Turning Uncertainty into Strategic Advantage

In an increasingly complex and interconnected world, businesses must navigate volatile market dynamics, evolving regulatory and policy landscape, supply chain disruptions, climate-related vulnerabilities, and rapid technological advancements. At Hindalco, we have adopted a proactive approach to safeguard our operations while strategically identifying and leveraging emerging risks and opportunities to remain ahead of the competition and build a resilient organisation.

Our Enterprise Risk Management Policy is the foundation for achieving our strategic objectives. It provides a structured and forward-looking approach to managing the full spectrum of risks across the organisation. We have adopted a robust three-tiered risk management strategy comprising Enterprise Risk Management, Crisis Management and Business Continuity Management. These components work in synergy to build a resilient and future-ready organisation. The ERM Policy is periodically reviewed by the Board to ensure its relevance, alignment with evolving business needs, and effectiveness in risk mitigation.

Robust Risk Governance Structure

At Hindalco, we have instituted a resilient and strategically aligned Risk Governance framework, anchored by Board-level oversight. This empowers the organisation to anticipate, assess, and respond to risks with precision and foresight. At the apex level, the Board-level Risk Management (RM) and ESG Committee, holds responsibility for ensuring that the organisation's risk profile remains within acceptable exposure limits while providing strategic guidance and oversight.

The Committee, which convenes every quarter, oversees the development and implementation of policies, procedures, frameworks, and governance mechanisms. This oversight guides the management of risks across economic, environmental, and social dimensions. It ensures that risk management is deeply embedded in our DNA, guiding decisions across all levels of the organisation. Our comprehensive due diligence mechanism encompasses regulatory compliance, ESG risk assessments, sustainability impact evaluations, and financial risk analytics — designed to boost resilience and maintain stakeholder trust.

Furthermore, our senior management is entrusted with the responsibility of implementing risk management practices and ensuring their alignment with strategic objectives. Through continuous engagement between the Board and leadership, we refine our risk practices to enhance mitigation effectiveness, business continuity, and stakeholder confidence.

To stay ahead of the curve, we have established an Emerging Risk Committee, a forward-looking body focused on the early identification and strategic evaluation of emerging and evolving risks. Climate-related risks are further evaluated using scenario analysis aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) now known as IFRS S2. Through rigorous trend analysis, scenario planning, and collaboration with global experts, regulatory authorities, and external consultants, the Committee delivers critical insights to the RM & ESG Committee and senior leadership, supporting agile and informed decision-making.

Moreover, our comprehensive risk governance framework is anchored in the Three Lines of Defence Model, which delineates clear roles and responsibilities across operational levels to ensure organisation-wide risk management.

Three Lines of Defence Model

First Line

Business Unit and Operations

+ Business leaders and functional heads are responsible for identifying and managing risks in their respective areas.
+ Dedicated Risk Champions are deployed in key functions for identification and mitigation of risks at the operational level.

Second Line

Enterprise Risk Management and Compliance

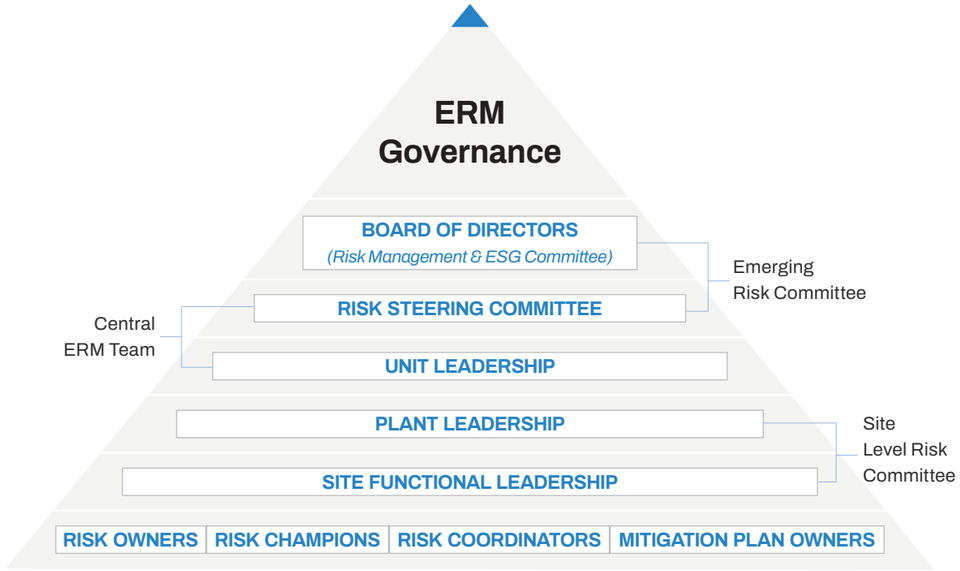
+ The ERM team develops risk policies, frameworks and guidelines.
+ Risk managers at plant/cluster levels drive risk awareness and governance.
+ Compliance teams monitor adherence to policies and regulatory requirements.

Third Line

Internal Audit and Assurance

+ The internal audit function provides independent assurance on the effectiveness of risk management process.
+ External audits are conducted periodically to validate risk governance process.

This structured approach fosters a culture of accountability and resilience, incorporating risk management in our daily operations to safeguard business continuity and strategic objectives. A detailed overview of the salient features is provided in the Integrated Report FY 2023–24.



Risk Management Process

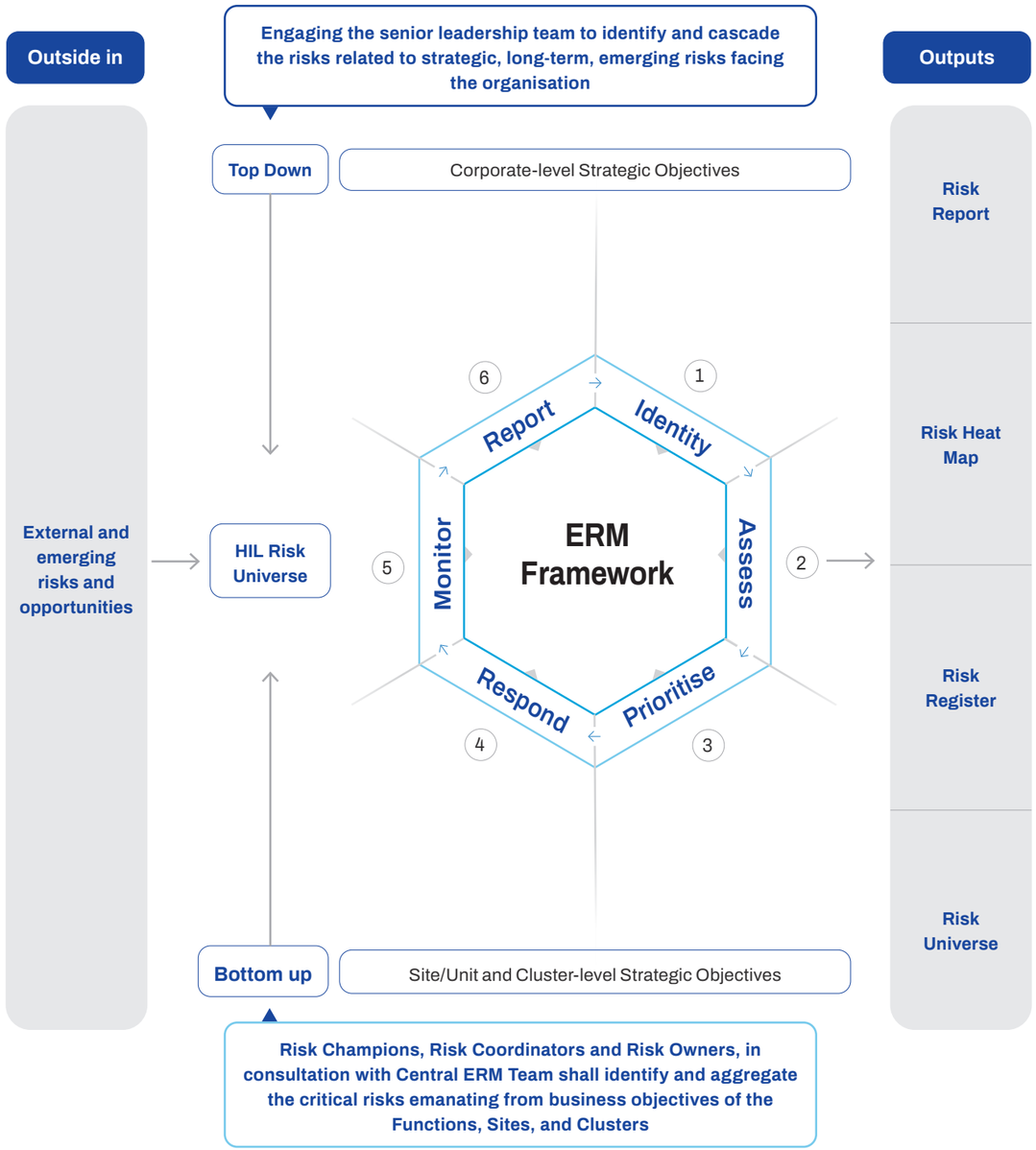
At Hindalco, we recognise the rapid evolution and growing complexity of the global business environment. This demands a proactive and integrated approach to risk management. Our framework is strategically rooted in our planning processes, ensuring alignment with business objectives and enabling early identification of potential derailers. While the core ERM policy framework remains consistent, we have transitioned to a digital tool-based platform for real-time risk reporting and monitoring. We assess both risks "to" and "of" the strategy to identify potential derailers that could impact goal achievement , as embedded in product development lifecycle. Strategic goals are cascaded across business units, with KPIs mapped to risk indicators for balanced oversight. Aligned with ISO 31000:2018 and COSO 2017 standards our ERM framework reflects our commitment for addressing the wide array of risks — strategic, operational, financial, regulatory, and ESG in a holistic manner.

Sustainability risks such as climate change, water availability, and regulatory compliance are categorised as operational risks. These risks are present across the key functions, including Environment, Health and Safety (EHS), operations, strategy, and finance. These risks are prioritised in decision-making processes to ensure that our activities do not adversely impact the environment or the communities in which we operate. These risks are managed through an integrated framework, aligned with our ERM Policy, Sustainability Policy, and Environment Policy.

Identification of sustainability-related risks is carried out through site-level assessments, stakeholder engagement, materiality analysis, and alignment with global frameworks such as TCFD,

Global Reporting Initiative (GRI), and CDP. Risks are assessed based on their likelihood and potential impact on our operations, environment, and reputation. The risks are identified, assessed, and monitored using a structured set of inputs and parameters, including alignment with our 2050 ESG targets, financial impacts and likelihood of risk occurrence.

Supported by a structured six-step ERM process, we enable risk-informed decision-making, proactive mitigation, and optimised resource allocation.



We follow a dual approach to risk identification, comprising a bottom-up process that empowers business units to escalate operational risks, and a top-down assessment by senior leadership to evaluate strategic, macroeconomic, and emerging risks. These inputs are consolidated using a structured 6x6 risk matrix that incorporates both qualitative and quantitative criteria to ensure a comprehensive risk profile. Risk exposure is reviewed every quarter at the Board-level committee.

To assess the likelihood and impact of risk fruition, we apply a structured risk scoring matrix across all domains. This includes analysing historical incident data, benchmarking industry standards, monitoring environmental trends, conducting stress testing and scenario analysis in areas such as climate change. Mitigation strategies are subsequently implemented, ensuring a systematic, proactive, and risk-informed approach to managing uncertainties.

Our Risk Appetite Framework is strategically aligned with our long-term goals, financial strength, and regulatory obligations. We maintain a low appetite for risks related to safety, compliance, and ESG — reflecting our commitment to responsible operations. A moderate appetite guides our approach to strategic and financial risks, balancing growth with stability, while a higher appetite is reserved for innovation and emerging technologies, fostering agility and transformation.

Hindalco's risk management process is both comprehensive and proactive, ensuring a holistic impact assessment across the six capitals through the 3C+2S framework (Cash, Cost, Customer, Safety & Sustainability, Systems & Processes). Our strategic planning balances resource allocation across all six capitals.

Internal audits are conducted annually by our Manufacturing Centre of Excellence (MCoE) team to review adherence to frameworks and compliance standards, while external audits are conducted periodically by independent auditors to assess effectiveness and regulatory compliance. The findings from these audits are reviewed by the Audit Committee and the Risk Management team to drive continuous improvements and address any identified Non-Conformities (NCs).

To cultivate an effective risk culture, we have implemented comprehensive, organisation-wide strategies. Our non-executive directors receive regular risk education through annual sessions on key risk areas, quarterly briefings, and workshops with industry experts. Furthermore, across business units, we conduct focused trainings for new employees, risk champions, and coordinators to strengthen risk awareness and identification capabilities.

During the reporting year, we conducted over 8,500 hours of training on various aspects of risk management. At the operational level, plant-specific trainings emphasised safety, environmental compliance, and operational risks, reinforced through regular mock drills and scenario-based simulations. In parallel, specialised sessions on cybersecurity and data protection were delivered by IT experts to strengthen digital resilience. Our crisis management and business continuity programmes further equipped teams with the skills needed for effective emergency response and stakeholder communication. Additionally, members of our core risk team, including Risk Managers, were formally certified through the BSI's Certified Risk Professional (CRiSP) programme, to sharpen their skill sets.

Accountability is built into our performance systems. The incentives for senior management are directly linked to compliance with risk mitigation protocols, achievement of key risk indicators (KRIs), and fulfillment of safety and environmental objectives. Further, emphasis on risk performance is a core component of our quarterly and monthly business reviews (QBRs and MBRs), ensuring integration of risk management and business performance. This integration extends to performance evaluation, where performance in safety and environmental compliance directly influences variable compensation, ensuring risk management is a fundamental component of our reward system.

This structured approach underscores our unwavering dedication to maintaining a resilient and sustainable business environment, fostering a culture of continuous improvement and proactive risk management across all levels of the organisation.

Key Risks

R1 Increased focus on decarbonisation

Significance and Impact

+ Global efforts towards decarbonisation are expected to alter material demand and supply patterns across industries.
+ Policies such as carbon pricing, EU CBAM may influence operational costs in the future.

Mitigation Actions

+ Increased our renewable energy consumption by ~10% compared with the previous year, with a renewable energy capacity of 190 MW (without storage) as on March 31, 2025.
+ Executing another 9 MW of solar capacity in FY 2025-26.
+ Commissioning of a 100 MW round-the-clock (RTC) renewable energy project at our Aditya Aluminium smelter in Odisha in June 2025 - an additional 39 MW of renewable energy projects scheduled for commissioning in FY 2025-26.

R2 Cybersecurity and data protection risks

Significance and Impact

+ Digital tools are essential in today's technology landscape. The increasing utilisation of these tools and the risk of AI/GenAI has amplified various cybersecurity risks, including privacy violations, data loss, fraud, and theft.
+ These cybersecurity risks have the potential to affect businesses, operations, and customer relationships.

Mitigation Actions

+ Cybersecurity practices guided by our IT policy
+ Entire IT infrastructure certified with ISO 27001 Information Security Management System; periodic audits to strengthen the systems.
+ Incident Reporting Form to report any actual or suspected information security breaches present on the intranet portal for the employees.
+ Information security training programme (Cyber Suraksha Programme) for our employees about cybersecurity best practices and phishing awareness.
+ Conduction of different simulation exercises (phishing, smishing, etc.) on a regular basis.

R3 Climate change risk

Significance and Impact

+ Extreme weather events and evolving stakeholder expectations due to climate change can cause significant operational disruptions.
+ Adapting to climate change impacts may lead to increased operational costs, including those related to infrastructure upgrades and emergency response measures.
+ Failure to address climate change risks can result in non-compliance with emerging regulations, leading to potential fines and legal challenges.

Mitigation Actions

+ Identification and measurement of the impact on climate change by tracking and monitoring the GHG emissions from operations and the value chain.
+ Conduction of periodic climate risk assessments based on Intergovernmental Panel on Climate Change's (IPCC) global scenarios, i.e. Representative Concentration Pathways (RCPs), as per the Fifth Assessment Report (AR5).
+ For assessing transition risk, studied the potential impacts of the climate change landscape on our operations using the International Energy Agency (IEA) NZE 2050, IEA B2DS, IEA 2DS, and the International Aluminium Institute (IAI) 1.5°C scenario.

Capitals

N Natural Capital · M Manufactured Capital · Intellectual Capital · F Financial Capital · H Human Capital · S Social and Relationship Capital

Risk Category

ESG · Operational · Strategic

Risk Exposure

Λ High · V Low · > Medium

R4 Supply chain risks

Significance and Impact

+ Supply chain disruptions can significantly affect our operations, strategies, and broader society.
+ This may influence our revenue, customer base, and inventory expenses.

Mitigation Actions

+ Identifying significant suppliers using risk- and criticality-based segregation and classification.
+ Strengthening our supply chain strategy through a systematic screening approach, incorporating physical assessments, due diligence, and evaluations of geopolitical, ESG risks.
+ Transforming supply chain through digitisation, improving governance, enhancing productivity, and streamlining processes.
+ Dedicated taskforce to identify and mitigate internal and external supply chain risks.
+ Mitigate threats from high-risk sourcing regions through the Responsible Sourcing Policy and CAHRA methodology.
+ Ensuring real-time geopolitical risk detection and execution of countermeasures through close coordination between Supply Chain and ERM teams.
+ Engage with Indian government to influence policy reforms, enabling competitive raw material sourcing for domestic aluminium producers.

R5 Price volatility of commodities (aluminium, copper)

Significance and Impact

+ Fluctuations in the price of aluminium and key commodities can have a significant impact on the profitability of our business.

Mitigation Actions

+ Deployed strategies such as hedging against price fluctuations and diversification of product portfolio.
+ Regular reviews and stress tests to optimise hedge levels.
+ Follow view-based hedging in the Aluminium business to insulate it from commodity price and currency fluctuations.
+ Follow price offset hedging in the Copper business to insulate it from commodity price and currency fluctuations.

R6 Changes in the regulatory requirements

Significance and Impact

+ The regulatory landscape around ESG, such as the carbon trading system, is rapidly evolving.
+ EU's CBAM regulation will impact aluminium imports into the EU.

Mitigation Actions

+ Engaging with government agencies and industry bodies to adapt to the evolving regulatory environment.
+ Developing low carbon products and executing decarbonisation plans across all sites.
+ Aligning our disclosures in line with the EU's CBAM requirements.

Strategic Priorities

- **SP-1** Prudent Capital Structure
- **SP-2** Value Enhancing Growth/Double-down on Upstream Capacities
- **SP-3** Strong ESG Commitment
- **SP-4** Value Enhancement through Portfolio Enrichment

R7 Stakeholders' focus on ESG

Significance and Impact

+ Regulatory changes have elevated stakeholder focus on ESG, enhancing long-term value.
+ Stakeholders are increasingly aware of the organisation's impact beyond direct associations.
+ Growing significance of ESG among stakeholders can influence operations, reputation, and capital access if expectations are not addressed.

Mitigation Actions

+ Fostering new opportunities and implementing ESG best practices such as emission reduction, responsible waste management, and resource conservation. Also, ensuring fair labour practices, contributing to communities, strengthening corporate governance and risk management.
+ Enhancing ESG reporting and transparency in line with the evolving reporting landscape.
+ Integrating sustainability parameters into our annual incentive payout scheme.

R8 Solid waste management

Significance and Impact

+ Improper management of solid waste can lead to contamination of surrounding areas and adversely impacting the neighbouring community.
+ With evolving waste management regulations, and challenge in availability of land for waste storage, it is essential to ensure efficient management of waste for environmental protection and societal safety.
+ Poor waste management can lead to contamination of soil and water sources, introducing hazardous chemicals and pollutants into the environment.

Mitigation Actions

+ Formed a Waste Management Task Force (WaMTF) to streamline waste management in each unit.
+ Adopted a waste management strategy focusing on minimisation, resource recovery and circularity, to achieve our goal of zero waste to landfill by 2050.
+ Follow the 5R+1S approach (Reduce, Redesign, Recover, Rehabilitate, Recycle, and Storage) aligned with our environmental policies and UNSDG 12.
+ Partnered with cement manufacturing companies to utilise our by-products.
+ Adopted in-house processes to create value from waste.
+ Collaboration with research institutes and think tanks to explore effective utilisation of waste.

R9 Increased import of aluminium

Significance and Impact

+ Rising imports of aluminium and scrap pose a risk to market share, pricing power, and profitability.

Mitigation Actions

+ Organically expanding our downstream facilities to enhance the product mix and meet customer demands.
+ Building a can recycling facility with a tolling partner to utilise secondary aluminium.

R10 Depletion of natural resources

Significance and Impact

+ With rise in consumption of natural resources, the cost of material is also increasing.
+ Furthermore, shortage of natural resources is leading to adverse impact on business prospects.

Mitigation Actions

+ Adopting water-saving technologies and practices across operations to minimise water consumption.
+ Enhancing our recycling capabilities and reused 19.09 million m3 of wastewater during the reporting year.
+ Integrating circularity into every aspect of our business, encompassing mining, aluminium production, and scrap recycling, to reduce reliance on natural resources.

Emerging Risks

Emerging risks have the potential to significantly disrupt our operations, both directly and indirectly. Our approach involves proactively monitoring and assessing potential threats, including cybersecurity breaches, regulatory changes, technological disruptions, and environmental challenges. By staying ahead of these risks, we not only protect our operations but also position ourselves to leverage new opportunities that arise from a dynamic and evolving market.

1. Critical change to earth's ecosystem

Description

+ Potentially irreversible and self-prolonging changes to critical earth's systems can have unforeseen and severe impacts on planet health and human welfare.

Impact

+ With the rise in sea level and change in weather patterns, there is an increased risk of infrastructure damage and supply chain disruptions. This comprises climate change, biodiversity loss, change in land use pattern, freshwater use, ocean acidification, ozone depletion, increase in air pollution, chemical pollution, and introduction of novel entities.
+ In the absence of maintenance of these boundaries, there is an increased risk on stability and sustenance of a habitable planet. This will not only impact our operational efficiency but overall affect the value chain due to irreversible effects on our planet.

Mitigation Actions

+ Completed third season study for 23 sites and developed biodiversity management plans for 39 sites.
+ Completed TNFD assessment to act upon nature-related dependencies; comprising alternate innovative sourcing initiatives and investments in ecosystem restoration.
+ Conducted scenario analysis to assess potential risks across the supply chain.
+ Integrated resource efficiency and recycling-related initiatives for effective waste management.
+ Conducted water risk assessment for all our plants in India and adopted technologies to attain water circularity and zero liquid discharge.
+ Carried out climate risk assessment study and subsequently devised mitigation strategies for the identified risks.

2. Adverse outcomes of AI technologies

Description

+ The rapid proliferation of AI technologies is likely to bring numerous benefits but poses significant risks to individuals and businesses. As AI becomes more widespread and advanced, it may lead to unforeseen or deliberate negative consequences that could have far-reaching impacts.

Impact

+ Inaccurate and poor-quality data inputs to train AI models can significantly impact our business performance and lead to negative outcomes.
+ AI systems are vulnerable to cyberattacks, which could compromise our sensitive information, disrupt supply and operations, and can even have severe consequences for data security.

Mitigation Actions

+ Given the growing significance and utilisation of AI across our operations, we are incorporating AI-related considerations into key policies, such as human rights, cybersecurity, and IT governance etc.
+ We leverage Large Language Models (LLMs) to benchmark our ESG performance against industry peers. This enables us to identify best practices across various Key Performance Indicators (KPIs), such as water conservation, waste circularity, occupational health and safety, risk management etc.

Key Opportunities

Our commitment to innovation and sustainability drives us to continuously explore new applications and technologies that enhance the performance and environmental value of our products. By integrating advanced manufacturing processes and leveraging cutting-edge research, we aim to meet the evolving needs of our customers while promoting a greener, more resilient economy. Amidst the pressing challenges such as climate change, supply chain disruptions, and resource scarcity, aluminium and copper products emerge as pivotal solutions to drive decarbonisation and foster a circular economy. At Hindalco, we have transitioned from being a pure metals manufacturing company to offering comprehensive engineering solutions, enabling us to seize these opportunities and contribute to a sustainable future.

1. Rising demand for aluminium and copper products

Significance

+ There is growing market demand and a shift in consumer preferences for aluminium products with low carbon footprint and recycled content.
+ By 2033, aluminium demand is expected to double in India from 4.5 to 9 million tonnes and copper consumption is set to increase from 1 to 2 million tonnes.
+ The increase in demand will open opportunities in sectors such as automotive and transport, urban infrastructure, pharma, renewables, and air conditioning etc.
+ Potential revenue growth is expected from sales of sustainable aluminium products.
+ There are opportunities to expand market share and enter new market segments.
+ An increase in demand from OEM manufacturers for lightweight materials, with rapid expansion of the electric mobility space, is creating significant growth opportunities.

Mitigation Actions

+ Focusing on technological innovations to develop newer products and solutions.
+ Invest in research and development to innovate sustainable aluminium alloys and manufacturing processes.
+ Enhance marketing and brand campaigning to promote eco-friendly products.
+ Enhancing our downstream capacity for extrusions, FRP, battery enclosures and foils, and coated AC fins to cater to the market.
+ Focused on capital allocation for expansion and downstream product development.
+ Manufacturing superior Copper Alloy Rods for railways.
+ Developing an inner-grooved copper tube facility and coated AC fins under the Product Linked Incentive scheme.

2. Development of low carbon products

Significance

+ With rising carbon prices and increasing commitments to decarbonisation, the industry will have a growing appetite for low carbon products.
+ Low carbon products will be a differentiator compared with other products.
+ Investments in renewable energy, inert anodes, hydrogen, and biofuels will be significant.

Mitigation Actions

+ Expanding our renewable energy portfolio and investing in research and development for low carbon products and solutions.
+ Included products manufactured from recycled aluminium in our Novelis portfolio.
+ Broke ground on copper recycling plant in Pakhajan, near Dahej.

Aditya Aluminium is the first plant in India to set up a Zero Liquid Discharge unit within its premises

3. Recycling and circular economy

Significance

+ Aluminium and copper, with their high recycling properties, may prove to be building blocks for the circular economy.
+ With the projected increase in consumption, the volume of post-consumer aluminium and copper is also set to rise.
+ Using recycled metals will help meet consumer demands while reducing the consumption of virgin metals.

Mitigation Actions

+ Developing a can recycling facility where a tolling partner will provide the hot metal.
+ Implementing a state-of-the-art recycling facility for copper and e-waste.
+ Collaborating with cement manufacturers to use fly ash and bauxite residue.
+ Utilising bauxite residue in roadmaking and using fly ash in cement manufacturing.

4. Emerging applications for specialty alumina

Significance

+ Due to evolving industry requirements, there is an increased demand for developing high-end sophisticated products in existing markets such as refractories, ceramics and flame retardants, and emerging markets such as Li-ion batteries and semiconductors.

Mitigation Actions

+ Developing nearly 45 applications, 120 SKUs.
+ Commencing 600 KT project for white fused alumina, in Aditya.