of the most vital component of a company's climate risk framework. This pillar covers governance framework, the roles, responsibilities and decision-making procedures by which a company adheres to its climate-related commitments. We have a robust Governance structure to identify and mitigate climate-related risks and opportunities. The details of our Governance are given below:



Our Risk Management Structure and Responsibilities

Our comprehensive Risk Management approach is led by the Board of Directors and covers corporate level, business level, site level and department level involvement. The Board level Risk Management Committee is responsible for the approval and regular review of the risk management plan. The Risk Management Committee meets on a quarterly basis, and during every Board meeting, a discussion is conducted on the major organizational risks faced by Hindalco to apprise the Board and the Board Committees. Climate-related issues such as renewable energy, product stewardship for lowering carbon footprint, environmental stewardship and commitments are also regularly discussed in the Board Meetings.

At the Corporate level, the Sustainability committee oversees climate-related performance by institutionalising clear goals and targets for the company and setting out frameworks for monitoring performance across diverse aspects of business operations such as energy conservation and emissions reduction. The senior management is charged with identifying, mitigating, and continuously monitoring risk for their respective areas of oversight. The implementation of risk processes and ensuring compliance to risk procedures are part of their key responsibilities; also, the key performance indicators related to climate risks are directly linked to their variable compensation basis on our risk signoff. Monthly review is carried out to assess implementation of mitigation plans for respective functions. The corporate sustainability cell is tasked to drive the sustainability agenda and coordinate the implementation of the devised action plans with support of unit level sustainability and energy teams.

Hindalco also has an Enterprise Risk Management team which acts as a custodian facilitating the Risk Management process at each business location and corporate functions. The central team reports to the CRO (Chief Risk Officer) who further reports to the CEO of the organization and is member of the Risk Management Committee of the Board.

At Cluster or Business level, Business unit leaders are accountable for risk management. They further choose Risk Ambassadors at Cluster level, Risk Champions at Site level, and Risk Coordinators at department level to form a team for an effective risk management process. In addition, Energy Managers appointed at Site Level are responsible for effective implementation and monitoring of energy conservation initiatives. At Department level, we have also established Task Forces working on Energy, Water, Waste and Air Quality support in continuous improvement by implementation of identified initiatives.

For all employees involved in risk management, including the Board level Committee, the Company provides training on Risk Management concepts. The Board and Senior Management are provided training specific to ERM processes. Risk champions are provided special training for 2 days on Risk Management concepts including identification, assessment, and management, risk tools, templates etc. We have also started conducting refresher course on Enterprise Risk Management for all employees across all our sites to build a strong culture of risk management across operational aspects along with workshops, seminars, E-trainings, etc. to build risk awareness and understanding in our employees.



Our Policies

Risk Management Policy

Consequently, we have developed a comprehensive risk management policy, which is authorized by the Risk Management Committee. This policy forms the core of our risk management framework and institutionalizes a holistic risk management approach encompassing all functions such as operations, strategy, projects, ESG, marketing, procurement, logistics, IT, HR, Legal, etc.

Energy and Carbon Policy

Our Carbon and Energy Policy covers our aspirations on energy consumption and carbon emissions. We understand that our operations are energy intensive and for the same, we intend to take responsible actions within the company in domain of energy efficiency and renewable energy. We also aspire to develop mechanisms to measure, monitor and report our energy consumption and carbon emissions in our annual disclosures. For more information on this policy, please [click here](#).

Sustainability Policy

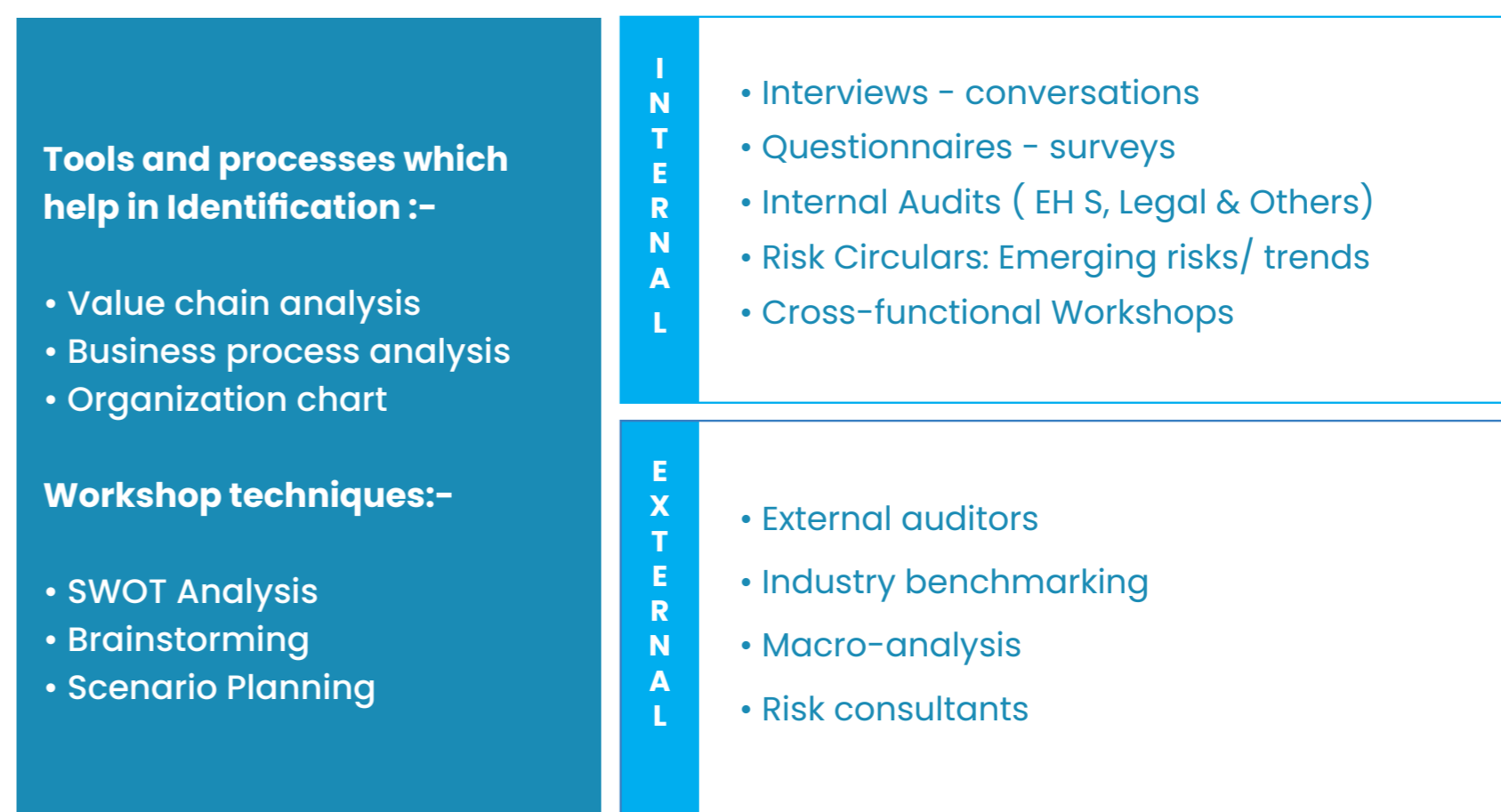
Our Sustainability Policy frames a pathway for Hindalco which leads to sustainable operating practices. In alignment with this policy, we aim to ensure the presence of a strong governance structure, regulatory compliance, sustainability considerations in business decisions. For more information on this policy, please [click here](#).

Environment Policy

Our Environment Policy talks about our ambition to continually improve our environmental performance for sustainable operations and responsible growth globally. As part of our policy, we aim to make our process more energy and resource efficient. For more information on this policy, please [click here](#).

Our Risk Management Procedure

Our Risk Management Process imparts a systematic and consistent approach to identify opportunities and threats by managing the associated risks in efficient ways. It is based on 3 main steps, i.e. Risk Identification and Assessment, Risk Management and Mitigation, and Risk Monitoring and Reporting. These steps also apply to the climate-related risks which have been identified and integrated in our Enterprise Risk Management Framework based on the TCFD Recommendations.



Risk Identification

Consequences	Extreme (5)	5	10	15	20	25
	Major (4)	4	8	12	16	20
	Moderate (3)	3	6	9	12	15
	Minor (2)	2	4	6	8	10
	Incidental (1)	1	2	3	4	5
		Rare (1)	Unlikely (2)	Possible (3)	Likely (4)	Expected (5)

Likelihood

Risk Heatmap

Risk Identification and Assessment

Our risk identification covers internal and external sources of uncertainties, and are identified using various tools and processes like value chain analysis, business process analysis, etc. and interactions like questionnaires, interviews, workshops, etc. The identified risks are categorised based on their likelihood and consequence to generate a risk matrix, which further helps in prioritising the important risks.

Risk Management and Mitigation

Once the risks are prioritised, we perform various analysis such as threat analysis, failure mode and effects analysis, regression analysis, etc. and a mitigation

strategy is developed keeping in mind the short term and long-term implications of the risks on the organisation. These are incorporated in our governance and business strategy to achieve success in our overall business performance.

Risk Monitoring and Reporting

We consider monitoring and reviewing to be the key factors in continual improvement of risk management. We cover net risk monitoring, risk mitigation monitoring and outcome monitoring to effectively enhance our risk mitigation process. In alignment with the TCFD Framework, we track metrics associated with physical and transition risks.



Strategy

The Strategy pillar of the TCFD disclosures provides information about company's exposure to climate-related risks and opportunities. Also, under this pillar, the company covers their response to the risks and opportunities, and how are they integrated in the overall strategy. In alignment with TCFD recommendations, we have covered different climate-related risks and opportunities which Hindalco might face along with resilience measures that we have adopted to minimize the impact. Decarbonization has been identified as one of the important emerging risks and we have committed to become Net Carbon Neutral by 2050 in order to make the business practices more sustainable.

Risks

Climate related risks pose threats which have financial implications for organizations, such as direct damage to assets and indirect impacts to the supply chain. Hindalco identifies the risks at the corporate and site levels through integrated work processes and group-wide risk management, applying the enterprise risk management (ERM) framework using top-down and bottom-up approaches to anticipate any issues and to mitigate their impacts in advance. The climate-related risks are analysed through the perspective of physical and transition risks.

Risk Management

The risk management disclosures cover how the company identifies, measures, monitors, manages and reports on climate-related risks. It provides information to how the climate-related risks are integrated within the firmwide risk management



Solar Plant at Alupuram

framework. We, at Hindalco, have a robust risk management governance and procedure which is covered in Governance pillar of TCFD recommendations.

Climate-related risks are embedded in our robust Enterprise Risk Management (ERM Framework) and well-defined 3 step risk management approach, i.e. Risk Identification and Assessment, Risk Management and Mitigation, and Risk Monitoring and Reporting. With the involvement of our employees through our comprehensive risk management governance, we integrate climate-related risk management in our overall risk management process.

We identify climate-related risks by performing context-based baseline and scenario analysis for all sites across India. After identification these risks are categorised based on their potential impact in different time horizons and mitigation strategy.

Physical Risk Analysis

Hindalco uses WRI's Aqueduct Water Risk Atlas and India Water Tool to assess baseline water stress, riverine flood, coastal flood and drought risks, and to assess future projections. We use National Disaster Management Authority's data on cyclone hazard prone districts of India to assess Cyclone risk at our locations.

We also conduct a high-level analysis on change in annual average and maximum temperature and changes in annual average precipitation at our facilities till 2100 under various scenarios i.e. RCP 2.6, RCP 4.5, RCP 6 and RCP 8.5 through the data available on World Bank Climate Change Knowledge Portal. Consequently, we try to correlate the same with increasing drought and heatwaves probability at our facilities.

Transition Risk Analysis

We conduct transition-risk scenario analysis in alignment with IEA B2DS and IPCC 1.5-degree scenarios. Through the same, we assess the potential impact of evolution of climate policies in order to test the resiliency of the company, as well as to strategize the potential pathways for decarbonization for Hindalco to comply with expected policy mechanisms such as emission trading schemes.

We also evaluate global decarbonization pathways for aluminium industry developed by International Aluminium Institute (IAI). We recognize the target specified by IAI in alignment with B2DS target. We are developing climate change mitigation strategy based on three emission reduction pathways identified by IAI, namely electricity decarbonization, direct emissions reduction and recycling & resource efficiency.

Transition Risks

The following are the transition risks which are identified in Hindalco's risk register.

Regulatory Risks	Short Term and Long Term
	<ul style="list-style-type: none"> Increasing regulation of greenhouse gas emissions such as Perform, Achieve, Trade (PAT) scheme and Renewable Purchase Obligations (short-term) Introduction of carbon emissions trading mechanisms (long-term)
Reputational Risk	Short Term
	<ul style="list-style-type: none"> Shift in interest of the investors due to decreased ESG ratings.
Market Risks	Short Term
	<ul style="list-style-type: none"> London Metal Exchange has proposed to introduce LME passport which specifies Carbon Footprint of produced Aluminum.
	<ul style="list-style-type: none"> Carbon Border Adjustment Mechanism (CBAM) can impose a cost on aluminum goods imported into the European Union. Shifting customer preferences to alternative materials.
Technological Risks	Short Term and Long Term
	<ul style="list-style-type: none"> High dependency on coal owing to the locations of the current sites. Role of emerging decarbonization technologies such as hydrogen, carbon capture and energy storage to achieve the climate-related targets.

Hindalco has implemented several interventions to remain resilient from climate-related transition risks. We are constantly striving to diversify our energy mix and enhance energy efficiency in our operations. We have also implemented robust monitoring processes to track our targets, for example, energy consumption and emission reduction are constantly monitored and reported at the highest level of management in Sustainability Committee meetings.



Some of our decarbonization levers aligned with IAI’s three Decarbonatization pathways are listed below:

Electricity decarbonisation	<ul style="list-style-type: none"> • Increasing renewables in energy-mix (floating solar, RE Hybrid, RE procurement, pumped hydro) • Improving specific energy consumption through continuous improvements and technology interventions. • Improving heat rates for the plants. • Exploring low-carbon fuels
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Recycling & resource efficiency	<ul style="list-style-type: none"> • Driving Business growth through downstream products which are less emission intensive. • Increasing utilization of scrap to develop recycled aluminum products • Recycling and reusing of solid waste
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Direct emission reduction	<ul style="list-style-type: none"> • Exploring carbon capture and utilization mechanisms • Alternate fuels/energy for process heating • Green belt developments
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Physical Risks:

The following are the physical risks which are identified in Hindalco’s risk register.

Chronic Risk	Acute Risk
Medium Term	Short Term
Erratic monsoons, rise in global temperatures and increasing usage by industries and domestic users, will impact the availability of water.	Increasingly pervasive extreme weather patterns like heavy rain fall, torrential storms etc.

In order to minimize the impact of physical risks, Hindalco has implemented various watershed management initiatives and seasonal variability is being closely monitored. Adequate control measures for risks due to increasingly pervasive extreme weather patterns like heavy rain fall, torrential storms, increased temperature etc. are in place to further reduce the physical risk impact. In addition, to be resilient against natural calamities, the company periodically conducts Structural Stability studies at each manufacturing facility.

- Integrated watershed management measures inside our plant boundaries, as well as in nearby villages. This includes developing structures such as bunds, gully plugs, contours and terraces and rainwater harvesting ponds.



Tertiary Water Recycling Unit at Birla Copper

- Zero Liquid Discharge (ZLD) mechanisms have been installed at various sites to further reduce dependency on freshwater consumption.
- Water harvesting projects are undertaken. Ponds are constructed to collect rainwater and majority of the water requirement at mines is fulfilled through this harvested rainwater.
- Upgradation of Storm Water Drains to cater to torrential rains.
- The Company treats effluent water and uses it for auxiliary requirements to meet the overall water demands.
- Alternate sources of water supply are being developed.
- Monsoon preparedness plans are in place.
- Emergency Response Preparedness is assessed through Mock-drills

Case Study – Reduction in Freshwater Consumption at Belagavi

The refinery unit at Belagavi relied solely on the water supply from the corporation to meet its overall water requirements. This water source in turn depends entirely on the rains in the catchment area. The average freshwater consumption at the unit was in the range of 110 ML per month. In the absence of water supply, refinery operations were impacted. Moreover, the unit also anticipated a rise in the existing price of water in future.

To reduce its freshwater consumption, a dedicated team at the unit implemented an innovative project to send the recycled and treated effluent back into the refinery process after treatment through ETP, thereby promoting Zero Liquid Discharge. To achieve this, a dedicated line treated water storage pond of 6,000 m³ volume was constructed along with pumping facility. Also, a dedicated freshwater line was installed to meet the freshwater requirement of filter press. This resulted in a reduction of freshwater intake by approximately 40% bringing it down to 60–65 ML per month, resulting in a corresponding cost saving of ₹ 2.4 Crore per annum.



Opportunities

In our operations, we are focusing on utilization of scrap or used aluminum to develop recycled aluminum products. As developing recycled aluminum-based products is ~95% less energy intensive compared to developing primary aluminum-based products, we intend to explore these opportunities and reduce our overall energy intensity. We are also focusing on developing more value-added products to drive business growth as downstream operations are much less energy intensive compared to primary aluminum production. This product mix strategy also enables us to minimize potential transition risks identified.

Hindalco's business strategy leverages climate-related opportunities to decarbonize other sectors and value chain partners through the company's products. This includes for examples:

Sectors	Opportunities
Automobile Sector	<ul style="list-style-type: none"> • Use of aluminum for light-weighting of vehicles, leading improved mileage, reduced emissions and enhanced safety. • Use of copper in wiring, motors, batteries, and other charging systems in electric mobility applications.
Renewable Energy Sector	<ul style="list-style-type: none"> • Use of aluminium in module mounting structures for solar photovoltaic power plants.
Energy Storage	<ul style="list-style-type: none"> • Potential use of aluminium in novel types of batteries such as Aluminium-ion batteries.



Launch of Hindalco's all Aluminium bulker

Case study - Can Crush: A Big Step Towards Sustainable Packaging

With a recycling capacity of 2.5 MMT, Novelis operations have taken a significant stride towards circular economy. During 2020-21, Novelis has achieved an average of 59% of recycled aluminum inputs. Many of the automobile companies are procuring recycled aluminum from Novelis to make new products. Novelis is also helping an automobile company to recycle and reuse 90% of the aluminum scrap it is producing. This is an outcome of closed loop recycling method developed in collaboration with the automobile manufacturer.

Novelis has also received several awards for its innovation in electric vehicle battery enclosure, demonstrating its commitment to excellence and innovation. The Hindalco subsidiary is also working on meeting customer requirement for sustainable packaging around the world. Currently, Novelis is the leading global buyer as well as the recycler of used beverage cans, recycling more than 74 Billion cans in 2020-21.



Metrics and Targets

The disclosure on Metrics and Targets provides information on how the company is progressing towards climate-related indicators. These are the mechanism for measuring and disclosing progress for the commitments or ambitions taken for managing and mitigating the impact of climate-related risks. We are consistently disclosing our metrics, targets and progress against them in our integrated report.

GHG Emissions – Net Carbon Neutral by 2050

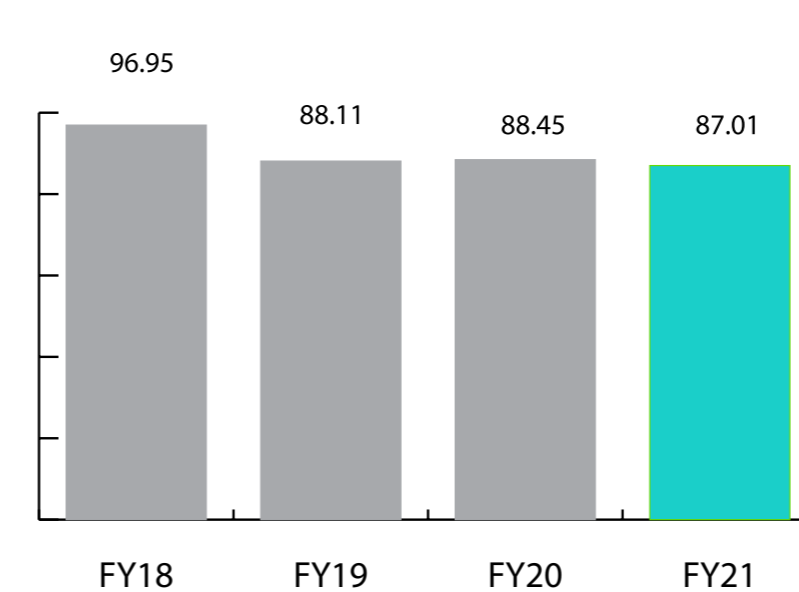
Details of scope 1 and 2 emissions from our aluminium and copper businesses in India have been presented in a tabular form. Development of a mechanism to estimate our scope 3 emissions is underway, a company level charter has been prepared to estimate these emissions for activities such as procurement and travel. There has been a consistent increase in the share of renewable energy in our total energy consumption for the year. In 2018, we had estimated an Internal Carbon Price (ICP) of USD 23.87 using Science Based Target analysis and currently updating this in-line with emission reduction pathways identified by IAI and latest technological developments.

Scope 1 and 2 Emissions

Year	Scope 1 GHG Emissions (million tCO ₂ e)		Scope 2 GHG Emissions (million tCO ₂ e)	
	Aluminium	Copper	Aluminium	Copper
2017-18	26.09	1.18	0.43	0.02
2018-19	26.07	1.15	0.51	0.04
2019-20	25.94	1.00	0.58	0.11
2020-21	24.33	0.83	0.39	0.04

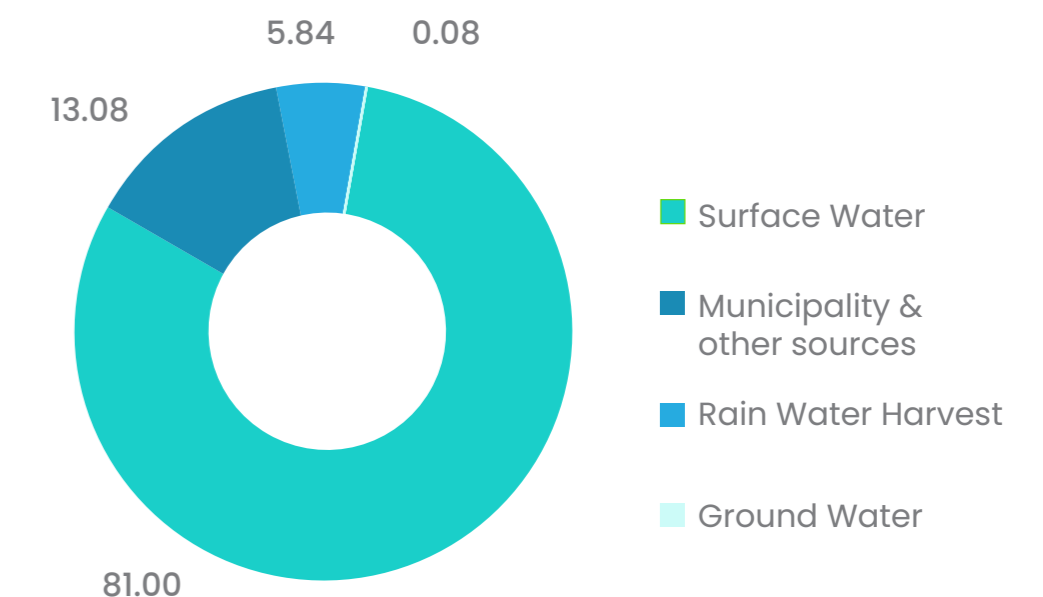
Water Withdrawal

Our water demands are largely met through surface water (water sourced through a river) and we ensure that our water withdrawal does not exceed permissible limits. We also track and monitor our water withdrawal at local level dedicated meter network and reporting through Sustainability Data Management system and work towards enabling digital water meter escalations at the corporate level. During the reporting period, our water withdrawal value stood at 87.01 million m³ from India operations, including a negligible amount of groundwater. We witnessed a decline in our total water withdrawal for FY 2020-21 as compared to last year



Water Withdrawal Trend

Water Withdrawal (Million m³)



Water Sources

Water Withdrawal from Source (%)

Freshwater Consumption

There are two major areas of water consumption viz. process and power generation. Out of the two, the latter accounts for the maximum consumption. We ensure that most of our plants, largely consisting of major production units, do not significantly impact the water sources and consume less than 2% of their total water storage capacity. We have an overall 26,89,507.629 cum. storage capacity near our plants. We try to meet our water requirements through recycled water wherever feasible thereby reducing our freshwater consumption. We are currently executing various water recycling and ZLD projects with investment of over Rs. 300 Crore.

Total Freshwater Consumption (Aluminium, Copper and Mines)

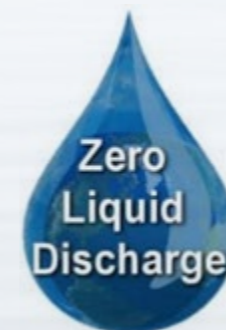
Source (Million M ³)	2017-18	2018-19	2019-20	2020-21
Surface Water	65.74	55.60	61.11	49.29
Ground Water	0.00	0.08	0.07	0.05
Rainwater consumed	3.43	2.18	0.09	3.55
Municipal Water Supplies	0.11	6.20	5.60	7.96
Total Freshwater Consumption	69.27	64.05	66.86	60.85

Water-related targets

TARGETS FOR 2024-25



20% reduction in Specific Freshwater Consumption, by FY 2025 from a 2019 baseline with an emphasis on recycled water content and rainwater harvesting



ZLD status across all sites by FY 2025



Achieve water positivity across mining and downstream verticals by FY 2025



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