



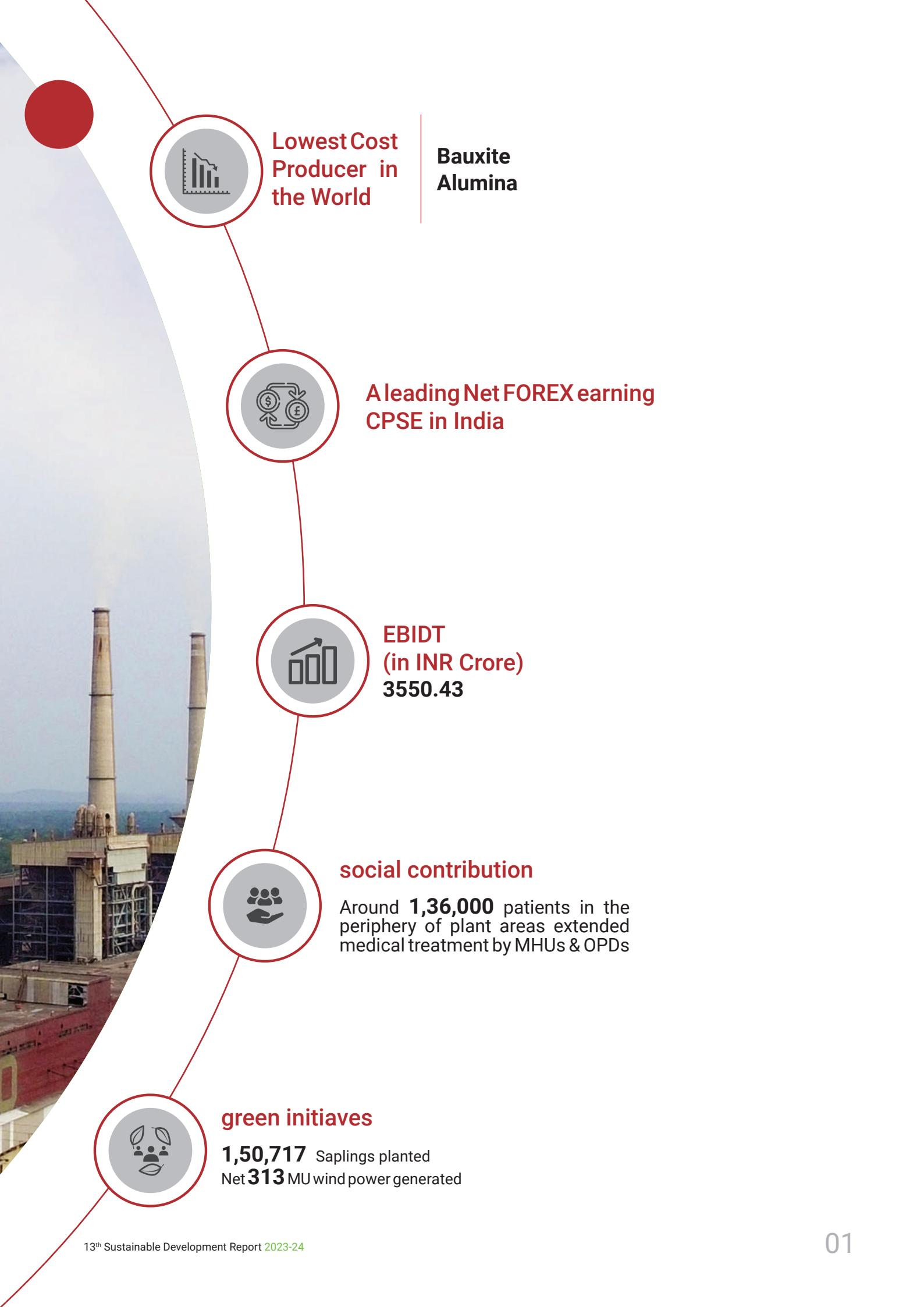
# RESPONSIBLE RESILIENT

13<sup>th</sup> Sustainable  
Development Report 2023-24



# ESG HIGHLIGHTS

National Aluminium Company Limited





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# ABOUT THE REPORT

We are excited to introduce our 13th Sustainability Report for the fiscal year 2023-24, marking a significant milestone in our commitment to sustainable development. As one of India's premier aluminium manufacturing companies, we are dedicated to integrating our business operations in an ethical and transparent manner, ensuring that the interests of our stakeholders remain at the forefront of our efforts. This report highlights our commitment to environmental stewardship, social responsibility, and outstanding corporate governance. We look forward to embarking on this journey towards a sustainable future.

Our reporting framework adheres to the GRI Sustainability Reporting Standards, encompassing all relevant aspects of our sustainability performance. It aligns with the reporting principle of GRI Standard, including materiality, stakeholder inclusiveness, sustainability context, and completeness, ensuring a comprehensive and illuminating presentation of our contributions to sustainable development. We have taken care to present facts in a clear, accurate and reliable manner. Within this report, you will find a detailed description of material issues and their prioritisation, following the guidance of GRI Standards Principles, Technical Protocols, and Disclosure Protocols. For a comprehensive index of GRI disclosures and their locations in this report, please refer to page 107. This report has been crafted in accordance with the GRI Standards 2021.

This report presents comprehensive information on our sustainability performance, material risks, and governance structures for the period spanning April 1, 2023, to March 31, 2024. It offers an integrated overview of Nalco's operations, specifically in Odisha, which include the Bauxite Mine, Alumina

Refinery, Aluminium Smelter, Captive Power Plant, and the Visakhapatnam port facility. Exclusions from this report comprise joint ventures and certain non-material topics, with clear boundaries for material topics delineated within the document. Notably, some non-material subjects, such as the 'policy for responsible sourcing of bauxite,' are addressed in response to stakeholder interest.

This report aims to provide clear and comprehensive information to all our stakeholders. It covers material issues, sustainability strategies, performance metrics, significant organisational achievements, challenges encountered, and actions taken to address stakeholder concerns. We prioritise thoroughness and accuracy in data verification across various levels. Our primary data sources include documentation reviewed by the Board, such as Annual Reports and Financial Statements, which undergo rigorous scrutiny. Therefore, we do not consider third-party assurance as a pertinent requirement. We employ diverse internal reporting systems to gather and evaluate relevant data for inclusion in our reports, adhering to strict internal controls throughout the data collection and analysis processes. When applicable, we transparently disclose any significant constraints or limitations affecting the information presented.

We value feedback and welcome contributions and ideas from all of our stakeholders. For any feedback and suggestions regarding the report kindly contact the following personnel.

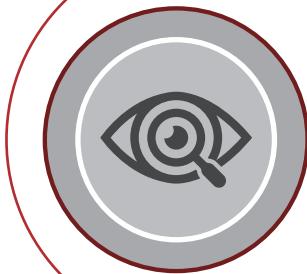
Shri S. S. Bhuyan, GM (TQM)  
NALCO Bhawan, P/1, Nayapalli,  
Bhubaneswar - 751013, Odisha.  
Email: [sustainability@nalcoindia.co.in](mailto:sustainability@nalcoindia.co.in),  
Website - [www.nalcoindia.com](http://www.nalcoindia.com)



# ESG AS AN OPPORTUNITY

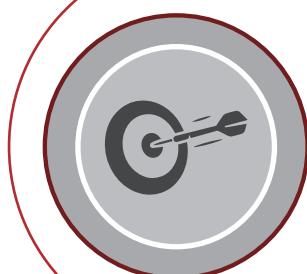
The global shift towards a net-zero economy, driven by the urgent need for climate action and sustainable living, is resulting in a significant increase in demand for metals, particularly aluminium. As a vital component of clean energy solutions, green technologies, and sustainable infrastructure, aluminium is set to play a crucial role in this transformative period. We at NALCO are actively navigating this changing landscape, identifying and capitalising on opportunities while addressing emerging risks. We understand the significant influence of Environmental, Social, and Governance (ESG) factors on our operations and

are committed to tackling these challenges through technological innovation and strategic initiatives. Our efforts include the implementation of smart mining practices and the adoption of advanced technologies such as artificial intelligence, robotics, and augmented or virtual reality to enhance resource utilisation and operational efficiency. As a responsible corporate citizen, we are focused on minimising our environmental impact while maximising our positive contributions to society. Our sustainability strategy aligns with the United Nations Sustainable Development Goals, aiming to create shared value for all our stakeholders. We believe that effective stakeholder engagement is essential for our long-term success. By moving from a reactive to a proactive approach, we have incorporated stakeholder feedback into our risk management and performance evaluation processes. We would like to express profound gratitude to all our stakeholders for their ongoing support. We are dedicated to exceeding expectations and welcome your valuable feedback as we work together to build a sustainable future.



## Vision

To be a Premier and Integrated company in the Aluminium value chain with strategic presence in Mining both domestic & global, Metals and Energy sectors.



## Mission

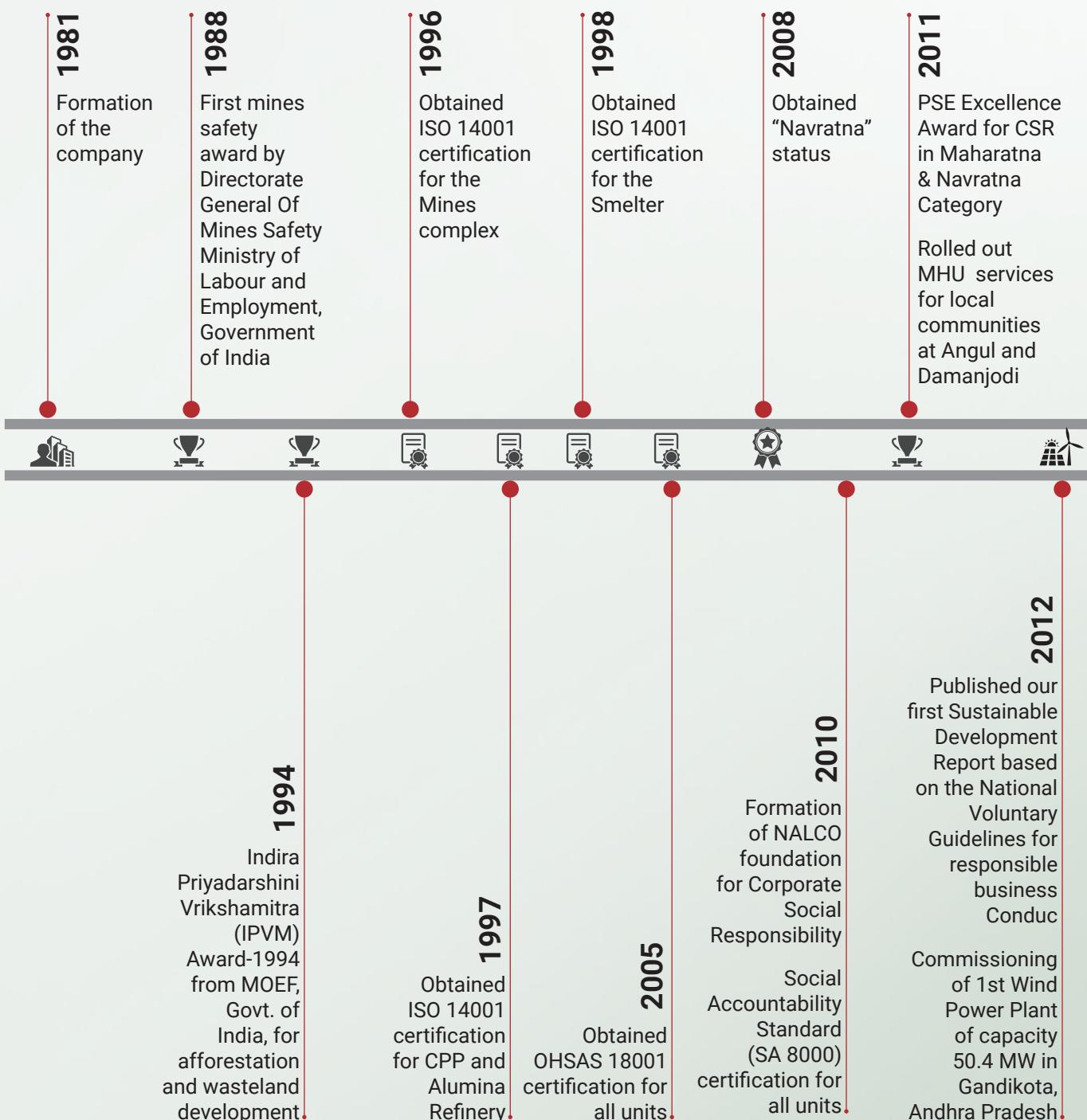
To sustainably grow multifold in Mining, Alumina and Aluminium business along with select diversification in Minerals, Metals and Energy sectors, while continuously improving on efficiency and business practices thus enhancing value for all stakeholders



## Core Values :

- B** • **Benefitting Stakeholders** - We provide our customers, suppliers and other stakeholders with the utmost level of value, service and satisfaction.
- E** • **Excellence and Quality** - We ensure that our products, manufacturing & business processes adhere to the highest quality levels and standards.
- S** • **Sustainability** - We relentlessly pursue sustainable practices and create a positive impact on the communities we engage with.
- T** • **Trust & Integrity** - We conduct ourselves with dignity, integrity, equity, transparency and accountability to build trust.

# REFLECTING ON NALCO'S SUSTAINABILITY JOURNEY SO FAR



<b>2013</b>	Obtained ISO 50001 certification for CPP  Started supporting residential education of needy students from M&V section in peripheral areas Damanjodi  Published the second sustainable development report based on GRI Sustainability Reporting Guidelines version 3.1 (GRI G3.1)	Published the fourth sustainability report in accordance with the GRI G4 framework  Achieved 5-star status for Panchpatmali bauxite Mines as per IBM rating for the first-time for 2014-15	Commissioning of 4th wind power plant of capacity 50.4 MW at Sangli, Maharashtra  First of its kind in the world, Emrion nano-technology based effluent De-fluoridation plant commissioned	40 kWp Rooftop Solar Project at Alumina Refinery, Damanjodi Commissioned	The Company achieved full capacity production of 4.6 lakh tonne, with all 960 POTs in operation in its Aluminium Smelter for the first time since inception.
<b>2014</b>	Rooftop solar System commissioned at Corporate Office  Obtained ISO 50001 certification for Smelter and Refinery	Rolled out 'Nalco ki Ladli' scheme under CSR for meritorious girl students from peripheral areas  Commissioning of 3rd wind power plant of capacity 50 MW at Devikot, Jaisalmer, Rajasthan	Upgraded the Occupational Health & Safety Management System of all facilities to ISO 45001:2018	Comprehensive 'Sustainable Development Policy' issued in conformity with NGRBC  Rooftop Solar Project at Mines, Damanjodi Commissioned.	Published 11th sustainable development report as per GRI sustainability reporting standards
<b>2015</b>					
<b>2016</b>					
<b>2017</b>					
<b>2018</b>					
<b>2019</b>					
<b>2020</b>					
<b>2021</b>					
<b>2022</b>					
<b>2023</b>					

# MESSAGE FROM CMD



**Dear Stakeholders,**

In recent years, sustainability has become a core driver of business strategy, from merely being a topic of discussion in the mining, metal, and power industries. We are excited to publish NALCO's 13th sustainability report 2023-24, in adherence to GRI sustainability reporting standards. This report encapsulates our commitment to a clean industrial future and sustainable development embracing our continuous efforts on the triple bottom line of economic, environmental, and social stewardship.

## **Navigating the Green Transition**

The year 2023 was marked by a tumultuous global landscape, characterised by ongoing conflicts, geopolitical tensions, and persistent inflation. These factors created challenging market conditions and impacted financial performance of the large sectoral players. The demand for aluminium from industries supporting the green transition continues to grow steadily worldwide as governments and regulatory bodies in major economies are prioritising low-carbon solutions and renewable energy, further bolstering demand.

While transitioning to a low-carbon circular economy presents significant challenges, we view it as a fundamental megatrend that will shape our future and a significant value creation opportunity for NALCO. Our integrated value chain, which delivers products with a strong sustainability profile, and is focused around shared value creation for both our customers and shareholders.

NALCO's greatest asset however is our employees, who contribute to our strength and resilience in a rapidly evolving world. Driven by dedication and determination, our people leverage their skills and experience to achieve our ambitious strategic goals. Fostering a diverse and inclusive workplace is essential for continuously improving our greener product offerings, cost efficiency, and market positioning. Backed by our sound governance and the resoluteness of our people, we remain confident in the long-term potential of the green transition and the crucial role of aluminium in this transformation.

## **Consistent performance and innovation**

In Fiscal year 2023-24, we have continued to achieve

milestones indicating our positive growth movements toward economic, environmental, and social excellence. The company's after-tax profit margin has increased by about 33% over the previous year highlighting a key milestone towards our economic sustainability. Besides domestic production, NALCO's export turnover has recorded an increase of about 1.4% from last year, highlighting the company's strong export performance.

We are deeply focused on extending our limit in production and operational agility, rolling out innovative approaches for value creation. The fiscal year is also celebrated for our remarkable physical performance in all departments.

Over the decades, NALCO has earned its reputation as synonymous with excellence. Tackling enormous operational uncertainties, the company has sustained its performance consistency. Our bauxite production reached a record-breaking performance of 75.27 lakh metric tonnes. Our alumina refinery has witnessed Alumina Hydrate production enhanced by 0.5% signalling our continuous growth in domestic production. NALCO's Aluminum Smelter achieved a record cast metal production of 4.63 lakh MT.

We, over the years, have valued our continuous engagement in research and Development (R&D) to foster innovation at NALCO. Our R&D expenditure has led to a multitude of improvements with significant positive impact on our sustainability journey.

### **Environmental & Social Stewardship**

We believe that growth comes with accountability for NALCO's deeply rooted conviction towards mitigating environmental impacts as a way to deliver sustainable returns. Our vision is to manage our environmental footprint alongside our growth and enhance our significant social impact. We, as a responsible organisation, deliver value preserving the delicate balance of terrestrial and marine ecosystems.

Continuing our legacy and status of being the market leader in environmental stewardship with state-of-the-art technology and consistent initiatives in resource conservation and process control, we have excelled in pollution control, energy & water conservation, environmental excellence and sustainability.

In order to accomplish the objective, we generated 313 MU of wind energy in 2023-24 FY, which surpassed the previous fiscal year's production by approximately 11.7%. We also generated about 614 MWh of solar energy from our rooftop PV solar power plant installed across Corporate Office, refinery and Bauxite mines. Our concerted efforts have also resulted in water conservation.

In view of our commitment to the natural ecosystem, we planted 1,50,717 saplings following our green-belt initiatives in fiscal year 2023-2024. We also distributed fruit-bearing seedlings to local villages to spread environmental awareness and motivate community participation in mass plantations. We also provided villagers with natural pesticides, fertilisers, and training without any cost demonstrating our complete support.

In the communities where we operate, NALCO's dedicated community relations and corporate social teams continue to foster long-term partnerships. Our broad range of initiatives supports entrepreneurship, health, equality, and inspires young minds to pursue education. Adhering to our firm commitment towards social development in surrounding areas, especially, among marginalised and vulnerable communities, we expended INR 50.54 crore in FY 2023-24 for various CSR Projects, which was about 27% more than our previous year's budget. Approximately, 65% of the beneficiaries of our CSR project belonged to vulnerable and marginalised groups who received our education aids and merit scholarships.

NALCO's commitment to corporate social responsibility extends beyond our core business. We've invested significantly in empowering tribal women through self-help groups, safeguarding their ancestral arts and crafts. Moreover, our support for the historic city of Puri reflects our dedication to preserving India's rich cultural heritage. These initiatives are integral to our vision of creating a sustainable and inclusive future for the communities we serve.

### **Moving towards a sustainable future**

As the world is moving towards clean technologies, responding to the emerging need for a sustainable lifestyle and climate action, the drive towards a 'Net Zero' economy is gaining a huge momentum. Recognising the role of aluminium in aiding the transition path to net zero, we cater to the emerging demand for aluminium in ushering green technologies, clean energy solutions, and sustainable systems. We recognise that making products that help meet the growing demand is not enough. It also matters how responsibly these products are made. At NALCO, we will keep on making strides to be recognised among the world's most responsible metals and mining companies in everything we do or venture to.

Thank you,

**Shri. Sridhar Patra**

**Chairman cum Managing Director, NALCO**

**24th October 2024**





# CORPORATE OVERVIEW

## About NALCO

At National Aluminium Company Limited (NALCO), we take pride in being a prominent 'Navratna' public sector enterprise classified under Schedule 'A'. Established on January 7, 1981, with our registered office located in Bhubaneswar, Odisha, we are one of India's largest integrated complexes specialising in bauxite, alumina, aluminium, and power generation. Our role is crucial in the country's industrial landscape, with the Indian government holding a 51.28% stake in our company.

Since commencing commercial operations in 1987, we have consistently demonstrated financial strength and operational excellence, maintaining profitability throughout the years. This success has positioned us among the nation's leading foreign exchange-earners. Furthermore, we are internationally recognized as the lowest-cost producer of bauxite and alumina, underscoring our commitment to efficiency and competitiveness in the market. For further details, please visit our website at <http://www.nalcoindia.com>.

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## Organisation profile

We are one of the country's largest bauxite, alumina, aluminium and power complex. We operate a bauxite mine with two blocks of combined capacity 68.25 lakh tonnes per annum (TPA) and a 21.00 lakh TPA alumina refinery in Damanjodi, located in the Koraput district of Odisha. Additionally, we have a 4.6 lakh TPA aluminium smelter and a 1200 MW captive power plant in Angul, Odisha. Further we have operationalized captive coal block Utkal-D at Chhendipada in Odisha.

Our domestic distribution network is extensive, featuring seven operating stockyards across India and registered sales offices in major cities like Delhi, Kolkata, Mumbai and Chennai. On the international front, we have bulk shipment facilities at Vizag port for exporting alumina and aluminium, as well as for importing caustic soda, with additional shipping at Kolkata port.

We were the first public sector company in India to enter the global metal market by registering on the London Metal Exchange (LME) in May 1989. We have been listed on the Bombay Stock Exchange (BSE) since 1992 and the National Stock Exchange (NSE) since 1999.

## Locations

			
Registered office Bhubaneshwar	Port Facilities Vishakhapatnam	Wind Power Gandikota, Sangli, Devikot, Ladarva	Regional Office New Delhi, Mumbai, Chennai, Kolkata
			
Production Centres Angul, Damanjodi	Stock Yard New Delhi, Jaipur, Baddi Chennai, Vishakhapatnam, Kolkata, Raipur		Project Office Ahmedabad

# Scale of Operation

## Activities, Brands, Products and Services

### Aluminium Products

#### Product Range and Applications:

- Our extensive product portfolio includes Standard Ingots, Alloy Ingots, T-Ingots, Sow Ingots, Billets, Wire Rods, Cold Rolled Coils, Sheets, and Chequered Sheets.
- Our Ingot offerings—Standard, Alloy, T, and Sow varieties—serve as versatile inputs for a wide range of end-use products.
- Billets are primary input for producing premium-quality extrusions. Our high-speed alloy billets specifically designed to enhance the efficiency of the extrusion process.
- Wire Rod Coils are inputs for manufacturing of conductors and cables.
- Our Rolled Products and Chequered Sheets meet the needs of the manufacturing and automotive sectors, while our Foil Stock is widely utilised in the packaging industry.



### Alumina Products

Our alumina product range includes Calcined Alumina, Alumina Hydrate, and Specialty Alumina & Hydrate.

- Calcined Alumina is a crucial input for various industries, including aluminium smelting, refractories, ceramics, and high-alumina cement.
- Alumina Hydrate is an essential component in the production of alum, polyaluminium chloride, and other specialised chemicals.
- Specialty Alumina is designed to meet the specific requirements of the refractory, ceramic, and abrasive sectors.
- Additionally, Specialty Hydrates are utilised in a wide array of applications, serving as filler materials in plastics, rubber, paper, fire retardant chemicals, and in the manufacturing of alumina chemicals.

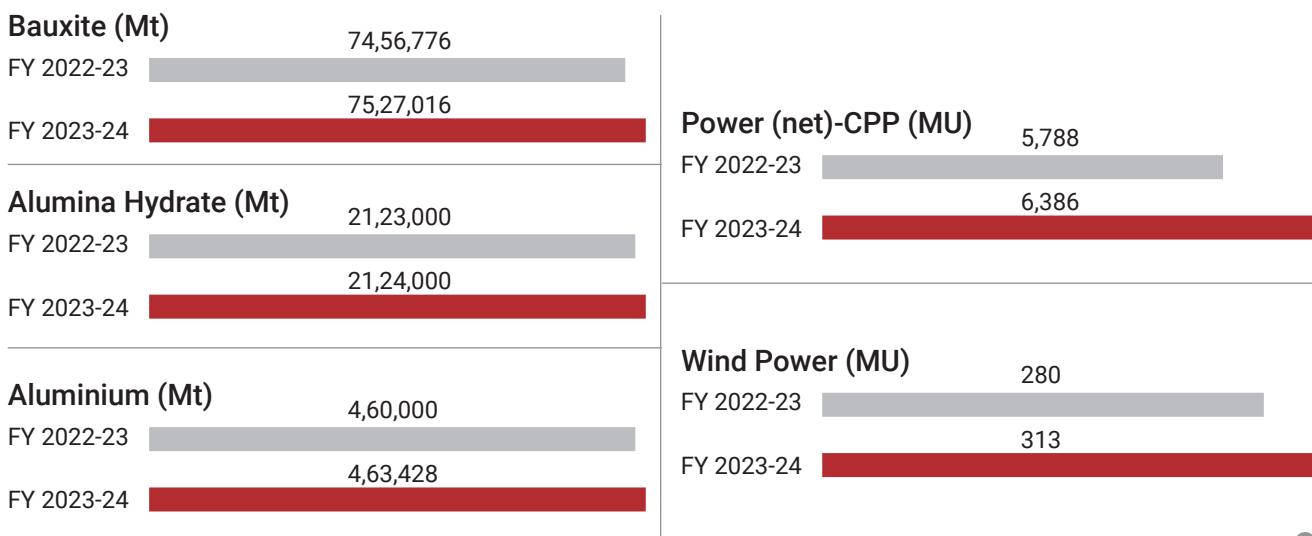


### Power Products

Our power portfolio encompasses Thermal, Co-generation, Wind, and Solar power generation. Power generated is mostly utilised for our process and social needs. Excess power is exported to the grid.



## Production



## Employment

Employees are the backbone of our organisation and we have maintained a strategic balance between the on-role and off-role engagements, prioritising productivity.



**4,874**

Total no of employees

## Markets Served

We have established a strong presence in key geographic regions, including Southeast Asia, the Far East, the Indian Subcontinent, the Gulf, China, and the USA, in addition to the domestic Indian market.

As of FY 2023-24, we operate in 23 states across India and have a global footprint spanning 13 countries.



## Supply Chain

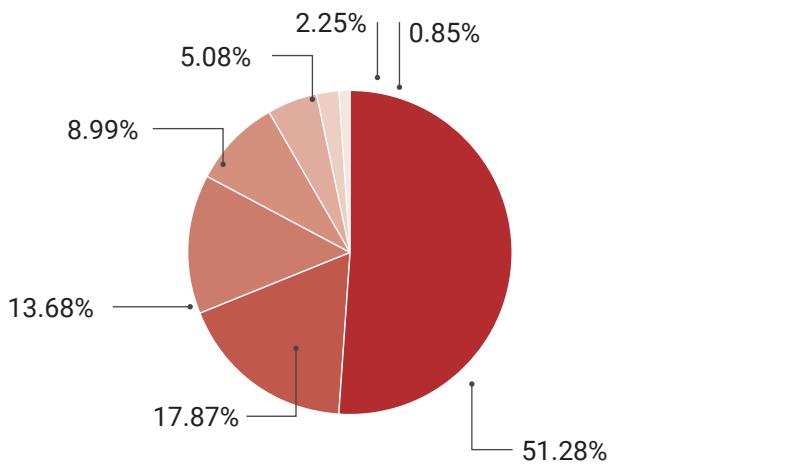
Our sourcing strategy extends beyond traditional primary suppliers of raw materials, fuel, and machinery, encompassing a robust network of local suppliers, with special emphasis on Micro and Small Enterprises (MSEs) located near our manufacturing facilities or within the state. These local partners play a vital role in our supply chain, and we are dedicated to fostering their growth and development. Their contributions not only enhance our operations but also align with our sustainability objectives.

We prioritise resource efficiency throughout our supply chain—from sourcing to distribution—by optimising energy, water, and raw material consumption through close collaboration with our suppliers. Furthermore, we strive to ensure sustainable sourcing by carefully selecting transportation methods and ensuring that our suppliers adhere to established social responsibility standards.

## Ownership & legal structure

Being a Public Sector Undertaking (PSU) under the aegis of the Government of India, the majority of the NALCO's ownership is held by the Government of India, followed by Indian Public. Shareholding pattern as on 31st March 2024:

<span style="color: #8B0000;">■</span>	Promoters (Government of India)
<span style="color: #A54E4E;">■</span>	Indian Public
<span style="color: #C85A3D;">■</span>	Mutual Funds
<span style="color: #E68B6B;">■</span>	Foreign Portfolio Investor
<span style="color: #FADBD8;">■</span>	Insurance Companies
<span style="color: #FDD8D8;">■</span>	Bodies Corporate
<span style="color: #FDD8D8;">■</span>	Other Entities



## External Initiatives

NALCO's operational framework is carefully aligned with a range of global standards and initiatives, including the UN Global Compact, GRI Standards, the UN Sustainable Development Goals, and the Universal Declaration of Human Rights. Our commitment to responsible business practices is further reinforced by adherence to the guidelines set forth by the International Labor Organization (ILO) and the National Guidelines for Responsible Business Conduct as mandated by the Government of India.

To promote sustainable mining practices, our Bauxite Mines operate in strict accordance with the regulatory framework established by the Indian Bureau of Mines (IBM). Implementation of Management System for Quality, Environment, Occupational Health & Safety, Energy, Social Accountability and Information Security, corresponding regular audits and inspections bolster our commitment to environmental stewardship. In support of the nation's developmental goals, NALCO actively engages in initiatives such as Swachh Bharat Abhiyan, Make in India, and Digital India.

## Membership of Associations

NALCO participates in the external stakeholder dialogues and policy advocacy through its strategic memberships with the prominent industry associations. At present, NALCO is associated with 19 such associations, and the leading among them are depicted below.

Name of the trade and industry chambers / associations	Reach of trade and industry chambers / associations (State / National)
Aluminium Association of India	National
Engineering Export Promotion Council	National
Confederation of Indian Industry	National
Standing Conference of Public Enterprise	National
Chemical and Allied Products Export Promotion Council	National
Federation of Indian Mineral Industries	National
National Institute of Export Organizations, New Delhi	National
National Institute of Personnel Management (NIPM)	National
National Chamber of Commerce	National
Indian Chamber of Commerce (ICC)	National

## Awards & Accolades

These awards highlight our commitment to responsible business practices and environmental sustainability in our mining operations.

- Dun and Bradstreet Award-2023 to our Company for Business Excellence in the non-ferrous metals sector on 06 October, 2023.
- Smelter Plant was adjudged as “Best performer in Odisha with 5 Star rating” recognition in CII ENCON Energy Conclave 2023 for its strong commitment towards Energy Efficiency.
- Smelter plant was adjudged with “Excellent Energy Efficient” unit in CII National Energy Conservation Award 2023 for its strong commitment towards Energy Efficiency.
- CII-EXIM Bank Business Excellence Award-2023 to NALCO's Panchpatmali Bauxite Mines, Alumina Refinery and Smelter Plant.
- Captive Power Plant bagged Odisha State “Best Performance Award 2023” for energy conservation in the category of CPP from Govt. of Odisha.
- Our Company's Panchpatmali Bauxite Mines received a number of awards for its Environment Concern, Sustainable development, overall performance during the 25th Mines Environment and Mineral Conservation Week 2023-24, organised by IBM.





# CORPORATE GOVERNANCE

Our company is dedicated to creating value for all stakeholders while maintaining high standards of sustainability. We incorporate responsible practices into our operations and actively engage with the communities we serve.

A strong governance framework is key to our success. Our Board of Directors, made up of eminent skilled and experienced individuals, sets the strategic direction and monitors the company's performance. They represent the interests of shareholders while also considering the wider community of stakeholders.

Our governance practices follow the guidelines of the Securities and Exchange Board of India (SEBI) and the Companies Act of 2013. As a Navaratna company, we comply with the directives of the Department of Public Enterprises. The Board includes both executive and independent directors, appointed based on their qualifications and expertise.

Through effective governance, we ensure transparency, accountability, and compliance, fostering a culture of integrity and trust.

## Governance Highlights

15

Core policies & Guidelines  
for ESG governance

10

Board Level Committees for  
ESG governance

12.5%

Women participation in the  
Board of Directors

15

Identified ESG material issues

ISO9001, ISO14001,  
ISO45001, ISO50001,  
ISO27001 & SA8000

Certification of operating units

# Our Approach to Governance

Our company is dedicated to creating value for all stakeholders while maintaining high standards of sustainability. We incorporate responsible practices into our operations and actively engage with the communities we serve.

## Governance Structure

Our Board of Directors provides strategic leadership and oversight. Composed of experienced individuals, the Board establishes our vision, mission, and objectives, aligning them with stakeholder expectations. The Board is accountable to shareholders and operates within the framework of applicable laws and regulations, including the Companies Act, SEBI guidelines, and DPE directives for Navaratna companies. Directors are appointed by the Government of India based on their qualifications.

We are a Public Sector Undertaking with the Government of India as our primary shareholder. As of March 31, 2024, the Government held a majority stake of 51.28% in our company. The remaining 48.72% of the equity shares are distributed among a diverse group of public shareholders. This shareholder structure reflects our status as a government-owned enterprise and underscores the nation's strategic interest in our operations.

## Leadership

The Board consists of six full-time functional directors, including the Chairman and Managing Director, two part-time official directors, and eight part-time independent directors. The selection process for executive and independent directors is overseen by the Public Sector Enterprises Board (PSEB).

## Board Level Committees

We have established committees at the Board level, to improve efficiency and focus on specific areas. These committees, which include both functional and independent directors, oversee various aspects of the company's operations. We maintain both statutory and voluntary committees, all of which operate under the same governance standards as the main Board. These committees are essential in supporting the Board's decision-making process and ensuring effective oversight.

### Statutory Committees

- Audit Committee
- Nomination & Remuneration Committee
- Stakeholder Relationship Committee
- Risk Management Committee
- CSR & Sustainability Development Committee
- Technology Committee
- Share Transfer Committee

### Non- Statutory Committees

- Human Resource Committee
- Ethics and Corporate Governance Committee
- Committee of Directors for Projects and New Ventures

## Performance & remuneration of the governance body

Directors of the Company are evaluated by the Administrative ministry, no separate review of the performance of independent directors, chairperson and the Board as a whole is done. Consequently, a formal evaluation report within this sustainability report is not mandated.

The remuneration, benefits, and performance-related payments (PRP) of functional directors are determined in accordance with the guidelines established by the Department of Public Enterprises (DPE). Given our status as a Public Sector Utility Company, we are exempt from the requirement to formulate independent director remuneration policies under Section 178 of the Companies Act, as stipulated by the Ministry of Corporate Affairs (MCA).

8<sup>th</sup> January, 2024

Swaran Bhawan, New Delhi



For comprehensive information on our evaluation and remuneration policies, please refer to our 43rd Annual Report: <https://halcoindia.com > investor-services > annualreports > 43rd Annual Report 2023-24.pdf>

## e-Governance

Technology is a fundamental component of our commitment to transparency, integrity, and ethical excellence. By leveraging the power of information technology, we have embarked on a digital transformation journey aimed at optimising our operations, enhancing stakeholder engagement, and driving sustainable growth.

The implementation of the SAP Enterprise Resource Planning (ERP) system has allowed us to streamline our core business functions, including sales, finance, materials management, human resources, and production planning. To further enhance efficiency and transparency, we have integrated the Government e-Marketplace (GeM) and the Central Public Procurement Portal (CPP) to facilitate seamless procurement processes. Our digital ecosystem also extends to our employees through centralised

applications and self-service portals, ensuring a smooth experience.

To promote accountability and transparency, we have introduced the e-Office system, which supports remote work and efficient document management. Additionally, we have deployed a range of digital solutions, including online vendor bill tracking, contract labour management, recruitment portals, and mobile applications, all designed to enhance the experience of our stakeholders.

Our organization has implemented various online web-based applications to strengthen governance and monitoring. These applications enable real-time tracking of capital expenditure, fund utilization, compliance management, and vigilance complaint resolution. Such initiatives facilitate timely decision-making, effective resource management, and adherence to statutory compliances.

Utilizing the power of data analytics and visualisation tools, we monitor and optimize our production, sales and distribution and human resource management processes. Data-driven insights inform our decision-making and enhance operational efficiency.

## Current policies and Manuals

Current Policies and Manuals	Web Address
Code of Business Conduct and Ethics for Board Members and Senior Management	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Code of Conduct">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Code of Conduct</a>
Fraud Prevention Policy	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Fraud Prevention Policy">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Fraud Prevention Policy</a>
Whistle Blower Policy	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Whistle Blower Policy">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Whistle Blower Policy</a>
Delegation of Power	(Internal circulation only)
CVC Vigilance Manual	<a href="https://nalcoindia.com&gt;vigilance&gt;Manuals &amp; Policies &gt; CVC Vigilance Manual">https://nalcoindia.com&gt;vigilance&gt;Manuals &amp; Policies &gt; CVC Vigilance Manual</a>
Marketing Guidelines	(Internal circulation only)
Contracts Manual	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Contract Manual">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Contract Manual</a>
Independent External Monitor for Integrity Pact	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Independent External Monitor for Integrity Pact">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Independent External Monitor for Integrity Pact</a>
Code of Practices and Procedures for fair disclosure of unpublished price sensitive information	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Code of Practices and Procedures for fair disclosure of unpublished price sensitive information">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Code of Practices and Procedures for fair disclosure of unpublished price sensitive information</a>
Risk Management Policy	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Risk Management Policy">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Risk Management Policy</a>
NALCO Recruitment & Promotion Rules for Executives	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;HR Policies &amp; Procedures- Recruitment &amp; Promotion Rules 2017 &amp; SOP">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;HR Policies &amp; Procedures- Recruitment &amp; Promotion Rules 2017 &amp; SOP</a>
Dividend distribution Policy	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Dividend Distribution Policy">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Dividend Distribution Policy</a>
Social Accountability Policy	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Social Accountability Policy">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Social Accountability Policy</a>
Policy on related party transaction	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Policy on related party transaction">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt; Policy on related party transaction</a>
Sustainable Development Policy	<a href="https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Sustainable Development Policy wef 28.06.21">https://nalcoindia.com&gt;company&gt;Policies &amp; Documents&gt;Sustainable Development Policy wef 28.06.21</a>

# Ethics & Integrity

Our organisation, along with all its employees, is persistently guided by moral and ethical principles in every attitude, action, and decision we make. We firmly believe that these values are the foundation of our integrity and the key to our sustained success. Every judgement we render and every step we take is rooted in these principles, ensuring that our business operates with the highest standards of honesty and responsibility.

## Values and Principle driven Company

NALCO is built on a strong foundation of values such as transparency, accountability, and responsibility. These principles guide our operations and help us maintain the highest ethical standards. Our governance framework is in line with government regulations and industry best practices. We have established solid policies and procedures to prevent fraud, bribery, and unethical behaviour. This includes detailed guidelines for contracts, procurement, and marketing, as well as protections for whistleblowers. Our commitment to transparency is demonstrated through initiatives like the Integrity Pact and the Public Information Disclosure and Protection of Informer scheme.

## Code of Conduct

We at NALCO have established a comprehensive Model Code of Business Conduct and Ethics, which all board members, government nominees, independent directors, and senior management are required to follow. This code, available on our company website, outlines our ethical principles, guidelines for disclosing conflicts of interest, accountability measures, compliance audit procedures, and protections for confidential information. To ensure adherence, we have implemented strict disciplinary actions for any violations of the code. During the reporting period, we are pleased to report that no breaches occurred.

## Mechanisms for Advice and Concerns about Ethics

We have put strong systems in place to identify and address ethical concerns. Regular audits, including those by the Comptroller and Auditor General, help us spot areas for improvement. Our Vigilance department actively monitors for any ethical risks. We have clear protocols for handling contract deviations, which include independent monitors and strict guidelines. For serious issues, we conduct thorough investigations and seek expert advice when necessary. We prioritize fairness, transparency, and ethical conduct in everything we do.

## Integrity Pact

To promote fair and transparent business practices, we require all bidders for contracts over INR 50 lakh to sign an Integrity Pact. This agreement, which is required by the government, prohibits bribery and corruption. We collaborate with independent monitors to ensure proper oversight and quickly address any concerns that arise.

## Whistle-blower Protection

NALCO's whistleblower policy encourages employees to report unethical or illegal activities without fear of consequences. This policy protects those who disclose wrongdoing in good faith and covers a wide range of misconduct. Employees can report incidents to the compliance officer via email or in writing. The company will investigate all reports and take appropriate action.

### **Our Whistleblowing Policy covers a wide range of misconduct, including:**

- Abuse of authority
- Violations of contracts
- Negligence that could harm public health and safety
- Data manipulation or falsification
- Financial irregularities, including fraud
- Theft of confidential or proprietary information
- Breaches of legal or regulatory requirements
- Misuse of company funds or assets
- Violations of the employee code of conduct
- Unethical, biased, or imprudent behavior

We value and support those who come forward to report such issues

## Fraud prevention

NALCO's Fraud Prevention Policy outlines procedures for preventing, detecting, and reporting fraud within the organization. It applies to all employees, vendors, and other stakeholders involved with NALCO. The policy emphasizes the responsibility of everyone to report suspected fraud and ensures confidentiality for informants. Investigations into reported fraud cases are conducted by the Vigilance Department, and appropriate actions are taken based on the findings. Additionally, the policy outlines measures to prevent fraud and create a culture of ethical behavior among employees and stakeholders.

For the fiscal year under review, the auditors' report, as required by Section 143(12) of the Companies Act, 2013, did not reveal any instances of fraud committed by the company or its officers and employees.

## Corporate Vigilance

The vigilance function plays a crucial role in maintaining internal controls and preventing unethical practices. At NALCO, our vigilance department is led by a Chief Vigilance Officer (CVO) who is appointed by the Government of India. The department is supported by a team of vigilance officers selected under the CVO's guidance. We have established the vigilance function at three key locations: our corporate headquarters in Bhubaneswar, the S&P Complex in Angul, and the M&R Complex in Damanjodi.

To meet the diverse needs of vigilance, we have created the Online Vigilance Portal. This platform acts as a central source of information about the operations, processes, initiatives, and overall functions of the Vigilance Department. With a user-friendly interface for submitting complaints and tracking their resolution, the portal simplifies the complaint-handling process and improves the effectiveness of our vigilance operations.

During the fiscal year 2023-24, our Vigilance department received 85 complaints, out of which 28 complaints were taken up for investigation, leaving 2 complaints pending disposal as of March 31, 2024. In addition, the Vigilance department conducted 29 nos. Capacity Building/training programs, 17 nos. Surprise checks, 18 nos. Periodic/Regular checks, 4 nos. CTE type checks, Vigilance Campaign as per guidelines of CVC and observed Vigilance Awareness week

## Vigilance

### Highlights of Vigilance



Study of contract/purchase/ sales files and Internal Audit Reports



Investigating complaints



Implementation of Integrity Pact



Surprise checks in sensitive areas



Advising on rotation of officials in sensitive posts



Undertaking CTE type inspections & Scrutiny of audit reports



IT initiatives like Learning Portal, Online Vigilance Clearance, Online Exit Process and Online Vigilance Portal



Suggesting system improvements



Advising CMD on vigilance matters and matters relating to disciplinary procedures



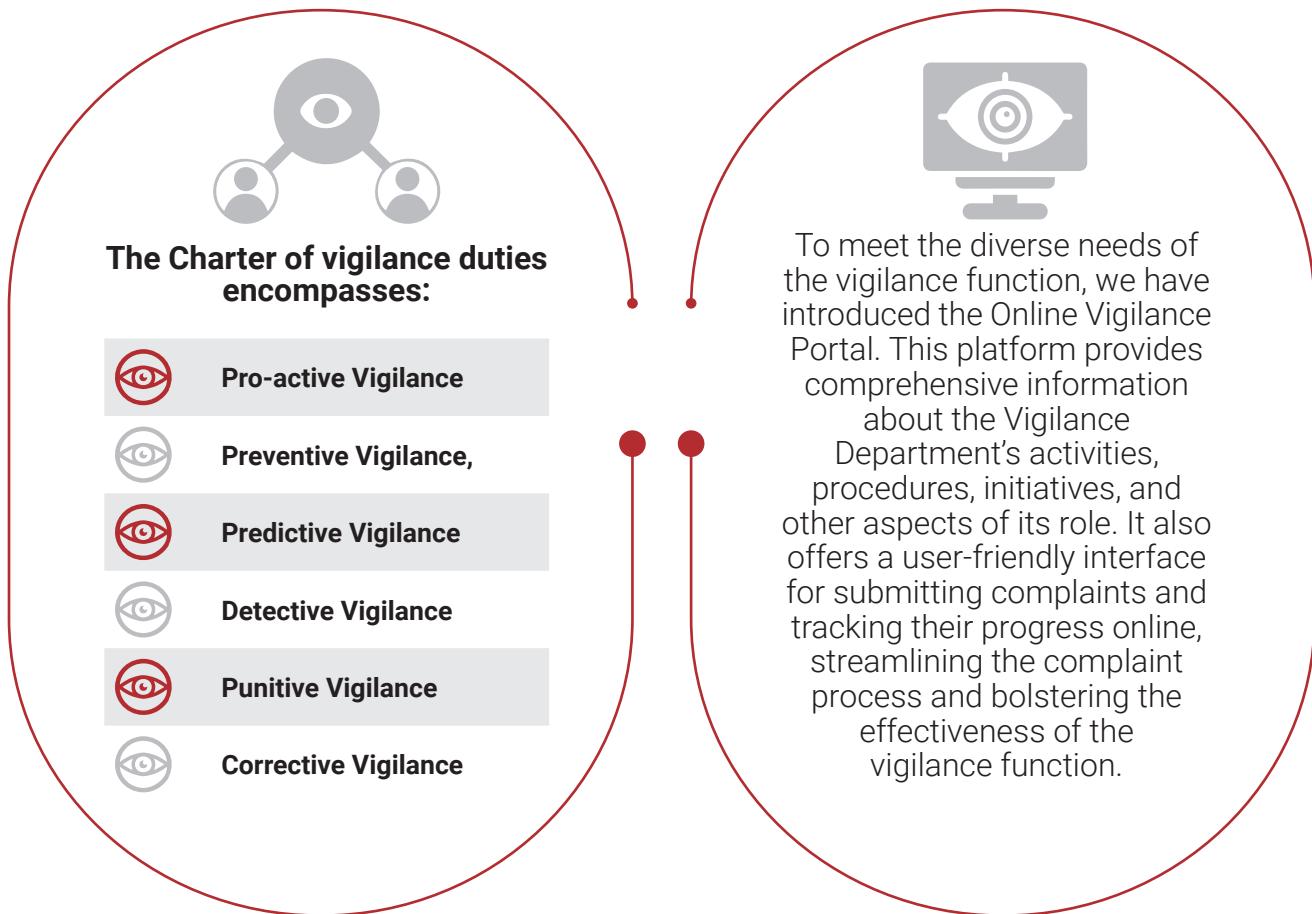
Liaison with CBI



Scrutiny of Property Returns



Conducting training programs for awareness among employees and general public as a part of preventive vigilance mechanism



## Right to Information

As part of our commitment to transparency, we have established a comprehensive Right to Information (RTI) system. This includes an appellate authority, a Public Information Officer (PIO), and nine Assistant Public Information Officers (APIOs) who are dedicated to processing and responding to RTI requests.

We strive to make it easy for individuals to submit RTI queries and appeals by accepting both physical and online submissions. Since 2017, we have actively engaged with the DoPT Government of India's RTI portal ([www.rtionline.gov.in](http://www.rtionline.gov.in)).

For information regarding RTI applications and appeals received during the year 2023 fiscal year, please refer to the ESG databook.

The Third-party Transparency Audit conducted during the year elicited satisfactory remarks from the Auditors.

## Operations Assessed for Risks Related to Corruption

We have implemented strong anti-corruption measures to protect our operations. All significant transactions are thoroughly reviewed to ensure compliance with our internal policies and procedures. Additionally, these transactions are rigorously audited by the Comptroller and Auditor General (CAG). Our vigilance department conducts regular inspections to maintain constant oversight. We also use a comprehensive system of sample checks and detailed examinations to reinforce our commitment to anti-corruption. To further enhance our compliance framework, we carry out regular internal audits.

# वार्षिक साधारण बैठक

21 सितम्बर 2023, भुवनेश्वर



## नालको

National Alumini

### Communication and Training about Anti-Corruption Policies and Procedures

We prioritise building a strong ethical framework through comprehensive training and open communication. Our approach includes the following key elements:

1. Continuous Training: Employees receive ongoing training to promote vigilance and integrity.
2. Regular Training Sessions: We conduct sessions to ensure adherence to evolving policies and procedures, covering:

- In-depth understanding of company rules and regulations
- Comprehensive knowledge of Central Vigilance Commission (CVC) guidelines
- Familiarity with disciplinary procedures
- Proficiency in tendering and procurement processes
- Awareness of common irregularities

- Specialized Training for Vigilance Officers: We collaborate with the CBI Institute to provide focused training for our vigilance officers.

3. Engagement Initiatives: Our training efforts are supported by speeches, seminars, and discussions centered on vigilance and anti-corruption.

### Compliance of the guidelines on Corporate Governance

We are committed to upholding high standards of corporate governance. As part of this commitment, we submit quarterly self-appraisal reports to the Department of Public Enterprises (DPE) to assess our adherence to their guidelines. We are pleased to report that we received an "Excellent" rating for the 2023-24 financial year.

For more details on our self-appraisal reports, please visit our website: <https://nalcoindia.com/investor-services > self evaluation report on corporate governance>



# Risk Management & Sustainability Strategy

## Enterprise Risk Management

We have established a strong risk management framework to identify, assess, and mitigate potential threats to our business. A dedicated Board-level committee oversees this process, ensuring strategic alignment. Regular risk assessments and evaluations are conducted, with identified risks documented and escalated as necessary. This proactive approach safeguards our operations and promotes sustainable growth.

## Sustainability Strategy

At NALCO, our business strategy is deeply connected to our commitment to sustainability. We assess business opportunities with a focus on reducing risks while considering the environmental and social impacts of our operations. Central to our sustainability approach is a strong dedication to inclusive growth and community development, which we believe is key to creating lasting value for both our business and stakeholders.

Our sustainability strategy is shaped by our vision, mission, and core values, guiding our investments, enhancing performance, and strengthening stakeholder engagement. Our goal is to make a positive impact and improve lives through responsible corporate citizenship, supported by our comprehensive Sustainability Policy, which aligns with the National Guidelines on Responsible Business Conduct (NGRBC). We track our progress using key performance indicators (KPIs) aligned with our organisational objectives, enabling us to continuously evaluate and improve our performance.

To proactively manage risks, we conduct regular reviews and evaluations. Designated risk officers document identified risks in exclusive registers, which are reviewed by our internal auditors and senior management. Any issues are escalated to the Risk Management Committee for guidance.

Through this structured approach, we are dedicated to identifying, mitigating, and eliminating potential threats to our operations, ensuring sustainable growth and stability.

## Sustainable Development Policy

Sustainability is integral to our business value-system, aggregating economic, social, environmental and ethical principles to the holistic business model of NALCO. We dedicate ourselves to excellence in business and stellar performance, creating and delivering value to stakeholders.

For more details, please visit our website Sustainable Development Policy.

### Guiding Principles

- i) Ethics, Transparency, Accountability & Integrity in Governance, ensuring compliance with applicable legal and regulatory requirements with infusion of sustainability considerations in the business decisions, while preserving and promoting human rights and advocating public and regulatory policy in a transparent and responsible manner.
- ii) Producing sustainable products adopting sustainable, fair & non-discriminatory technical, commercial and administrative practices while ensuring sustainability, safety, health, diversity & wellbeing of employees and associates in the value chain, and striving to provide maximum satisfaction to all stakeholders including employees, customers, consumers, suppliers & service providers.
- iii) Assigning priority to the preservation of natural resources, conservation of ecosystem & biodiversity, environmental excellence, energy efficiency and low-carbon footprint in all facets of our activities, pursuing innovative solutions for the same.
- iv) Engaging with our stakeholders, including Communities, understanding their concerns and contributing to inclusive growth and equitable development through CS and other means.
- v) Monitoring and reporting progress on our sustainability performance to our stakeholders on a regular basis

### Commitment

We are committed to conduct our business in a responsible manner and to continually evolve our structure, policies, systems, processes and practices to match global standards and to ensure a better planet for future generations.

## Social Strategy

At NALCO, we are dedicated to promoting inclusive growth and equitable development in the communities where we operate. Our CSR policy, aligned with the Companies Act of 2013, provides a strong framework for designing, implementing, and monitoring initiatives that support sustainable communities.

We focus on key areas such as education, healthcare, women's empowerment, livelihood enhancement, rural infrastructure, cultural preservation, and sports

development. Our goal is to uplift marginalised groups and encourage harmonious coexistence.

To enhance our social impact efforts, we established the NALCO Foundation. This dedicated organisation leads project-based initiatives that address specific community needs while ensuring accountability and engaging stakeholders. The Foundation has played a crucial role in empowering youth, women, and local governance bodies, contributing to their overall development and capacity building.



## Environmental Strategy

We are committed to minimising and mitigating the environmental impact of our operations. Our approach to environmental stewardship focuses on reducing degradation, expanding renewable energy sources, adopting cleaner fuels, and using advanced energy-efficient technologies. Through initiatives such as reforestation, responsible resource management, and effective waste management practices, we strive for environmental excellence. All of our operational units have achieved ISO 14001:2015 certification, highlighting our dedication to exceeding environmental regulations and standards.

## Raw Material & Fuel Security

We have obtained long-term leases for the Panchpatmali Bauxite Mines and have been granted the Pottangi Bauxite Mines, significantly enhancing our bauxite reserves. Additionally, to further strengthen our resource base, we have acquired mining leases for the Utkal-D and Utkal-E coal mines, with the Utkal-D mine already in operation.

## Principle of Approach

We are committed to the precautionary principle, emphasising environmental and human safety. Our strong risk management framework incorporates environmental, social, and economic factors. By keeping informed about the latest research from respected organisations such as NEERI, TERI, IPCC, and UNEP, we promote a culture of continuous learning and improvement. Our commitment to excellence is further demonstrated by our strict adherence to ISO management system standards, certified by Bureau Veritas.

To enhance our precautionary approach, we have developed a comprehensive policy and guideline

framework. Each project undergoes a thorough assessment to identify potential financial, environmental, and social impacts, which we proactively address through collaboration with all stakeholders.

## Responsible Mining

Our approach to mining is firmly rooted in a commitment to sustainability. We carefully select mining methods, utilise advanced equipment, and follow strict mine closure plans and land reclamation strategies.

We prioritise minimising environmental impact by implementing stringent controls to reduce noise, vibration, and air pollution. To maintain ecological balance, we use precision mining techniques, avoid secondary blasting, and ensure proper machinery maintenance.

We recognize the responsibilities that come with mineral extraction and are dedicated to continuous improvement. By proactively identifying and addressing risks, we work collaboratively with government authorities, communities, and stakeholders to promote sustainable mining practices.



## NALCO's Policy for Responsible Sourcing of Bauxite

NALCO sources its entire Bauxite requirement from its own Captive Mines, located at Panchpatmali in the Koraput district of Odisha. NALCO has been mining Bauxite from the leased area granted by Government of Odisha and has all necessary statutory clearances from IBM (Indian Bureau of Mines, Government of India), OSPCB (Odisha State Pollution Control Board), DGMS (Directorate General of Mines Safety), MoEF&CC (Ministry of Environment, Forest & Climate Change, Govt. of India), Directorate of Mines, Govt of Odisha etc. All mining activities are carried out in accordance with the provisions, rules, and guidelines of the statute applicable to Mining. NALCO's mines are located within the district of Koraput, where there is no widespread incidence of violence, armed conflict, political/ institutional instability, repression, war of liberation, insurgency or civil wars. In order to mitigate risks, arising on account of any of the above, NALCO has established the following key measures:

- a) Mines has adequate mechanisms to ensure security to its establishment and operations. Central Industrial Security Force (CISF) has been deployed at NALCO's Mines, to ensure security to establishment and operations. (The CISF is an independent Central Government Force, under the aegis of Ministry of Home Affairs, Government of India, which provides security cover to India's most critical infrastructure facilities, including Nuclear installations, Space establishments, Mining areas, Power Plants, Airports, Sea ports etc.) Monthly Security review meetings are held between authorities of NALCO and CISF to review security risks to take necessary corrective and preventive action (if any required.)
- b) NALCO neither makes payments to nor provides logistical assistance or equipment to non-state armed groups . There has been no instance of any non-state armed groups illegally controlling mines sites or transportation routes in the region of our bauxite mines.
- c) The role of the CISF, which is a public Security force, deployed by NALCO at it's Mines facilities includes maintenance of law (including safeguarding of human rights), providing security to Mines workers, equipment and facilities and protecting the mines site and transportation routes (within NALCO Mines area) from interference with legitimate extraction and trade. Payments to the CISF (against salaries & other benefits) are made by NALCO on monthly basis, as per Bills raised by them. Details of payments made to CISF are disclosed publicly in NALCO's Annual Report, which is available in the Public domain, for complete transparency, proportionality and accountability in the reporting framework.
- d) The Company has set up a Risk Management Committee at the Board level. This Committee reviews the exceptional Risk Reports and advises remedial measures from time to time. The risk mitigation measures are periodically reviewed to ensure that executive management controls risk through means of a properly defined framework. A periodical review is made to identify new risk areas along with mitigation plans. For the identified risks, the nominated risk officers maintain risk registers in



prescribed format which are also overviewed by Internal Auditors of the Company and at senior management level. Deviations, if any, are reported to the Risk Management. Risk reports are furnished by Mines to Corporate Office every month. The same is compiled for review by Board level committee.

- e) Further operational risks are identified at Mines level through establishment of HIRA teams. Each dept has a HIRA team (Hazard Identification and Risk Assessment), who review the risks on a routine basis and devise appropriate action plan for mitigation of the risks. Similarly departmental HODs review the environmental and quality risks associated with their departments and take required mitigation measures.
- f) Ethics and transparency at NALCO's Mines are guided by central policies developed at NALCO's Corporate Office level. Our contract Manual and Purchase Manual have ample provisions to ensure fair deals from suppliers, contractors and service providers in matter of contract and procurement. Likewise Marketing guidelines provide procedure and guideline for fair, transparent and credible transaction in an International scenario. The Sustainable Development Policy and Core Values, reflect our commitment towards integrity, ethical practices and transparency. The system is further augmented with NALCO's approved and published "Fraud Prevention Policy", "Whistle Blower Policy", "The Code of Business Conduct & Ethics for Board Members and Senior Management", "Code of conduct and procedures for fair disclosure of unpublished price sensitive information", Approved Conduct, Discipline and Appeal (CDA) Rules applicable to all executives of the Company, Certified Standing Order applicable to other employees etc.
- g) Any mala-fide deviation in form of fraud, bribery, appeasement etc. in any business transaction attracts stringent action as per the Company's Vigilance manual, CVC Guidelines, SEBI guidelines, Code of Conduct and other applicable guidelines. Pre-Contract integrity Pact is signed between transacting party and company for all contacts above INR 5 Million gives further boost to our conviction regarding ethics and transparency. Any complainant lodging complaint under Public Information Disclosure and Protection of Informer (PIDPI) Scheme of Govt. of India receives due protection as per provisions of the scheme.
- h) NALCO does not offer, promise, give or demand any bribes to conceal or disguise the origin of minerals, to misrepresent taxes, fees and royalties paid to Central and/or State Governments for purposes of mineral extraction, trade, handling, transport and export. There is complete transparency in payment of fees & taxes and royalties to Government which are online transactions as per the requirement of government agencies.
- i) NALCO neither tolerates nor by any means, profits from, contributes to, assists with or facilitates any form of torture, cruel, inhuman and degrading treatment or any forms of forced or compulsory labour, including Child labour, nor is any work extracted using coercion and/ or threat of penalty (i.e. involuntary labour).
- j) Moreover, NALCO's Bauxite mining operations are organised and large-scale in nature and do not come under the ambit of small scale or artisanal mining, and are, therefore, much less susceptible to the more serious abuses, associated with extraction and transport of minerals.

# Alignment with Sustainable Development Goals of the United Nations

In 2015, the United Nations secured the support of all its member nations for the Sustainable Development Goals (SDGs), also known as the Global Goals. These goals represent a united global effort to eliminate poverty, protect the environment, and promote well-being and peace worldwide by 2030. The SDGs provide a detailed roadmap to achieve key objectives, including reducing inequality, combating climate change, and eradicating poverty.



## Elements of the SDG Mapped to GRI Standards

- Earnings, wages and benefits (GRI 202-1)
- Economic development in areas of high poverty (GRI 203-2)
- Community Development (GRI 413-2)

### NALCO's Contribution

- We at NALCO ensure generous compensation for our employees, with nonpermanent workers engaged through contractors consistently receiving wages above the prescribed minimum.
- Our sustainable livelihood and infrastructure development programs have significantly uplifted the local economy in the areas where we operate.
- Implement local community development projects based on a careful evaluation of the specific needs of the communities we serve.



## Elements of the SDG Mapped to GRI Standards

- Significant indirect economic impacts (GRI 203-2)

### NALCO's Contribution

- Provide direct and indirect employment opportunities, which are essential for local livelihoods.
- Support a significant number of local suppliers through our operations.
- Our CSR programs play a crucial role in fostering self-reliance and generating livelihoods within local communities



## Elements of the SDG Mapped to GRI Standards

- Access to medicines (GRI 203-2)
- Air Quality (GRI 305-1, 305-2, 305-3, 305-6)
- Occupational health and safety (GRI 403-2 & 403-3)
- Spills and Water Quality (GRI 306-1, 306-2, 306-3, 306-4)
- Infrastructure investments (GRI 201-1 & 203-1)

### NALCO's Contribution

- Operate OPDs, mobile health units, and health camps that offer free medical consultations and dispense free medicines to people around our plant areas.
- We have established Occupational Health Centers to prevent the spread of occupational diseases.
- Continually monitor emission and effluent parameters and ensure effective spill containment



#### Elements of the SDG Mapped to GRI Standards

- Education for sustainable development (GRI 2-17)
- Employee training and education (GRI 404)

#### NALCO's Contribution

- Provide generous support to schools and meritorious girl students in the areas surrounding our operations through our CSR initiatives.
- We have established fully-aided schools in our plant townships for the children of our employees and other outstanding students.
- Offer in-house training institutes and sponsor external training programs to ensure regular skill enhancement for our employees and workers



#### Elements of the SDG Mapped to GRI Standards

- Equal remuneration for women and men (GRI 202-1)
- Diversity and Equal Opportunity (GRI 405-1, 405-2)
- Gender Equality (GRI 401-1, 404-1, 404-3, 405-1)
- Non-discrimination (GRI 406-1)

#### NALCO's Contribution

- We uphold a policy of equal pay for both men and women.
- Our recruitment and selection procedures ensure representation from all genders, geographical regions, ethnic groups, religious groups, and social classes.
- We do not tolerate any form of discrimination.



#### Elements of the SDG Mapped to GRI Standards

- Water (GRI 303-1, 303-3)
- Waste (GRI 306-2)
- Wastewater quality (GRI 306-1)

#### NALCO's Contribution

- Implement rainwater harvesting, STP, ETP, and water conservation practices in our plants and mines.
- Ensure zero discharge to external areas, minimising any negative impact on water bodies.
- Support for Swachh Vidyalaya Abhiyan and Open Defecation Free (ODF) Villages

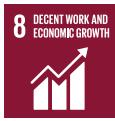


#### Elements of the SDG Mapped to GRI Standards

- Energy efficiency (GRI 302-1, 302-2, 302-3, 302-4)

#### NALCO's Contribution

- Operation with Energy-Efficient Equipment and Systems
- We consistently achieve the specific energy consumption targets set in the PAT (Perform-Achieve-Trade) cycles of the Bureau of Energy Efficiency (BEE).
- We generate renewable energy through rooftop solar power and wind power initiatives



### Elements of the SDG Mapped to GRI Standards

- Infrastructure investments (GRI 203-1)
- Earnings, wages and benefits (GRI 202-1)
- Employment (GRI 401-2)

#### NALCO's Contribution

- We do not employ child or forced labour in our operations.
- Comply with all provisions for decent work as per the SA8000 Social Accountability certification.
- Ensure our supply chain adheres to social accountability norms.
- Consistently create and distribute significant economic value



### Elements of the SDG Mapped to GRI Standards

- Infrastructure investments (GRI 201-1, 203-1)

#### NALCO's Contribution

- Support infrastructure development programs for communities and society.
- Invest in R&D and have established a well-equipped R&D centre.
- Consistently promote innovation among employees through various reward schemes



### Elements of the SDG Mapped to GRI Standards

- Equal remuneration for women and men (GRI 405-2)

#### NALCO's Contribution

- Ensure the same pay for the same rank without discrimination.
- Sponsor skill-development and technical training for unemployed youth from peripheral affected families.
- Assist underprivileged, needy, and differently-abled individuals through our CSR schemes.



### Elements of the SDG Mapped to GRI Standards

- Infrastructure investments (GRI 203-1)

#### NALCO's Contribution

- Utilise energy-saving technology and equipment, along with wind and solar power.
- Maintain controlled emissions and ensure no discharge to the environment.
- Prioritise water conservation in our operations.

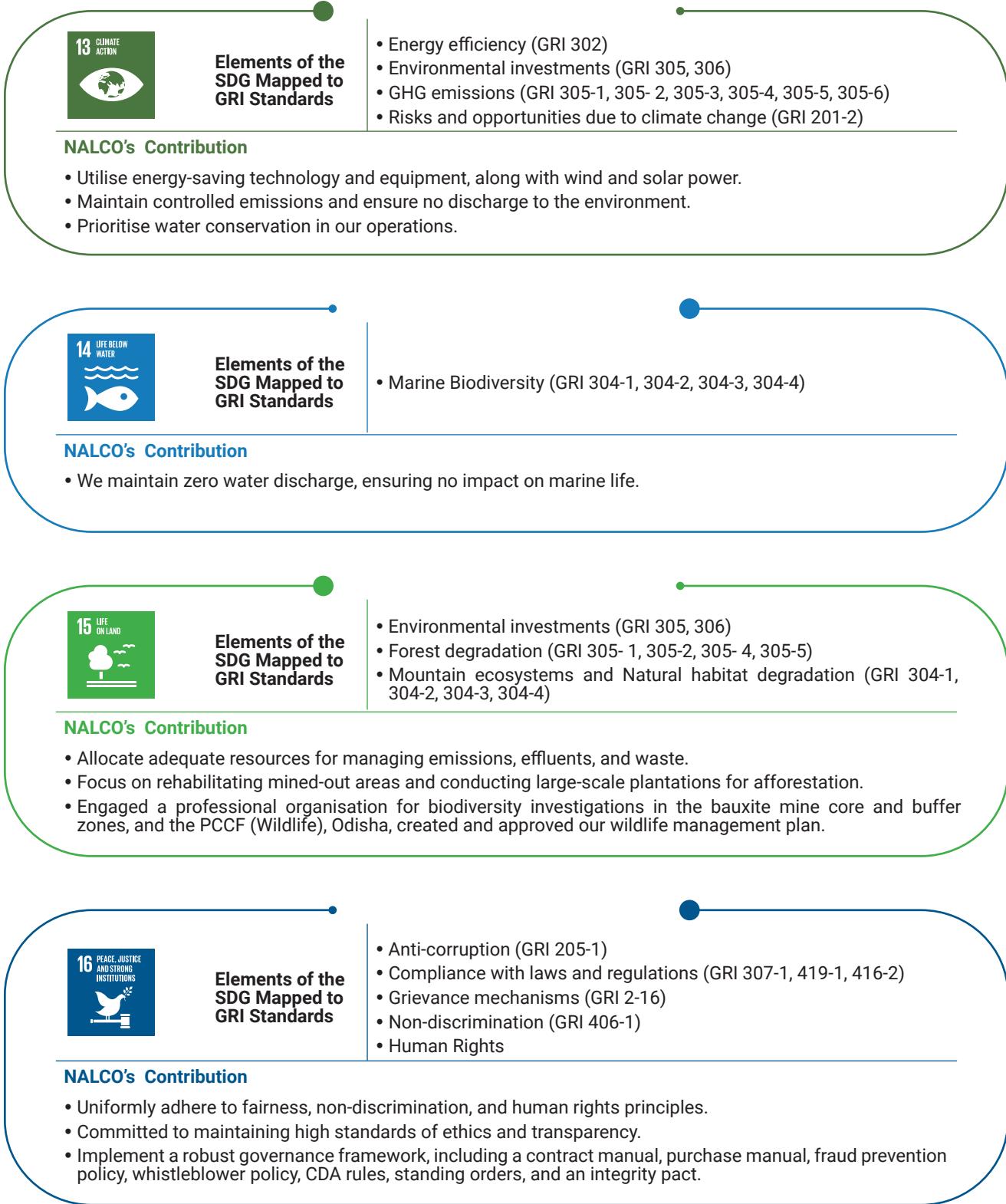


### Elements of the SDG Mapped to GRI Standards

- Energy efficiency (GRI 302-1, 302-2, 302-3, 302-4)
- Materials efficiency/recycling (GRI 301-1, 301-2)
- Procurement practices (GRI 204-1)
- Spills (GRI 306-3)
- Transport (GRI 302-1 & 302-2)
- Water efficiency (GRI 303-3)
- Water quality (GRI 306-1)

#### NALCO's Contribution

- Monitor raw material and energy consumption according to set norms.
- Achieve 100% reuse of overburden and actively reclaim mined-out areas.
- Thrust on recycling of aluminium scrap and aluminium dross.
- Reduce energy consumption, implement green technology, control emissions, and monitor air and water quality to protect the environment.
- Optimise transport modes and routes for products and raw materials.



# Stakeholder Engagement & Materiality

Cultivating strong and mutually beneficial relationships with our stakeholders is essential to our commitment to inclusive and responsible growth. We prioritise understanding their unique needs, interests, and expectations as a key part of our engagement strategy.

We believe that engaging in active dialogue with individuals, pressure groups, and organisations affected by our operations is vital for improving our overall performance, expanding our knowledge, fostering goodwill, and reinforcing our operational legitimacy.

Stakeholder engagement is a foundation of our corporate accountability. It involves actively identifying, understanding, and addressing sustainability challenges. Transparent and open communication has been crucial in building strong and lasting relationships with our stakeholders. Our process for identifying stakeholders is based on a thorough assessment of their impact on our operations and their influence in helping us achieve our corporate goals.

## Stakeholder Identification

Our methodology for identifying stakeholder groups is predicated on the scope of engagement and guided by specific attributes. These attributes include:

**Dependency:** We consider entities or individuals who rely on our operations, products, or services, as well as those upon whom our operations depend.

**Influence:** We recognise entities or individuals who can affect our strategic or operational decision-making.

**Responsibility:** We acknowledge groups or individuals to whom we have legal, commercial, operational, or ethical obligations.

**Diversity:** We value groups or individuals who provide diverse perspectives, helping us gain new insights and uncover potential opportunities.

**Attention:** We prioritise stakeholders who require immediate attention due to financial, economic, social, or environmental issues.

## Prioritised Stakeholders

### Stakeholder



Suppliers & Vendors



Investors & Shareholders



Customers & Consumers



Industry Associations



Employees



Civil society & local communities



Government / Regulatory Bodies



Contractors/other service providers



## Approach to Stakeholder Engagement

We actively engage with all our stakeholders, adjusting our interaction levels based on their influence and interest in our organisation. Our engagement strategy is supported by a thorough assessment of both internal and external stakeholders.

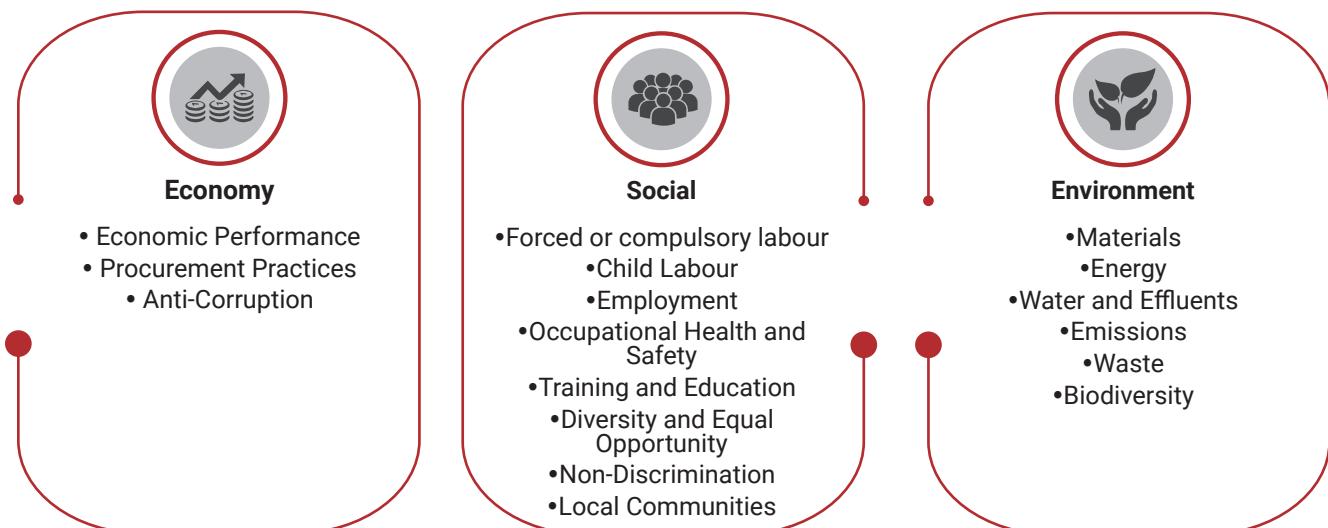
We carefully evaluate our position within our operational environment, focusing on the economic, environmental, and social aspects of sustainability. This reflection helps us identify any gaps in our responsible business strategy and take corrective actions when needed. By maintaining open and regular communication, we ensure that we have a clear understanding of stakeholder needs and expectations.

Stakeholder group	Mode of engagement	Concerns	NALCO's Response
Government & Regulators	<ul style="list-style-type: none"> <li>• Meetings with different Central and State Government Bodies, such as: Ministry of Mines, Ministry of Coal, Ministry of Power, Ministry of Corporate Affairs, Ministry of Environment, Forests and Climate Change</li> <li>• Different circulars, directives, office orders, letters and information</li> <li>• Submissions of various returns &amp; compliances to statutory authorities</li> <li>• Email Communication</li> </ul>	<ul style="list-style-type: none"> <li>• MOU performance</li> <li>• Infrastructure development</li> <li>• Capital expenditure</li> <li>• Tax &amp; Dividend</li> <li>• Labour relation &amp; Labour welfare</li> <li>• Corporate Social Responsibilities</li> <li>• Compliance of various rules, acts, regulation and laws</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance of Govt. directives and alignment with Govt. Policies</li> <li>• Performance MoU with Ministry of Mines</li> <li>• Apprising different Parliamentary Committees, Constitutional &amp; Statutory Commissions and subordinate bodies</li> <li>• Filing of Returns, Compliances, ATRs and status reports</li> </ul>
Shareholders & Investors	<ul style="list-style-type: none"> <li>• Annual General Meetings, Periodic financial &amp; performance reports to shareholders and investors</li> <li>• Reports, Memorandum &amp; Press release of SEBI, CAG, Banks and Financial institutions</li> <li>• Shareholders' surveys and meets</li> </ul>	<ul style="list-style-type: none"> <li>• Profit &amp; return on Investment</li> <li>• Financial restructuring and disinvestment of Govt. Shares</li> <li>• Share price &amp; Dividend</li> <li>• Grievance resolution</li> <li>• Foreign exchange &amp; exchange rate</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly results, Audited Financial performance</li> <li>• Annual general meeting, Annual report</li> <li>• Analyst meet &amp; Analyst briefings</li> <li>• Press releases, Website updates</li> <li>• Shareholder's grievance committee</li> </ul>
Employees	<ul style="list-style-type: none"> <li>• Official communications like office order, notice, circular and hand-outs</li> <li>• Intranet</li> <li>• Bipartite &amp; tripartite meetings with labour unions, Collective bargaining</li> <li>• Interaction with officers' associations</li> <li>• Employee satisfaction surveys</li> <li>• Grievance redressal forums</li> </ul>	<ul style="list-style-type: none"> <li>• Employee benefits and remunerations.</li> <li>• Performance rating and recognition</li> <li>• Career growth and succession planning</li> <li>• Training and skill development</li> <li>• Safe and healthy working condition</li> <li>• Quality of life</li> </ul>	<ul style="list-style-type: none"> <li>• Regular sharing of information</li> <li>• Interaction with Unions, Officers Associations &amp; similar forums</li> <li>• Training &amp; performance feedback, Succession Planning</li> <li>• Address by members of top management during different official and social</li> </ul>
Customers & Consumers	<ul style="list-style-type: none"> <li>• Regional and national customer meets</li> <li>• Customers plant visits and management interactions</li> <li>• Advertisements in print and audio-visual media</li> <li>• Feedback, satisfaction surveys and grievance resolution</li> <li>• Product information and response to enquiries</li> </ul>	<ul style="list-style-type: none"> <li>• Product quality, cost, and delivery</li> <li>• Product life cycle including environmental aspects</li> <li>• Customer complaint resolution</li> </ul>	<ul style="list-style-type: none"> <li>• Strict quality control and timely delivery, Product information through website</li> <li>• Biennial customer satisfaction surveys, Customer complaint resolution system</li> <li>• Product support and downstream development</li> </ul>

Suppliers, & Vendors	<ul style="list-style-type: none"> <li>Tender &amp; contract</li> <li>Periodic vendor and supplier meet</li> <li>Regional, National and International trade fairs</li> <li>Supplier relationship management (SRM)</li> </ul>	<ul style="list-style-type: none"> <li>Simplified procedure &amp; timely payment.</li> <li>Terms &amp; conditions of purchase</li> <li>Special privilege to MSE units</li> <li>Transparency &amp; anti-corruption practices</li> <li>Speedy liquidation of disputes &amp; redressal of grievances</li> </ul>	<ul style="list-style-type: none"> <li>Vendor development and import substitution, eProcurement, e-billing &amp; e-Payment</li> <li>Support including purchase preference to MSE units</li> <li>Plant level sub-committee meets at Angul &amp; Damanjodi</li> <li>Plant level advisory committee meeting at Bhubaneswar</li> <li>Half-yearly supplier satisfaction surveys</li> </ul>
Community/ civil society organisations	<ul style="list-style-type: none"> <li>Gram-Sabha and public hearing</li> <li>RPDAC meetings</li> <li>Cultural, religious and social functions</li> <li>Need assessment interactions for CSR projects</li> <li>Local community events</li> </ul>	<ul style="list-style-type: none"> <li>Community needs on infrastructure, employment, education, health, sanitation</li> </ul>	<ul style="list-style-type: none"> <li>Operating mobile health units &amp; organising health camps in periphery villages</li> <li>Sponsoring children from periphery villages for formal education</li> <li>Other CSR initiatives</li> </ul>
Industry Associations	<ul style="list-style-type: none"> <li>Conference, workshops &amp; seminars</li> <li>Trade Fair, exhibitions and industrial expo</li> <li>Membership in different industrial &amp; professional associations</li> </ul>	<ul style="list-style-type: none"> <li>Policy issues</li> <li>Statutory regulations</li> <li>International &amp; internal market conditions</li> <li>Technological developments</li> </ul>	<ul style="list-style-type: none"> <li>Active participation and sharing of common issues in different industrial and professional platforms, Mentoring and sponsoring programs of different industry associations &amp; professional bodies</li> </ul>
Contractors/ Other service providers	<ul style="list-style-type: none"> <li>Tender enquiries and RFQ</li> <li>Meetings and discussions</li> <li>Training, skill development, work instruction</li> <li>On the job supervision</li> <li>Techno commercial discussion for award of work</li> </ul>	<ul style="list-style-type: none"> <li>Work culture and quality of supervision</li> <li>Statutory regulations &amp; compliance</li> <li>Health and safety at workplace</li> <li>Welfare measures</li> <li>Working hours and</li> <li>Forced labour, child labour, and discrimination</li> </ul>	<ul style="list-style-type: none"> <li>On the job counselling and feedback</li> <li>Timely payment, Trainings during induction, Toolbox talk</li> <li>Periodic meetings with production facility in-charge</li> </ul>
Business partners / New ventures	<ul style="list-style-type: none"> <li>Review of business</li> <li>Technology &amp; feasibility</li> </ul>	<ul style="list-style-type: none"> <li>Guidance and hand holding Support</li> <li>Sharing of good practices</li> </ul>	<ul style="list-style-type: none"> <li>Meetings</li> <li>Official communication between the parent and joint venture entities</li> </ul>

## Key topics emerging out of stakeholder engagement

Key concerns identified through stakeholder engagement are outlined below, considering all relevant aspects. These topics serve as the foundation for evaluating and analysing materiality





## Materiality Process

To understand the importance of environmental, social, and governance (ESG) factors for our stakeholders, we conducted a thorough materiality assessment. This process helped us identify, prioritise, and define the key issues that impact both our stakeholders and our company's performance. In this context, materiality refers to how important an issue is for reporting purposes.

Following GRI Standards, we carried out a detailed materiality analysis that included the Report Content Principles and Materiality Test. We used a structured survey based on GRI standards, industry best

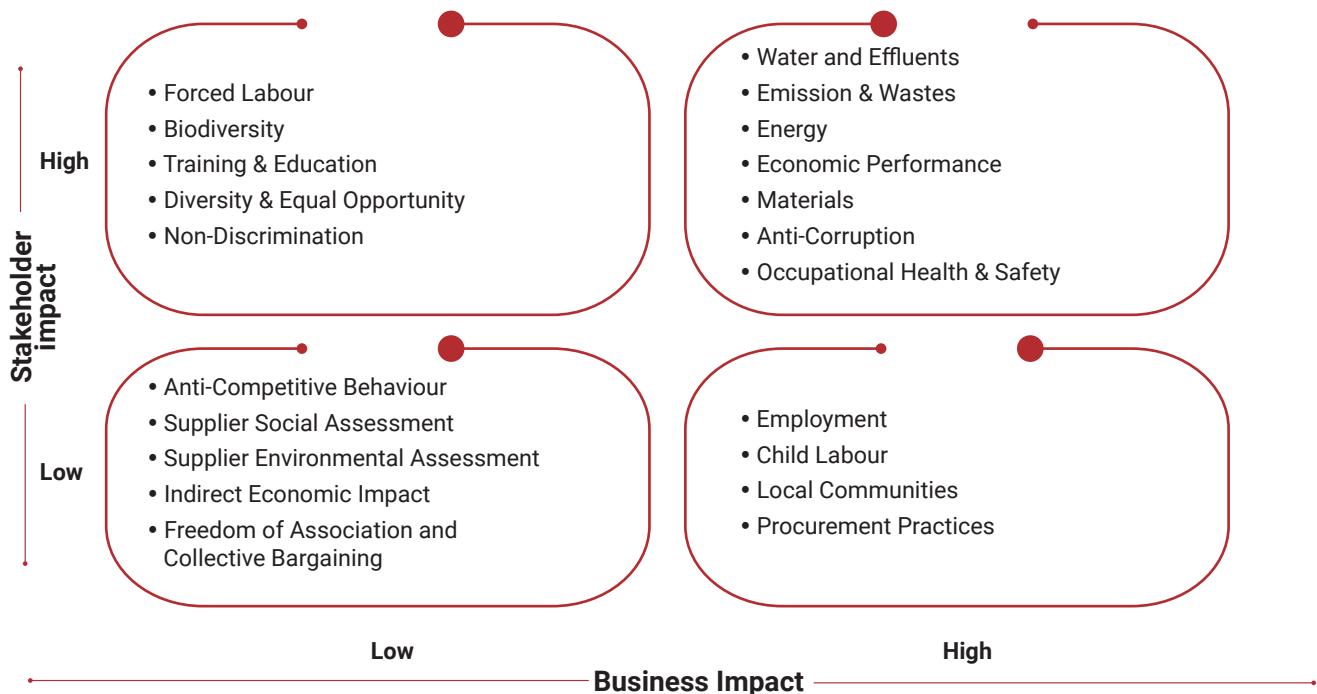
practices, and our operational challenges to engage with stakeholders. We gathered diverse perspectives through questionnaires sent to a representative group of our stakeholders.

We carefully analysed the results, taking into account our operational context and insights from stakeholder interactions. The key issues we identified were plotted on a materiality matrix that compared their importance to management with their impact on stakeholders. This visual tool helped us clearly see the most critical areas that need our attention. Our sustainability strategy is built around these material issues, which highlight the main opportunities and challenges on our path to a sustainable future.

Material issues with high business and stakeholder impact are the focus of this report. There are no significant changes in scope or topic boundaries from the previous report. All efforts have been made to report on the identified material issues in accordance with GRI 3: Material Topics 2021.



## Materiality Matrix



## Materiality Boundaries

Prioritised Materiality Topics	Topic Boundary	GRI Standard Reference
Economic Performance	Inside	GRI 201
Procurement practices	Inside	GRI 204
Anti-Corruption	Inside	GRI 205
Materials	Inside	GRI 301
Energy	Inside	GRI 302
Water and Effluents	Inside	GRI 303
Biodiversity	Inside	GRI 304
Emissions	Inside	GRI 305
Wastes	Inside	GRI 306
Employment	Inside	GRI 401
Occupational Health and Safety	Inside	GRI 403
Training and Education	Inside	GRI 404
Diversity and Equal Opportunity	Inside	GRI 405
Non-discrimination	Inside	GRI 406
Child Labour	Inside	GRI 408
Forced or Compulsory Labour	Inside	GRI 409
Local Communities	Inside	GRI 413

## Data Transparency

In our organisation, data is thoroughly screened for completeness and accuracy at various levels. The primary data source is Board-reviewed documentation, such as the Annual Report and Financial Statements. Consequently, third-party assurance is not deemed necessary. When direct measurements are not feasible, we use data calculated based on standard

assumptions and protocols, ensuring transparency by clearly explaining the assumptions, formulas, and standardisations used in data estimation and quantification.

## Changes to materiality

There is no change in the material topic or its boundaries, and no information is restated.



# ECONOMIC PERFORMANCE

## Economic Performance

Consistent economic value creation is a key measure of our organisation's effectiveness and longevity. At NALCO, we have a strong history of profitability and a debt-free balance sheet, and we consistently aim to exceed the financial expectations of our investors, shareholders, the government, and society. We carefully evaluate every investment and spending proposal to ensure they align with the needs and expectations of our investors, partners, financial institutions, and the broader economy.

In 2024, while the short-term economic outlook for the alumina industry showed a balanced supply and demand, and the aluminium market experienced a slight supply surplus, we remain optimistic about the long-term prospects for both sectors.



**10%**

Increase in Net Worth



**33.42%**

Increase in profit after Tax



**1.4%**

increase in Export Turnover



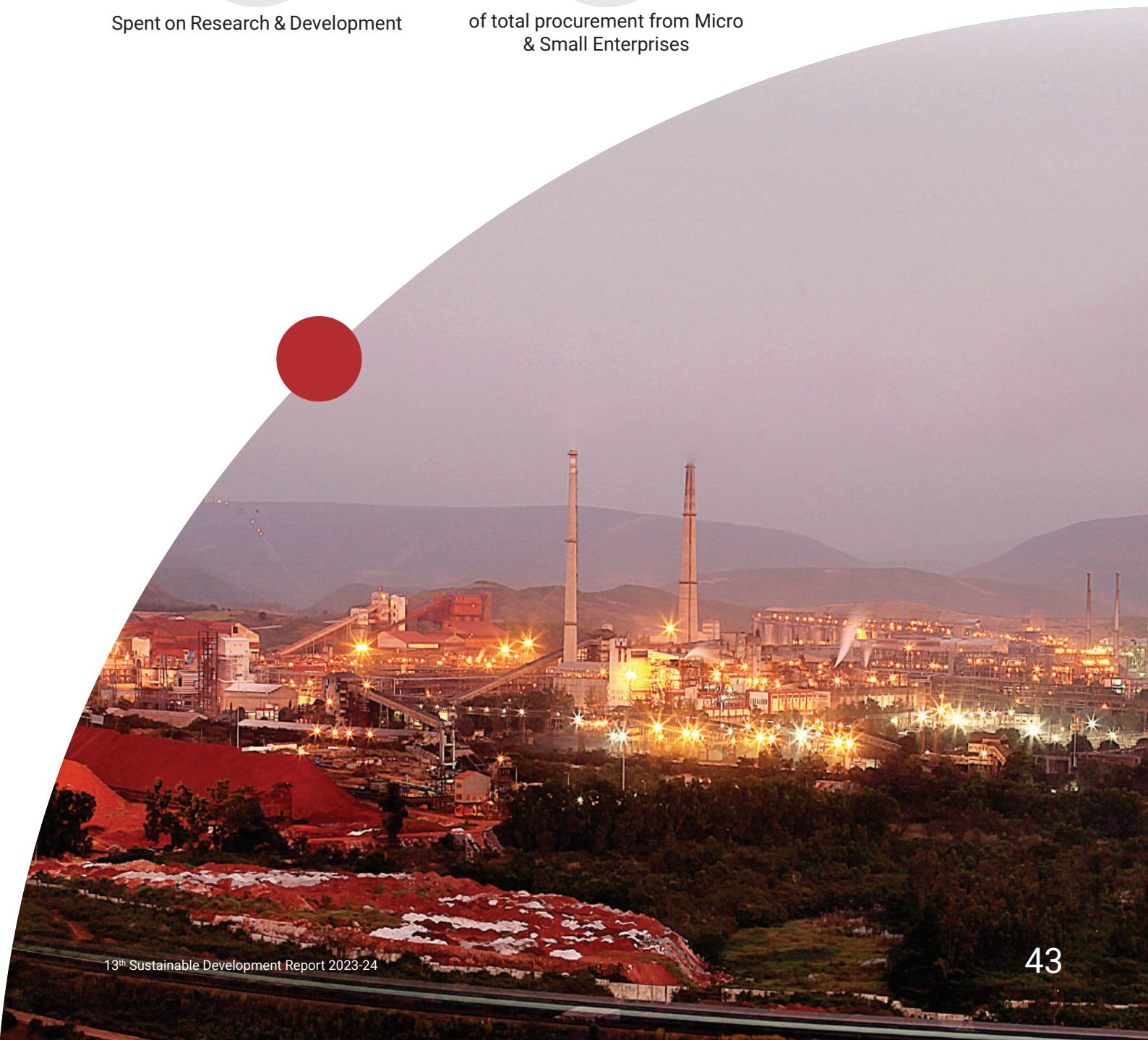
**INR 106.35 Cr**

Spent on Research & Development



**30.64%**

of total procurement from Micro  
& Small Enterprises



# Economic Risks & opportunities

We conduct thorough studies to understand and address the opportunities and challenges facing the aluminium industry both domestically and internationally. Our business plans and goals consider various factors, including the growth of high-consumption categories, price fluctuations, geopolitical issues, the Indian government's budget, and its priority areas. We have summarised our current economic opportunities and threats below :

Opportunities	Threats
<p><b>Projected Demand Increase:</b> Global aluminium demand is expected to rise from 86.2 million tonnes in 2020 to 119.5 million tonnes by 2030. The metal is expected to be widely used for its versatility and recyclability, considered as crucial to the global journey of sustainability.</p> <ul style="list-style-type: none"><li>Transportation Sector: Anticipated to be a key driver of aluminium demand, India is expected to significantly contribute to this growth.</li><li>Electrical Sector: Demand for aluminium is expected to rise due to the expanding renewable energy sector and increased use of aluminium conductor cables.</li><li>Packaging Sector: Projected growth in aluminium demand, primarily driven by the rising popularity of canned beverages and consumer preference for environmentally friendly packaging</li></ul>	<ul style="list-style-type: none"><li>Trade policies and sanctions can drastically impact the dynamics of aluminium trade.</li><li>Geopolitical tensions can disrupt aluminium supply chains, leading to price volatility and inflation.</li><li>As focus shifts to decarbonisation, the imposition of CBAM and similar measures can be detrimental to Indian Aluminium producers with high carbon-intensity.</li><li>High aluminium prices can reduce demand as consumers seek alternatives.</li><li>The rise in thermal coal prices poses a risk to aluminium production due to potential power shortages.</li><li>Government policies, economic conditions, exchange rate fluctuations, and import competition are additional challenges.</li></ul>



## Business Opportunities Developed

- Caustic soda project at Dahej in Gujarat through a JV Company GACL-NALCO Alkalies & Chemicals Private Ltd (GNAL) which is operational since May'2022
- Angul Aluminium Park Pvt. Ltd. in JV with Odisha Industrial Infrastructure Development Corporation (IDCO) for promotion of downstream industries to manufacture conductors, extrusions, castings, foils and other aluminium products ; expected to be fully completed in FY 2024-25
- High end Aluminium Alloy plant in JV with Mishra Dhatu Nigam Ltd. to cater to defence, aerospace and automobile sectors
- Acquisition of strategic Minerals in overseas through a JV Company Khanij Bidesh India Limited (KABIL) with M/s Hindustan Copper Ltd. and m/s Mineral Exploration Consultant Ltd.
- Brownfield expansion project of Smelter to add 0.5 MTPA capacity at Angul

## New Projects

- Capacity expansion both at Alumina Refinery and Bauxite Mines- Addition of 5th stream at Alumina Refinery to expand capacity by 1 MTPA and operationalisation of Pottangi bauxite Mines ( having minable reserve of 75 Million Tons)
- Setting up of a Crushing and Conveying system for alternate sourcing of bauxite for the upcoming 5th stream of alumina refinery from existing & operational Panchpatmali mines south block.
- Operationalisation of Utkal-D & E coal blocks as a single mine to gain economic advantage
- Constructed a 25.5 MW wind power plant in Kayathar, Tamil Nadu.

## R&D Initiatives

Details of Research and Development initiatives of Company can be perused at page 34 of the

43rd Annual report of NALCO available in NALCO website,

<https://nalcoindia.com/investor-services>

**0.81 %**

R&D Expenditure as % of  
Turnover  
**2023-24**

## Financial Implications And Other Risks And Opportunities Due To Climate Change

Climate change is a serious global challenge. It presents significant challenges and opportunities for our industry. We are committed to reducing our environmental impact while capitalising on the growing demand for sustainable solutions.

Aluminium, as a lightweight and conductive material, is increasingly sought after in sectors such as

automotive, renewable energy, and packaging. We are well-positioned to meet this rising demand.

To mitigate our environmental impact, we are investing in renewable energy sources, enhancing energy efficiency, and adhering to stringent environmental regulations. We actively participate in India's climate action initiatives, including the National Action Plan on Climate Change (NAPCC). Our Alumina Refinery and S&P complex have successfully exceeded the energy efficiency targets set under the Perform, Achieve, and Trade (PAT) scheme, demonstrating our commitment to sustainable operations.



## Procurement Practices

We believe our suppliers are key partners in our success. We work closely with them, building open and trusting relationships. Our supplier network is diverse, including everyone from raw material providers to equipment suppliers.

We look for long-term partners who share our values and meet high standards. We regularly review our suppliers to ensure they meet our expectations. We're committed to ethical business practices and support local businesses whenever possible. By working together, we can achieve our shared goals.



## Nurturing local suppliers

As part of our mission, we actively promote relationships with regional vendors and contribute to their growth. We are dedicated to promoting a strong and sustainable supplier network. To achieve this, we have set up support centres at our facilities to offer comprehensive assistance to Micro and Small Enterprises (MSEs). These centres provide technical and commercial guidance to help and improve the capabilities of MSEs.

We have developed a mobile app called NAMASYA to facilitate seamless communication with MSEs. This platform offers important information on vendor

registration, product specifications, development programs, and training opportunities. Also, we have established physical display centres at our manufacturing facilities to showcase the products and services offered by MSEs.

To encourage MSEs to participate in our procurement process, we have implemented various measures, such as easing tendering procedures and waiving the Earnest Money Deposit (EMD). Additionally, we have included purchase preferences for MSEs in our procurement manual. These efforts are designed to empower MSEs and enhance our local supply chain. Our procurement manual has been appropriately updated to extend purchase preference to MSE units that quote within 15% of the lowest quoted price for the minimum quantity of 25% ear-marked for them.

## Highlights of Nalco's support to Ancillary Units & MSEs

- We increased Odisha MSE procurement to Rs. INR 580.48 crore from Rs. INR 562.98 crore. Total MSE procurement (including those from outside Odisha) reached Rs. INR 1059.84 crore, up from Rs. INR 960.00 crore. This represents 30.64% of total procurement, surpassing the government's target
- We strongly encourage all MSE vendors, including ancillaries, to register on the GeM Platform and TReDS Portal (RXIL) to fully benefit from the incentives offered to MSEs.
- In 2023-24, there were 8 vendor meets for MSEs, with 1 meets specifically for women-owned MSEs. The number of registered MSE vendors has increased from 2060 to 3090, and the number of registered women-owned MSEs has increased from 192 to 253.



# ENVIRONMENTAL PERFORMANCE

NALCO is committed to environmental excellence. We've implemented stringent pollution control measures and prioritised environmental impact assessment across all operations. Continued adherence to ISO 14001:2015 management system ensures environmental performance exceeding the regulatory requirements.

Key initiatives include afforestation, waste utilisation, and advanced pollution control technologies. Our focus on water pollution management, waste reduction, and biodiversity protection ensures minimal environmental impact. We've invested in pollution control technologies and adopted new technologies to meet stringent regulations. Emissions have been reduced through advancements in combustion technology, efficient fuel handling, and gas treatment processes. We continuously seek viable alternative applications for waste and rejects through in-house and collaborative R&D efforts. We employ cutting-edge technology to minimise water pollution and achieve zero discharge into aquatic bodies.

Our commitment to environmental stewardship is evident in our ongoing efforts to protect biodiversity and mitigate adverse effects on biological resources and natural ecosystems. We regularly review and update our objectives and policies to ensure continued progress towards a sustainable future.

# Environmental Performance Highlights

**3212.56**Lakh INR

Investment for Energy Conservation

**14.13%**

increase in the  
number of plantation

**33MU**

Additional Wind Energy Generated  
(Net) Over the Previous Year



# Environmental Risk and Concern Management

We prioritise minimising environmental harm and have implemented effective risk management strategies. Identified risks are addressed with appropriate mitigation measures. Our research and development efforts in hazardous waste disposal and waste management have yielded positive results. The following matrix illustrates the environmental risks to our plants.



Mines

Concern	Mitigation
<b>Air Pollution:</b> <ul style="list-style-type: none"><li>• Emissions from heavy vehicles</li><li>• Fugitive Dust emissions during Bauxite mining, handling including crushing in crusher and conveying conveyor</li></ul>	<ul style="list-style-type: none"><li>• Proper selection and maintenance of vehicles to minimise emissions.</li><li>• Water spraying on haul roads and stockpiles using mobile and fixed sprinklers.</li><li>• Suitable blast design and delayed blasting using NONEL detonators.</li><li>• Fog cannons near stockpiles.</li><li>• Adoption of vacuum suction/wet drilling in drill machines</li></ul>
<b>Water Pollution &amp; Conservation:</b> <ul style="list-style-type: none"><li>• Wastewater from Mining, Canteen, Vehicle Washing, and sewage from toilets</li></ul>	<ul style="list-style-type: none"><li>• Constructed an in-situ peripheral barrier to prevent rainwater from leaving the mining area.</li><li>• Check dams at strategic points to filter muddy water.</li><li>• Collection of rainwater in ponds and allowed it to percolate into the ground.</li><li>• Treated canteen wastewater in biological treatment units and vehicle wash water in oil water separators.</li><li>• Fully reused treated water for dust suppression and plantation.</li><li>• Zero-discharge of wastewater implemented</li></ul>
<b>Noise pollution:</b> <ul style="list-style-type: none"><li>• Noise during blasting and operation of heavy vehicles</li></ul>	<ul style="list-style-type: none"><li>• Replaced blasting with ripping and dozing.</li><li>• Planted trees around the area to reduce noise propagation.</li><li>• Improved equipment, soundproof cabins, and PPEs to reduce noise exposure.</li></ul>
<b>Solid Waste Pollution:</b> <ul style="list-style-type: none"><li>• Overburden material from excavation of minerals.</li><li>• Organic waste from the canteen</li></ul>	<ul style="list-style-type: none"><li>• 100% topsoil is reused for backfilling mined-out areas.</li><li>• Implemented a biogas plant to treat organic waste.</li></ul>
<b>Land Degradation:</b> <ul style="list-style-type: none"><li>• Excavation of overburden and ore material by blasting and use of machinery</li></ul>	<ul style="list-style-type: none"><li>• Concurrent mining and backfilling of mined-out areas.</li><li>• Rehabilitated mined-out areas through extensive plantation, converting barren land into forests.</li></ul>



## Captive Power plant

Concern	Mitigation
<b>Air Pollution:</b> <ul style="list-style-type: none"><li>• Flue gas from the boiler.</li><li>• Fugitive dust from coal and ash handling areas.</li><li>• Heat emission in flue gas to the atmosphere</li></ul>	<ul style="list-style-type: none"><li>• ESPs capture ash and particulate matter in flue gas paths.</li><li>• Dust extraction systems and sprinklers in coal and ash handling areas control fugitive dust.</li><li>• Air heaters and economisers recover heat from flue gas</li></ul>
<b>Water Pollution &amp; Conservation:</b> <ul style="list-style-type: none"><li>• Effluent wastewater</li><li>• Sewage wastewater</li><li>• Surface runoff water</li></ul>	<ul style="list-style-type: none"><li>• Effluent treatment plant treats industrial wastewater, reused for ash slurry making. Decanted water from the ash pond is also reused for ash slurry making.</li><li>• Sewage treatment plant treats sewage wastewater, reused for horticulture and plantation.</li><li>• Decanted water from the Ash Pond is chemically treated and recycled for ash slurry making.</li><li>• The Rainwater Harvesting and Recycling system has been commissioned with a pond capacity of 50000 m<sup>3</sup> of water equipped with 2x250 m<sup>3</sup>/hr. of pumping capacity. The recycled water is used as a make up for Fire hydrant Fore bay of RCPH-1 &amp; for plant usage.</li><li>• Zero-discharge of wastewater implemented.</li></ul>
<b>Land Contamination:</b> <ul style="list-style-type: none"><li>• Mill Rejects</li><li>• Ash</li><li>• Scraps (Metallic and Non-metallic scraps)</li></ul>	<ul style="list-style-type: none"><li>• Mill rejects are stored in demarcated low-lying areas for disposal to authorised parties for reuse.</li><li>• Bottom and fly ash disposed of in lean slurry mode to abandoned mine void or ash pond. Dry ash used for filling and brickmaking.</li><li>• The lean slurry disposal method is employed, where ash is disposed off in the abandoned mines of Bharatpur OCP (South block) of Mahanadi Coalfields Ltd. This initiative aims to achieve 100% ash utilisation.</li><li>• Scrap Recycling: Scraps sold to recyclers.</li></ul>



### Smelter

#### Concern

##### Air Pollution:

- Fluoride & particulate emissions from the FTP/ FTC stacks due to pot operation
- Generation of PFC during anode effect

##### Water Pollution & Conservation:

- Generation of fluoride contaminated surface runoffs

##### Land Contamination:

- Generation of Hazardous waste like Spent Potlining (SPL) , Dross, Shot blasting waste, etc.

#### Mitigation

- Adsorbed fluoride gas in alumina in FTPs & FTCs to control fluoride emission. Total fluoride emission was maintained below norms. Installed online continuous laser-based fugitive fluoride monitoring system.
- Pneumatic conveying system of coke dust for dust reduction.
- ALPSYS pot regulation system minimises anode effect through timely alumina dosing.
- Surface runoffs from Pot-line and Carbon areas, along with wastewater from the shop floor, are collected in three holding pools with capacities of 100,000 m<sup>3</sup>, 51,000 m<sup>3</sup>, and 38,000 m<sup>3</sup>. This water is then treated in Ion-Exchange and Emrion Nano De-fluoridation (DF) plants.
- The treated water from Ion-Exchange and Emrion Nano DF plants, surface runoffs from various areas (e.g., Zero Discharge Sump, SPL Storage Area, Captive Landfill Area), subsoil water from Potlines, effluent water from the Hazardous Waste Incinerator, and Plant STP water are all recycled.
- Zero-discharge of wastewater implemented.
- Hazardous Waste: Managed as per OSPCB authorisation, including categorisation, storage, and disposal.
- Spent Pot lining (SPL) carbon is recycled for energy recovery, and refractory portions are stored for authorised disposal.
- Aluminium Dross: Metallic portion recovered; remaining dross used in anode covering or disposed of by recyclers.
- Spent Anode Butts: Fully recycled for anode production.
- Miscellaneous Hazardous Waste: Includes carbon area waste, asbestos waste, and others disposed of at CHWTSDF.



## Alumina Refinery

### Concern

#### Air Pollution:

- Stack Emission
- Dust in Calcined Alumina, Bauxite, Coal, and Ash handling areas

#### Water Pollution & Conservation:

- Waste effluent
- Sewage & Waste water
- Surface Run-off water

#### Land Contamination:

- Lime grit
- Red mud
- Ash

### Mitigation

- Electrostatic Precipitators (ESPs) are used in boilers and calciners to collect particulate matter from flue gas and alumina dust.
- Bag filters and dedusting systems are used to prevent dust emission in alumina handling areas. Sprinkler and dedusting systems control fugitive emissions in lime handling, red mud pond, ash, coal, and bauxite handling areas.
- Wastewater at RMP is recycled and reused/ Ash Pond for process use at Alumina Refinery
- In the Sewage Treatment Plant, sewage wastewater is treated, and is used for horticulture purposes.
- Surface runoff and stormwater are stored in the Sabari Lake and disposed of outside after necessary treatment.
- Zero-discharge of wastewater implemented.
- Lime grit is disposed of in the red mud pond, with a portion used for road or land development.
- Red mud is disposed to red-mud pond
- Fly ash is disposed of in the ash pond and used for various purposes like filling low-lying areas, brickmaking, and supplying to cement plants.

# Environment Management Highlights in 2023-24



## Bauxite Mines

- a) 1,20,389 numbers of trees were planted in and around Mines against the target of 1,10,000 numbers of trees. Also around 5500 numbers of fruit bearing seedlings were distributed to local villagers to improve awareness about plantation among the villagers.
- b) Approximately 14.3 Ha of mined out areas were rehabilitated with plantation.
- c) 7000 square meter of grass-turfing was carried out inside the Mines as per the target.
- d) A biodiversity conservation policy was developed for Mines.
- e) One Online Noise Monitoring System has been installed near C&C Drive House.
- f) Two nos of fog cannons were procured to suppress dust near Stockpiles.
- g) Fixed automatic sprinklers of 3.8 km length were established in the south block and central block to suppress dust generated from haul roads.
- h) Mines has been established as a water positive mine in the study conducted by M/s Geoenvitech Services Pvt Ltd., Bhubaneswar.
- i) The Environment-cum- Mineral Awareness Programme (EMAP) for the year 2023-24 was conducted at Panchpatmali Bauxite Mine on 18th November 2023 in association with Society of Geo-scientists and Allied Technologists (SGAT), Bhubaneswar to spread awareness about the importance of conservation of environment and minerals among the school children of surrounding locality of mine.



## Alumina Refinery

- a) Alumina Refinery has achieved 100.70% ash utilisation for the year 2023-24.
- b) 15,084 No of trees were planted in and around Alumina Refinery.
- c) Project work for Implementation of Red Mud cake filtration system and dry stacking system has been started, as per CPCB guideline on Handling and Management of Red mud
- d) 2nd Red Mud Pond construction work is going on and in the final stage of its completion.
- e) E-Waste have been channelised to authorised collection centres/ Recyclers as per E-Waste Management & Handling Rule. Hazardous wastes (discarded asbestos and Used oils) are channelised through the authorised agency. Plastic wastes (Used filter clothes) are disposed through authorised co-processing cement plants.
- f) Empty Chemical containers/ Barrels are being disposed of through an authorised recycler.
- g) Retrofitting work for Boiler#3 ESP pass-A and pass-C, and Boiler#1 ESP pass-A has been completed.



## Smelter

- a) As a part of Hazardous waste management, 8568 MT of Carbon Area hazardous waste was disposed to Common Hazardous Waste Treatment, Storage & Disposal Facility (CHWTSDF), Sukinda, Jajpur during April 2023 to March 2024. 6278 MT of dross, and 5004 MT of carbon portion of spent pot lining were disposed to the agencies authorised by OSPCB (Odisha State Pollution Control Board) during April 2023 to March 2024.
- b) Installation of online flow measuring device with digital display and data recorder at Drain-2 completed which is working satisfactorily. Installation of the same at Drain-1 & 3 is under way.
- c) EPR registration in CPCB Portal for use of plastic materials for both Importer and Brand owner has been approved by CPCB.
- d) Third Party Audit on HW management in Smelter Plant for FY 2022-23 has been carried out and a report submitted to OSPCB.
- In GAP the Coke Handling area, Coke extraction de-dusting unit, replacement of mild steel baghouse hopper with SS material completed along with new bags. Installation of another dedusting system at the coke downstream of GAP 1 was under process.
- To develop green belt, 3010 Nos. of sapling planted inside Smelter Plant with distribution of 15500 Nos. of sapling to outside periphery villages during April 2023 to March 2024.



## CPP

- a) To further improve stack emission, revamping of 1st 4 fields of ESPs 8 has been carried out in Oct '2023 annual overhauling of the unit. Earlier Unit-5 & Unit-6 has been carried out
- b) The ash utilisation for the year 2023-24 is 89.77%.
- c) CPP has taken action for replacement of R-22 refrigerant used in Dx plants (Direct Expansion plants) by eco-friendly new generation R-407 C which is CFC free, zero ozone depleting potential & low GWP (Global warming potential) refrigerant.
- d) CPP, Nalco has implemented an incentive scheme of Rs 150/MT to Brick manufacturers to enhance ash utilisation. In the year 2023-24 (Up to Feb '2024) around 6.59 lakh MT of dry ash has been supplied to Brick manufacturers.
- e) In the year 2023-24, around 1.57 lakh MT of pond Ash has been supplied to NH for road construction. Further follow up is being done with National highway & State high way to enhance utilisation of Pond ash in upcoming project for using in road and flyover construction
- f) During the Financial year 2023-24, 13858344 cubic metre of mine void overflow water, 1451700 cubic metre of water from rain water harvesting system, 26,87945 cubic metre of water from Industrial Drain water recycling system, 37,82920 cubic metre of water from Ash Pond was recycled after treatment and re-used in plant purpose was recycled back to plant and re-used in plant purpose.
- g) CPP Nalco has planted 8050 Nos. of plants in the year 2023-24. The plantation done since its inception covers around 34.68 % of total area.

# Responsible Consumption of Materials

We ensure consistent raw material availability and optimise consumption through diligent monitoring and control. To achieve specific consumption norms set by the board-level Technology committee, we monitor raw material usage closely. NALCO is committed to optimising raw material usage through technology, process redesign, and waste minimisation.

A large orange dump truck is shown from a side-front angle, filled with dark red soil or ore. It is parked on a dirt surface in an open-pit mine. In the background, there are more mining trucks and piles of earth under a clear blue sky.

98%

blast free mining  
operation achieved

## Recycled Input materials

We have successfully recycled 8422.47 Mt of aluminium scrap, primarily generated internally, through remelting in our furnaces. This aligns with the circular economy approach, promoting infinite aluminium recycling.

Red mud, a byproduct of alumina refining, is thoroughly cleaned and thickened to minimise caustic liquor release. The cleaned red mud is pumped into a lined pond for storage. Solids settle at the bottom, and the clarified water is pumped back to the plant for mud washing and other purposes. This recycled water contains approximately 2-3 grams of caustic soda per litre.

**+3.12%**

Aluminium scrap recycled over  
the previous year

**12.85%**

Red-mud recycled  
Caustic Soda utilisation

## Energy

NALCO prioritises energy efficiency to reduce costs and gain a competitive edge in the energy-intensive aluminium industry. We've implemented energy-saving measures and achieved ISO50001 certification for our Alumina Refinery, Captive Power Plant, and Aluminium Smelter.

Regular energy audits identify opportunities for savings, which we carefully assess and implement. We've met BEE's SEC standards under PAT cycles I and II, demonstrating our commitment to sustainable energy practices and climate change mitigation.

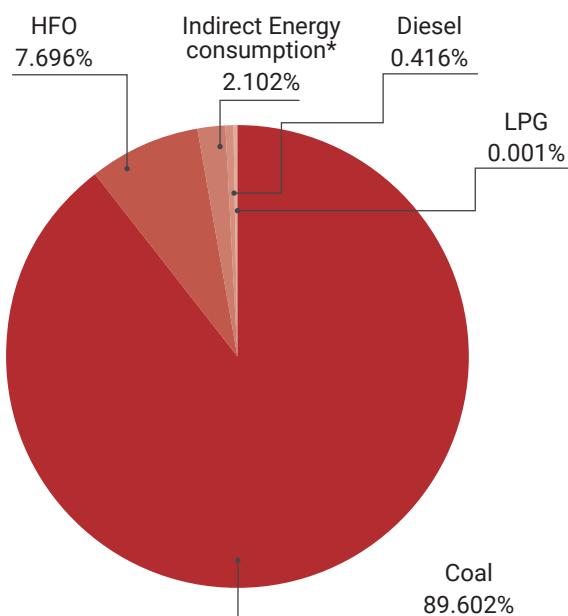
### Energy consumption within the organisation

We consumed 109398.335 TJ of energy from all fuels and imported electricity in 2023-2024. Site-specific calorific values were used, with IPCC values used in their absence.

**Energy Consumption in GJ**

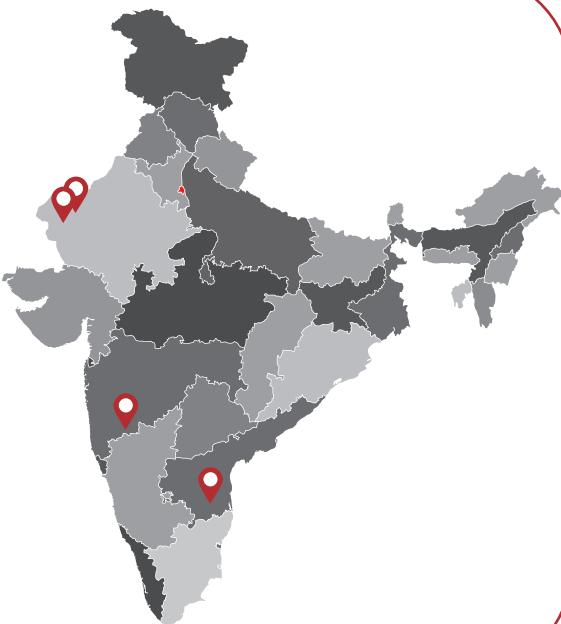
Coal	98023023	89.602	%
HFO	8419415	7.696	%
Indirect Energy consumption*	2299542	2.102	%
Diesel	455366	0.416	%
LDO	200119	0.183	%
LPG	868	0.001	%

\*includes 321468 GJ from renewable sources  
Wind Power and roof-top solar



### Renewable Generation Capacity (Wind Energy)

Location	Capacity in MW
Gandikota, Kadapa, Andhra Pradesh	50.4
Jath, Sangli, Maharashtra	50.4
Devikot, Jaisalmer, Rajasthan	50
Luderva, Jaisalmer, Rajasthan	47.6



### Renewable Generation Capacity (Solar Energy)



Location	Capacity (in kWp)
Corporate office, Township and NRTC	630
Alumina Refinery	40
Bauxite mines	180.76

### Highlights of Energy Conservation Initiatives

**~2125356 GJ**

of total estimated  
energy saved

**~84 MWh**

additional generation through the newly installed  
Solar SPV System

**~4200 KL**

of Fuel Oil saved

**~3500 Mt**

of Coal saved

### Key measures for Energy Conservation

- Addition of fuel additives in Heavy Earth Moving Machinery along-with better route and equipment optimisation
- Utilisation of heavy fuel oil additives in Alumina Refinery Calciner
- Replacement of conventional light fixtures with LEDs, especially for outdoor & environmental illumination
- Arresting steam loss and increasing steam economy in Alumina Refinery
- Graphitised 35 pots and converted 15 pots to run on AP2XN technology in the Smelter
- Renovation & modernisation of Air Pre-heater in Unit-2 & 4 of the CPP
- Modification & upgradation of pumps & compressors in smelter and CPP

## Water Stewardship

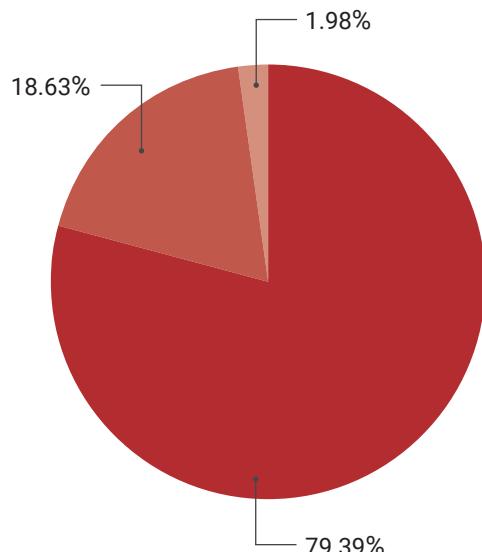
NALCO prioritises water stewardship. We're committed to responsible water usage, recognising its importance for sustainable growth. We collaborate with communities and adhere to ICMM's water stewardship principles.

Our water management approach emphasises conservation, quality preservation, and technological advancements. We've implemented high-volume water recycling systems and treat sewage and wastewater for reuse. We've successfully achieved zero-discharge and are exploring groundwater recharge and rainwater collection.

[We have implemented a pioneering water treatment facility at our smelter plant to treat fluoride-contaminated surface runoff and recycle it as cooling water. The facility, based on Emrion NanoTechnology, successfully recycled 298472 cubic metres of wastewater in the reporting year. We're expanding the plant's capacity from 1 MLD to 2 MLD in the first phase.]

### Water Withdrawal by Source

Surface Water	Unit	Amount	%
Brahmani River	ML	39,097.536	79.39
Kerandi River	ML	9,175.274	18.63
Jholaguda Stream	ML	977.197	1.98



## Water discharge by quality and destination

We prioritise Zero Liquid Discharge (ZLD) in our production facilities. The reused water is utilised for horticulture and other plant activities. We've established effective treatment facilities for ash pond overflow water, industrial effluent, and sewage water.

## Water Recycled and reuse

We've successfully achieved zero discharge of sewage and wastewater. Our production units have implemented rainwater collection, surface run-off containment, sewage and effluent treatment and recycling, and groundwater replenishment systems. We've also effectively utilised water from ash and red mud ponds for recycling.

### Water Recycled/Reused as proportion of fresh water intake % for the FY

#### Conservation and Recycling of water

FY 2023-24 8.99%



FY 2022-23 9.9%

Water Recycled/Reused as proportion of fresh water intake to Bauxite Mines

FY 2023-24 147.66%

FY 2022-23 161.28%

Water Recycled/Reused as proportion of fresh water intake to Alumina Refinery

FY 2023-24 41.18%



FY 2022-23 43.95%

Water Recycled/Reused as proportion of fresh water intake to Smelter

FY 2023-24 79.02%

FY 2022-23 123.35%

Water Recycled/Reused as proportion of fresh water intake to CPP



## Water Conservation Measures



### Mines

- We have improved pumping management to overhead tanks, to minimise water waste.
- Fixed sprinklers on haul roads use less water compared to mobile options.
- Sensor-activated faucets in restrooms.
- We reuse 100% of treated wastewater from the canteen and vehicle washing areas.
- Constructed ponds with a 65,880 cubic metre capacity collect rainwater for plantation and other uses.
- An in-situ peripheral barrier around the mine pit captures rainwater, preventing it from draining away and allowing it to recharge groundwater.
- Fixed sprinklers on haul roads use less water compared to mobile options.
- Sensor-activated faucets in restrooms.
- We reuse 100% of treated wastewater from the canteen and vehicle washing areas.
- Constructed ponds with a 65,880 cubic meter capacity collect rainwater for plantation and other uses.
- An in-situ peripheral barrier around the mine pit captures rainwater, preventing it from draining away and allowing it to recharge groundwater.



### Refinery

- Red mud reclaimed water is being used for fresh red mud generated in the Bayer process
- Ash reclaimed water is being used for fly ash slurry making
- STP treated water is used for Horticulture, gardening and green belt development purposes.
- Sodic Condensate (process liquor condensate)- Used for Cooling Tower make-up, area hosing and Ash slurry pit make-up purpose.
- Four rooftop rainwater harvesting projects at our Administrative Building, Training Center, and ED's residence.



## Smelter

- Recycling of Treated water of Ion-Exchange DF Plant
- Recycling of Treated water of Emrion Nano DF Plant
- Recycling of Surface run-off by Rerouting of Drain
- Recycling of Surface run-off from SPL Storage Area
- Recycling of Surface run-off from Captive Landfill Area
- Recycling of Surface run-off near Watch Tower No.-23
- Recycling of Subsoil water of Potlines
- Recycling of effluent water of Hazardous Waste incinerator
- Recycling of Plant STP Water
- Recycling of S&P Township STP water- Used for horticulture and gardening purpose inside Parks, Stadium, Clubs, Schools etc. at S&P Township
- Recycling of CISF Colony STP water
- Rainwater harvesting in S&P Township- Rainwater from the rooftops of new quarters is channelised to 3 charging wells to charge the groundwater



## CPP

- Lean slurry project of ash disposal to abandoned allotted mine void of south Bharatpur OCP- Under this scheme, lean slurry is deposited in the mines void at Bharatpur South, and the decanted water from the mines, after treatment, is brought back to the plant area for reuse.
- An additional Clariflocculator with a capacity of 3000 m<sup>3</sup>/hr. has been installed at the plant to improve the quality of recycled water from the Ash Pond and mine void. This facility reduces water turbidity, ensuring it meets quality standards for reuse.
- The Rainwater Harvesting and Recycling system has been commissioned with a pond capacity of 50000 m<sup>3</sup> of water equipped with 2x250 m<sup>3</sup>/hr. of pumping capacity. The recycled water is used as a make up for Fire hydrant Fore bay of RCPH-1 & for plant usage.

# Biodiversity

Biodiversity conservation is a global priority. We're committed to halting biodiversity loss and ecosystem degradation. Our operations are located away from World Heritage Sites and biodiversity hotspots, minimising direct impacts. The International Union for Conservation of Nature (IUCN) lists protected areas and biodiversity hotspots. These areas are more than ten kilometres away from our bauxite mine, helping to safeguard ecosystems and species at risk.

We have implemented measures to protect biodiversity and restore degraded areas. These include habitat restoration, species conservation, and community engagement initiatives. By aligning our operations with sustainable forest management principles, we're contributing to the goals of SDG 15.

## Preservation of Natural Resources, Ecosystems & Biodiversity

- Planted trees in and around our production units.
- Opening of mining faces is carried out as per approved Mining Plan
- Implemented renewable energy projects.
- Wildlife Conservation Plan and Biodiversity Management Plan are in place
- Restore mined sites as per the Mines closure plan, using indigenous species.
- Ozone Depleting Substance Minimisation
- Prevention of groundwater & surface water contamination, air pollution and proper utilisation of waste.
- Adopted rainwater harvesting ponds.
- Achieved zero discharge of industrial and sewerage wastewater through recycling and reuse.

NALCO commissioned a biodiversity study near the Panchpatmali Bauxite Mine by Utkal University's Botany Department.

We prepared a wildlife management plan, which was approved by the State Forest Department, and implemented its recommendations.

While our bauxite mines are located in high terrain, the mining areas were barren with minimal vegetation. We've undertaken large-scale plantation operations to improve the hillsides' greenery. Annually, we plant over one lakh indigenous saplings that are economically valuable, provide fruit, and support forest ecosystems

## Afforestation & wildlife conservation activities

- Afforestation and Wildlife Conservation
- Soil Erosion Prevention and Ecological Restoration
- Noise Pollution Prevention
- Native Tree Planting
- Green Belt Creation
- Community Needs Fulfilment
- Groundwater Recharge and Visual Appeal Restoration



Our bauxite mining lease area features Dry Deciduous Forests and Dry Deciduous Savannahs. We've introduced local tree species through afforestation to complement the region's natural vegetation. Our afforestation plan considers potential land use changes due to mining operations.

Beyond Bauxite Mines, we've planted saplings and carried out afforestation activities in our Refinery, Township, Smelter, and Power Complex. Our Horticulture departments operate full-fledged nurseries to support these efforts.

We've established a 1500 square metre butterfly park at the mines, promoting wildlife and serving as a recreational space. We've also distributed 5000 fruit-bearing seedlings to local villagers to raise awareness about tree planting.

One Miyawaki garden has been established in South block mined out area in an extent of 0.25 Ha with indigenous plant species of 25 varieties including fruit bearing, medicinal, flowering and of timber value towards improvement of biodiversity with creation of dense forest within a short span of time.

To conserve biodiversity in Utkal D coal mines, several strategies and practices have been implemented. These efforts aim to minimise the impact of mining activities on the environment and maintain ecological balance.

- (i) Eco-Friendly Mining Technologies: Utkal D Coal mine is using world class environmentally friendly mining technologies such as surface mines, drill machines, HEMs. These technologies can reduce the ecological footprint of mining operations and minimise harm to biodiversity.
- (ii) Conserving natural resources: The principle of reduce, reuse, recycle, redefine, and replace resources wherever possible is being used. This approach helps to preserve natural resources and minimises their depletion. We are also using sustainable practices to ensure that coal extraction does not lead to irreversible damage to ecosystems.
- (iii) Mitigating the effects of mining: Mitigative measures are implemented to neutralise the adverse effects of mining. These measures include pollution control, habitat restoration through wildlife conservation plan. Focus is given to minimise soil erosion, water pollution, and habitat destruction caused by mining activities.
- (iv) Biodiversity Conservation Measures: Implementation of reforestation and afforestation programs to restore green cover. Periodic monitoring the compliance with environmental norms and developing mechanisms for effective environment protection.
- (v) 4214 nos. of sapling planted in safety zone of Utkal D Coal Mine in FY 2023-24

## IUCN Red List species and national conservation list species with habitats in areas affected by operations

Even though there are no endangered species on the IUCN Red List in our bauxite mining area, we have still implemented a wildlife management plan to minimise any potential impact. The plan, developed by M/s CEMC, addresses potential effects like habitat fragmentation and disturbance caused by mining activities.

The plan outlines strategies to:

- Use alternative methods to reduce harm to wildlife.
- Maintain and improve habitat conditions.
- Conduct research to understand wildlife behaviour.
- Promote public awareness and cooperation for wildlife conservation.

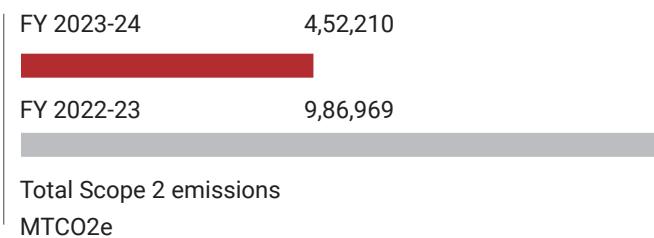
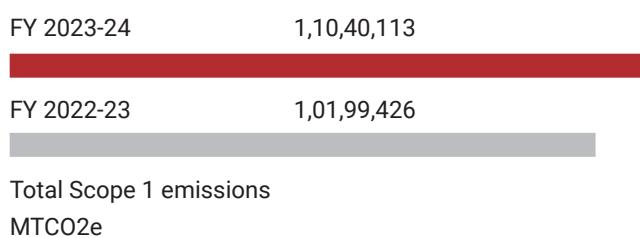
By following these guidelines, we aim to protect biodiversity and ensure our operations are conducted responsibly.



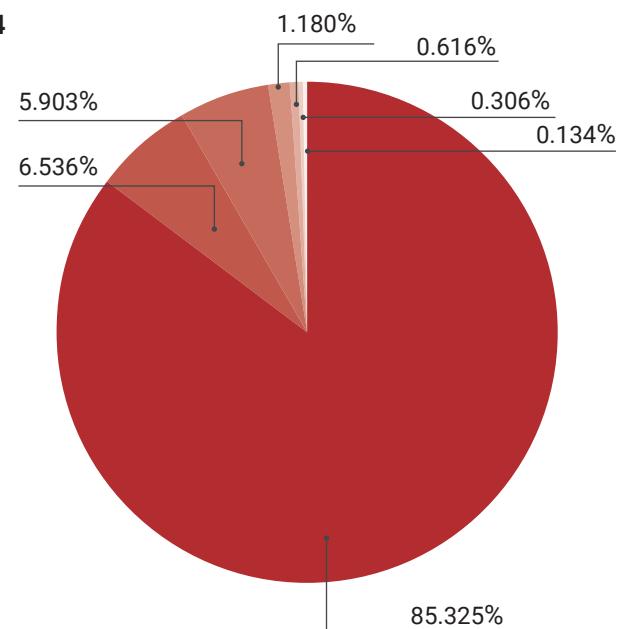
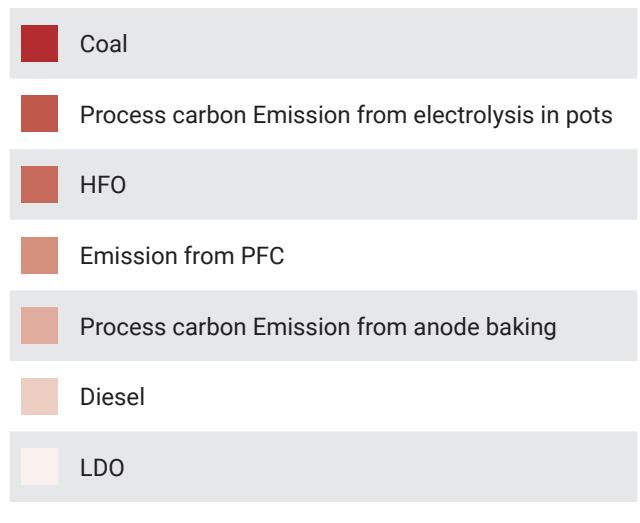
# Emissions

NALCO is committed to reducing GHG and other harmful emissions. We use appropriate technology, enhance combustion controls, and implement best practices in order to limit emissions to the lower end of the IPCC emission scenarios in accordance with current international agreements. We closely monitor stack emissions and utilise real-time monitoring stations for ambient air quality. Data from these stations is submitted to the OSPCB on-line for recording and monitoring. Our annual Environmental Statement to regulatory agencies includes emissions data, which has consistently remained within permissible limits.

## Greenhouse Gas Emissions



### Source-wise breakup of scope 1 emission for FY 2023-24



## PFC Emission

NALCO's smelter plant produces per-fluorinated compounds (PFCs) during anode effects. Our ALPSYS pot regulation system works effectively to reduce the frequency and duration of these events. This system involves precise Alumina feeding into the pot at the right time.

We regularly monitor PFC emissions and calculate them using the AP overvoltage method. The findings from these calculations are presented in the Databook.

### Fluorocarbon emission in FY 2023-24

Particular	Unit	Value
CF4	kg/t of Al	0.0367
C2F6	kg/t of Al	0.0044

# Waste

Waste management is a crucial component of our project planning at NALCO. We consider waste types, nature, best practices, regulatory frameworks, and available options to select appropriate methodologies and technologies. Our waste management plan is regularly reviewed to stay updated on technological advancements and evolving regulations.

Our industrial plants are ISO 14001 certified, and environmental management plans and impact assessments complement our waste management planning. External auditors verify our waste management system during certification and surveillance audits, ensuring prompt resolution of any gaps. Regulatory agencies such as IBM, SPCB, and MoEF&CC monitor our compliance.

## Waste management

We adhere to the 4R principle (Reduce, Reuse, Recycle, Recover) in our waste management practices. Repurposing waste materials is a key aspect of our plan. We identify, categorise, and assign responsibilities for handling, collection, reception, storage, treatment, transportation, and disposal of waste materials.

### Hazardous Waste Management:

- E-waste and Battery Waste : Segregated and disposed of at authorised centres.
- Biomedical Waste: Treated at our own facility in accordance with SPCB authorisation.
- Hazardous Waste Management: Details of other hazardous waste materials are specified, including category, authorised quantity, source, storage, and disposal methods.
- Spent Potlining (SPL) Disposal: Carbon portion is disposed of to authorised recyclers for detoxification and energy utilisation. Refractory and mixed fines are stored under a covered shed, awaiting OSPCB permission for disposal in CHWTSDF (Common Hazardous Waste Treatment, Storage, and Disposal Facility).
- Aluminum Dross Handling: Dross is cooled, crushed, and recycled. Legacy stock is disposed of to authorised recyclers.
- Spent Anode Butts: 100% recycled for anode making.
- Carbon Area Hazardous Waste: Disposed of at CHWTSDF .
- Used Oil Management: Stored in secured drums, auctioned or sold to authorised reprocessors/recyclers.

### Non-Hazardous Waste Management:

- 100% of overburden generated at bauxite mines is reused for reclamation.
- Red mud and Lime Grit generated at the Alumina Refinery are disposed of in the red mud Pond.
- CPP ash is disposed of in the abandoned mine void of South Bharatpur OCP through pipelines.
- Fly Ash is used for filling low-lying areas, brickmaking, and other purposes.
- CPP Coal Mill Rejects are stored in a dedicated yard for further disposal.
- Ferrous and Non-Ferrous scrap are recycled, reused, or sold to outside agencies.
- Used Refractory Bricks are used for hard surfacing and road construction.
- Mixed Debris is disposed of in low-lying areas.
- Food waste is converted to compost using a solid waste mechanical waste converter.

## Reusing and recycling of waste

We separate hazardous and non-hazardous wastes at their point of generation. We prioritise reuse, recycling, and repurposing of the various wastes through internal and external initiatives.

**76729 Mt**

spent anode internally reused for anode making

**64.5%**

Aluminium dross recycled at the smelter

**89.77%**

Ash utilisation at CPP

**100.6%**

Ash utilisation at refinery

## Overburden Control

Bauxite mining results in overburden and topsoil removal. We carefully manage this process by dumping overburden in backfilled or mined-out areas and stacking it for reclamation. The recovered ground is suitable for reforestation after levelling the lateritic overburden and creating benches and terraces. Topsoil is then applied and treated appropriately. The mined-out area is restored concurrently with reclamation, as per the authorised Mining Plan/Progressive Scheme's Mine Closure Plan.

Our mine closure plan includes concurrent restoration of mined-out areas, using techniques like backfilling, replanting, and installing water basins for proper drainage. We've replanted fruit-producing native species in backfilled regions.

We prioritise soil erosion prevention and the preservation of the original topography. The lush vegetation surrounding our bauxite mine demonstrates the success of our restoration efforts in previously heavily vegetated areas.

**950775 Mt**

Overburden reused for backfilling of mined out area





# SOCIAL PERFORMANCE

Social performance is essential for the long-term success and growth of an industrial unit. We recognise the importance of human capital and actively promote social initiatives to create a balanced social and economic environment. This commitment is reflected in our value creation for all stakeholders, including society, the public, and our employees. As a sustainability-driven organisation, we strategically employ social development activities to create a positive impact. Our track record of enhancing the quality of life in our operating region and our dedication to inclusive growth are well-established. Through our operations, we generate direct and indirect employment opportunities, stimulating economic activity. Our community development efforts, focused on healthcare, education, drinking water, rural development, environmental sustainability, and the development of iconic places, have significantly improved the surrounding landscape. We are equally committed to employee well-being, implementing policies for health and safety, benefits, work-life balance, human rights protection, and a safe workplace. Our supportive and growth-oriented work environment empowers our employees to excel. This unwavering commitment enables us to navigate challenging business conditions and emerge stronger. Adhering to laws and social norms, we ensure a discrimination-free workplace. Our commitment to equitable quality of life is evident in our employees' pay, benefits, engagement, development opportunities, social security, and professional advancement.

# Key Social Indicators

**27.81%**

increase in CSR spending

**2.12%**

increase in procurement through MSEs owned by women entrepreneurs

**1262**

students trained via internship program



# Employment

Many employee-centred policies, including fair compensation, professional development opportunities, a positive work environment, non-discrimination practices, and robust rights protections, have been implemented. By cultivating a unique and collaborative workplace culture, we prioritise health, safety, and employee empowerment. We foster a welcoming and encouraging environment where individuals can reach their full potential and contribute to the company's growth. We are committed to being an equal opportunity employer, ensuring that no employee is discriminated against based on their caste, creed, gender, religion, or place of origin.



nos of differently  
abled employees  
and workers



women participation  
in Employees  
and Workers

Our HR practices are designed to attract, develop, and retain the right talent in the right roles. We invest in comprehensive learning and development programs to facilitate fulfilling careers with ample opportunities for advancement. To address any disputes or concerns between management and staff, we have established formal grievance procedures. Our HR department actively listens to employees' perspectives, facilitates communication, and resolves valid grievances to foster a positive and collaborative work environment.

The absence of any strikes, lockouts, or stand-offs during the reporting period serves as the best example of the exceptional employee management relationship.

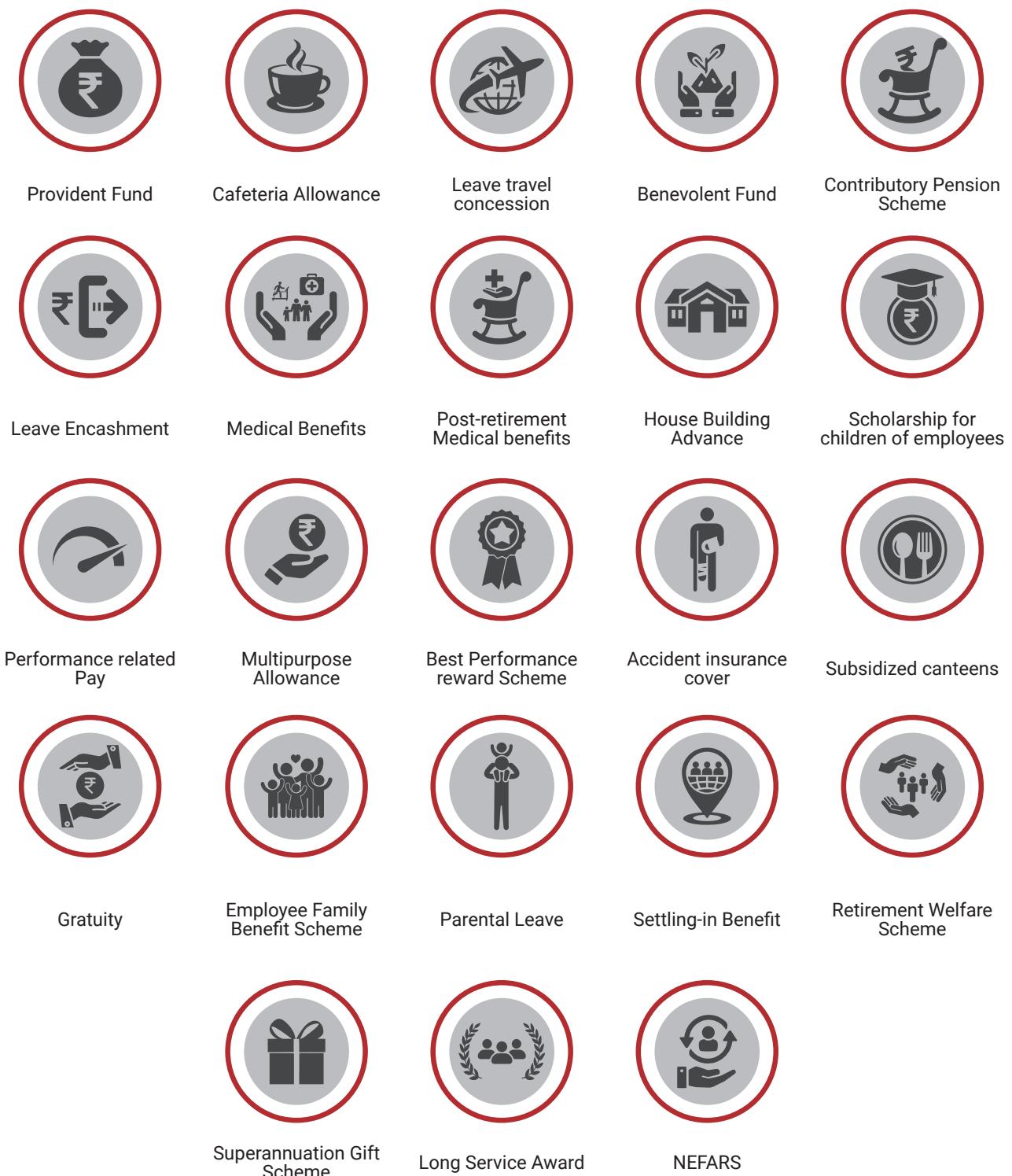
## Resilient Industrial Relations

We maintained a positive and peaceful work environment throughout the year. There were no work stoppages due to labour disputes. We have followed government guidelines, involved employees in decision-making, and complied with all labour laws related to employee benefits and well-being.

## Employment Benefits

Employee satisfaction is essential for organisational success. To ensure employee well-being, we offer a comprehensive package of benefits. At NALCO, we provide competitive compensation and a wide range of additional benefits, including healthcare, travel concessions, housing assistance, subsidised utilities, various allowances, parental leave, pension plans, educational incentives, loans, social security,

dependent child scholarships, and more. We have established defined benefit schemes for provident funds, pensions, settling-in benefits, long-service awards, gratuities, a benevolent fund, post-retirement medical benefits, and others. At plant locations, entire townships with modern amenities, such as schools, hospitals, shopping centres, clubs, parks, gyms, stadiums, and more, have been developed. Contractor workers also receive benefits like paid time off, health insurance, and provident funds. Additionally, we offer guest houses, transit houses, 24-hour security, discounted facilities, and community transport services. Benefits for non-permanent workers engaged through contractors are aligned with government regulations and the concept of a living wage. These workers may be eligible for benefits like provident fund, overtime pay, canteen allowance, bonuses, and others.



## Parental Leave

Particulars	No. of Employees who availed Parental leave in 2023-24
 Maternity Leave	5
 Paternity Leave	36

## Employee Diversity

NALCO values diversity and believes in creating an inclusive workplace where everyone feels valued and respected. We are committed to equal opportunities for all employees, regardless of their caste, creed, religion or colour. We prohibit all forms of discrimination whether based on gender, sexual orientation, race, ancestry, marital status, and membership in trade unions or majoritarian or minoritarian groups, and actively promote diversity in our hiring and promotion practices. Our recruitment process ensures that our workforce represents a broad spectrum of society, in compliance with government regulations.

## Gender Diversity

We actively encourage female employment to empower women and promote gender diversity within our workforce. All employees, regardless of gender, receive the same base pay for equivalent positions. Our organisation strictly adheres to the policy of "Equal Remuneration for Men and Women Workers for Work of Equal Value." We provide equal opportunities for all employees, both male and female, in terms of salary, benefits, professional growth, social security, and other areas.

## Employee Engagement

A variety of communication channels, including intranet portals, emails, websites, web-based applications, press releases, circulars, announcements, official events, and functions, provide employees with access to a wide range of information. Employee interactions also occur through union-management meetings, officer association meetings, wage negotiations, safety committee meetings, training and workshop closing sessions, employee grievance forums, shop-floor council meetings, and other platforms. Top management engages in mass communication activities to interact with large groups of employees. Effective communication through these channels enhances employee productivity and a sense of belonging to the organisation by aligning their work with the company's goals and objectives. IT tools facilitate email and website communication. We also utilise employee feedback, Kaizen initiatives, and suggestions through the Sarjana Scheme to foster employee involvement. Our corporate communications team continuously updates our websites with new information to keep employees informed about business developments. The Quality Circle activity has proven to be an effective tool for employee engagement, involving team formation, problem identification, brainstorming, solution finding, and presentation at various forums.



# Protection of Human Rights

## Human Rights and Forced labour

Our company is committed to respecting the UN Global Compact on Human Rights and the Universal Declaration of Human Rights in all aspects of our supply chain and business operations. Our employee-related policies align with various labour laws, the Indian Constitution, and the principles of human rights. We strictly adhere to relevant legislation, including the Factories Act of 1948, the Industrial Disputes Act of 1947, the Mines Act of 1972, the Contract Labor (R&A) Act of 1970, and the Payment of Gratuity Act of 1972. Significant human rights issues, such as forced labour, discrimination, pay, and work hours, are addressed in the terms and conditions of employment contracts for contractors and suppliers. We have also implemented the SA8000 Social Accountability Management System to further enhance our commitment to human rights. NALCO's corporate office and operational divisions have achieved certification to the SA 8000:2014 Social Accountability Standard.

The following methods are used to monitor suppliers for violations of human rights:

- All vendors, contractors, and suppliers are required to sign written agreements that mandate compliance with relevant labour laws.
- These agreements cover various acts, including the Wage Payment Act of 1936, the Minimum Wages Act of 1948, the Equal Remuneration Act of 1976, the Industrial Dispute Act of 1947, the Employees State Insurance Act of 1948, the Child Labor (Prohibition and Regulation) Act of 1986, and the Contract Labor (Regulation & Abolition) Act of 1970.
- NALCO ensures that contract labour is managed legally and fairly.

A centralised e-portal for contract labour management promotes transparency and facilitates efficient decision-making, further strengthening our contract labour management system

There was no recorded case during the reporting year on any violation of human rights. Also, there were no cases of any kind of child labour, forced or involuntary labour.

The International Labour Organisation defines forced labour as "all work or service which is exacted from any person under the threat of a penalty and for which the person has not offered himself or herself voluntarily." We are committed to never using forced or involuntary labour of any kind. All workers receive

detailed appointment letters outlining their terms of employment. The service rules and regulations manuals are accessible to all employees, and workers receive a copy of the certified Standing Orders, which outline general terms and conditions. The intranet site provides access to the HR Manual for reference.

In pursuance of Section 4 of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013, Internal Complaints Committee have been constituted at the production units and the corporate office of the Company to redress complaints relating to sexual harassment.

## Equal Opportunity Employer

All NALCO employees have equal access to service conditions, advancement opportunities, and other matters, as reflected in our policies and manuals. Our HR manual outlines a standardised set of rules that apply equally to all employees, regardless of gender, caste, religion, race, or other factors. We ensure a transparent and equitable hiring process, providing all qualified candidates equal opportunities for success. Our organisation adheres to equal opportunity principles in all aspects of employee recruitment, placement, promotion, transfer, pay, training, and benefits. Decisions are based on individual merit, competence, and the organisation's business needs. We comply with all relevant government guidelines regarding the employment of SC, ST, and OBC candidates. We also consider individuals with disabilities in accordance with the Persons with Disabilities Act of 1995. To oversee reservation concerns for SCs, STs, OBCs, and PWDs and monitor the implementation of government and presidential directives, we have designated liaison officers.

## Grievance Redressal Mechanism

We provide a formal grievance redressal mechanism for stakeholders, including employees, shareholders, vendors, and customers. Complaints are addressed through established procedures. Executives and non-executives have separate grievance procedures tailored to their employment conditions. Employees who are dissatisfied with initial responses can escalate their concerns to the department head or, if necessary, to a grievance committee. The committee carefully reviews each grievance and takes appropriate action within the framework of company policy.

# Occupational Health and Safety

Our topmost priority is the health and safety of our employees. We strive to prevent workplace injuries and accidents and do not tolerate unsafe practices or disregard for safety regulations. Our occupational health and safety policy emphasises accident prevention and addressing workplace health issues. Procedures such as standard operating procedures, work instructions, maintenance schedules, and others safeguard our operators and employees. Safety is considered in all technological decisions, equipment purchases, shop floor layouts, personal protective equipment recommendations, and more. All our industrial sites, including the port complex in Vizag, are certified to the ISO 45001:2018 Occupational Health & Safety Management System.

We conduct regular safety risk and hazard assessments to develop effective safety management policies and procedures. Internal safety audits and inspections are conducted, and appropriate corrective actions are implemented to address identified safety issues. Through root-cause analysis, we identify underlying problems and implement controls to prevent similar incidents. Behaviour-based safety, a proven method for improving safety performance and reducing human error incidents, is a key focus.

We proactively adhere to all relevant occupational health and safety laws and regulations. Employee participation enhances the effectiveness of our safety management. Each unit has a safety committee with representatives from management and employees to identify hazardous situations and suggest solutions. We strategically place safety signage throughout our facilities to promote safe practices. Fire extinguishers are readily available with clear usage instructions for quick response in case of emergencies. We conduct safety campaigns using various methods, including pamphlets, safety badges, skits, and audiovisual messaging.

Personal protective equipment (PPE) is used in accordance with prescribed requirements, including helmets, safety goggles, gloves, and safety shoes. Working at heights or in hazardous environments requires the use of safety equipment and obtaining a safety permit. All contracts include clauses mandating adherence to workplace safety regulations. Violations may result in warnings, fines, or contract termination, depending on the severity. Accidents and near-misses are thoroughly investigated to implement necessary corrective actions.



## Occupational Health and Safety Highlights



### Mines

- Conducted monthly safety talks in all departments with departmental heads.
- Conducted regular toolbox talks at the start of each workday.
- Held monthly safety committee meetings with representatives from various departments.
- Successfully conducted quarterly mock drills and internal safety audits.
- Provided dumper operation and skill up-gradation training for HEMM operators using simulators and VR-based training.
- Conducted refresher training and basic vocational training for all workers.
- Provided first aid, fire safety, and behavioural-based safety training for executives and non-executives.
- Installed QR code scanners in all working areas for instant reporting of unsafe acts, conditions, near misses, and safety suggestions.
- Conducted regular PMEs for 456 employees and detected no occupational diseases.



### Refinery

- Conducted monthly safety talks in all departments.
- Conducted simultaneous awareness programs at 24 locations.
- Conducted periodic road safety checks with CISF personnel.
- Provided safety awareness training to 4,563 contractor workers.
- Conducted classroom safety training for 783 employees and sensitised 3,787 workers in safety gatherings.
- Conducted two statutory mock drills in 2023-2024.
- Commissioned a vertigo test structure for height work training. Organised a one-day training program on Industrial Safety with M/s IQEMS.
- Renewed the fire safety certificate for HFO, LDO tank, and petrol/diesel bunk areas.
- Conducted statutory safety training for contract workmen as per The Factories Act, 1948.
- Implemented QR code scanners for instant reporting of safety issues.
- Organised mock drills at the HRD training centre building and at the caustic road tanker unloading site.
- Organised a disaster prevention awareness program in association with the NDRF team.
- Organised a safety seminar with the Directorate of Factories & Boilers, Rayagada Division.



### Smelter Plant

- Implemented plant safety inspections. 543 inspection points were raised, with 88% compliance.
- Installed 14 ANPR CCTV cameras to improve traffic and road safety.
- Installed permanent lifelines over rooftops to enhance safety for workers at heights (95% completion).
- Ordered a 41-metre boom lift for safe access to elevated areas (expected delivery in December 2024).
- Launched a program of surprise safety walks by Smelter leadership.
- Constituted department-level safety committees to address safety issues promptly.
- Established a mutual aid scheme with neighbouring industrial units for emergency response.
- Conducted 62 safety training programs for 4,626 employees (including 2,140 contractor workers).
- Implemented a new system for contractors to ensure safety compliance.
- Installed a safety kiosk at the main gate to promote awareness and provide information.



### CPP

- Received approval for the plan from the Directorate of Factories & Boilers.
- Conducted 111 safety awareness training programs for 1,646 contractor workers and 72 regular employees.
- Conducted mock drills as per the annual schedule and took follow-up actions.
- Conducted vertigo tests for 35 contractor workers engaged in height work.
- Organised a divisional-level seminar on safety, health, and environment.
- Installed 14 ANPR cameras to monitor traffic and identify violations.
- Implemented a QR code system for reporting unsafe practices, conditions, and near misses.
- Installed reflectors along the coal corridor to improve road safety.
- Procured and installed a safety training kiosk.
- Successfully implemented LOTO in CHP and 220 KV S/Y areas.
- Procured a new DCP fire tender to replace an old one.
- Procured electrical rescue sticks for electrocution victims.

## Worker Health and Safety Committee

Each unit has a safety committee composed of senior authorities and union representatives. The committee reviews safety performance, makes recommendations, and develops action plans for continuous improvement during meetings. All incidents, near-misses, and dangerous situations are investigated monthly. The Chief Safety Officer (CSO) convenes the committee, which includes other key executives and employees. The safety committee periodically sends representatives to other industries to learn about the latest safety practices.

## Injury Statistics

Among the crucial safety performance metrics we monitor are the frequency of injuries falling into predetermined categories, the quantity of man-days lost, the severity rate, and work-related fatalities. In accordance with the ISO 45001 management system, we analyse accidents to implement preventive measures.

Refer to the databook for detailed safety & injury statistics.

## Occupational Health

Our S&P Complex and M&R Complex have well-equipped occupational health centres with necessary tools for managing and preventing occupational diseases among employees. The centres are staffed by doctors, paramedics, and experienced technicians who monitor for occupational diseases and implement preventive measures. Our medical facilities at S&P and M&R provide treatment for all illnesses, including occupational diseases, to employees and their families. In case of severe conditions, referrals may be made to other government or specialty hospitals.

We conduct awareness programs to promote overall employee health and well-being. Periodic medical examinations (PMEs) are mandatory for all employees, both contract and permanent. The PME data for the reporting year is provided in the databook. Based on the nature of their work and environment, NALCO employees do not have a high risk of any specific occupational diseases.



# Training & Development

Training and development are essential for organisational success. We invest in employee development through various methods, including classroom instruction, on-the-job training, coaching, and mentoring. Our training centre at Corporate office, S&P and M&R complexes manage these initiatives. We identify training needs, develop tailored programs, and deliver training through our internal faculty or external specialists.

We focus on enhancing functional and behavioural competency, aligning individual needs with organisational objectives, and improving overall performance. We also provide training in areas like healthcare, stress management, and well-being. Our commitment to social responsibility extends to offering skill development training to contract employees, apprentices, and students. By investing in employee development, we empower our workforce, enhance our capabilities, and foster a positive organisational culture.

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## Community Development

Our community development projects have positively impacted the quality of life in the areas we operate, fostering inclusive growth. These initiatives are characterised by our accountability and dedication to the community. We have always recognised our responsibility to contribute to improved health and education, even before the concept of corporate social responsibility gained prominence.

### Driving Local Employment for Inclusive Growth

Direct and indirect job creation is a crucial strategy for improving the livelihoods of marginalised and vulnerable communities. Employment can uplift living standards by addressing barriers to education and health associated with poverty. This has a cascading impact on community development.

We support the creation of both direct and indirect employment opportunities in our peripheral regions through outsourcing, capacity building, and contractual engagement. We consider candidates registered with local employment agencies based on their employability and skills.

Those who lost land during the NALCO project acquisition have been provided with job opportunities. Local contractors in transportation, security, maintenance, and project sectors hire workers to fulfil contractual commitments, creating new job prospects for the local population.

In the reporting year, contractors in various businesses, including hospitality, maintenance, sanitation, conservancy, and project operations, employed 12,648 people to meet their contractual obligations. A significant portion of these individuals are from Odisha, demonstrating the positive impact on the local community.

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## Corporate Social Responsibility

Our well-crafted CSR Policy aims to promote inclusive growth for marginalised communities through thoughtful initiatives. The CSR Policy outlines a comprehensive approach, including needs assessment, societal involvement, intervention planning, execution, monitoring, impact evaluation, and review.

Community engagement allows us to gather valuable insights and feedback, which inform our people-centric approaches and ensure that vulnerable communities receive targeted support. Our community-based programs address various issues, such as women's empowerment, sports, education, healthcare,

sanitation, skill development, livelihood improvement, and rural infrastructure.

NALCO believes that development is inclusive and benefits all stakeholders. We prioritise equity-based development in all our activities, recognising that no one can succeed in isolation. The welfare of our stakeholders is integrated into our business processes. All CSR activities and initiatives are driven towards creating a positive and equitable impact on society.

To assess the effectiveness of our CSR activities, a Board-level subcommittee on CSR and Sustainable Development meets regularly. This subcommittee

is chaired by an independent director. A separate Monitoring and Evaluation mechanism ensures timely completion of initiatives.

The NALCO Foundation, NALCO, and Rehabilitation and Peripheral Development Advisory Committees (RPDACs) directly implement the company's CSR activities. The NALCO Foundation, registered under the India Trust Act, 1882, manages CSR initiatives on behalf of the company. CSR projects are selected and implemented through community engagement, fostering sustainable models at the local level.

Social interventions and specific activities are developed based on various factors, including needs assessments conducted by the CSR coordination cell, recommendations from the RPDAC, feedback from the NALCO Foundation, and local community needs. To ensure effective implementation and alignment with community needs, these programs are continuously monitored and evaluated.

## Stakeholder & Community Engagement Mechanism

The sustainability of our projects depends on the acceptance and adoption of change by the beneficiaries. We employ a participatory approach throughout the CSR project lifecycle, from conception to implementation, to foster acceptance. By involving communities in identifying needs and prioritising projects, we encourage ownership and responsibility. We use participatory rural appraisal (PRA) tools to engage communities and empower them to prioritise their needs. We also support the formation and development of community-based organisations (CBOs), such as self-help groups (SHGs), village development committees (VDCs), youth clubs, and

farmer's groups. These CBOs act as change agents, facilitating positive transformation at the grassroots level. To increase acceptance and adoption, we organise sensitisation workshops and village-level meetings. We also collaborate with government bodies, NGOs, and other program implementing agencies (PIAs) in areas like health, education, livelihoods, rural development, environment (plantation), and ethnicity to expand our reach and adaptability.

## Social Impact Assessment

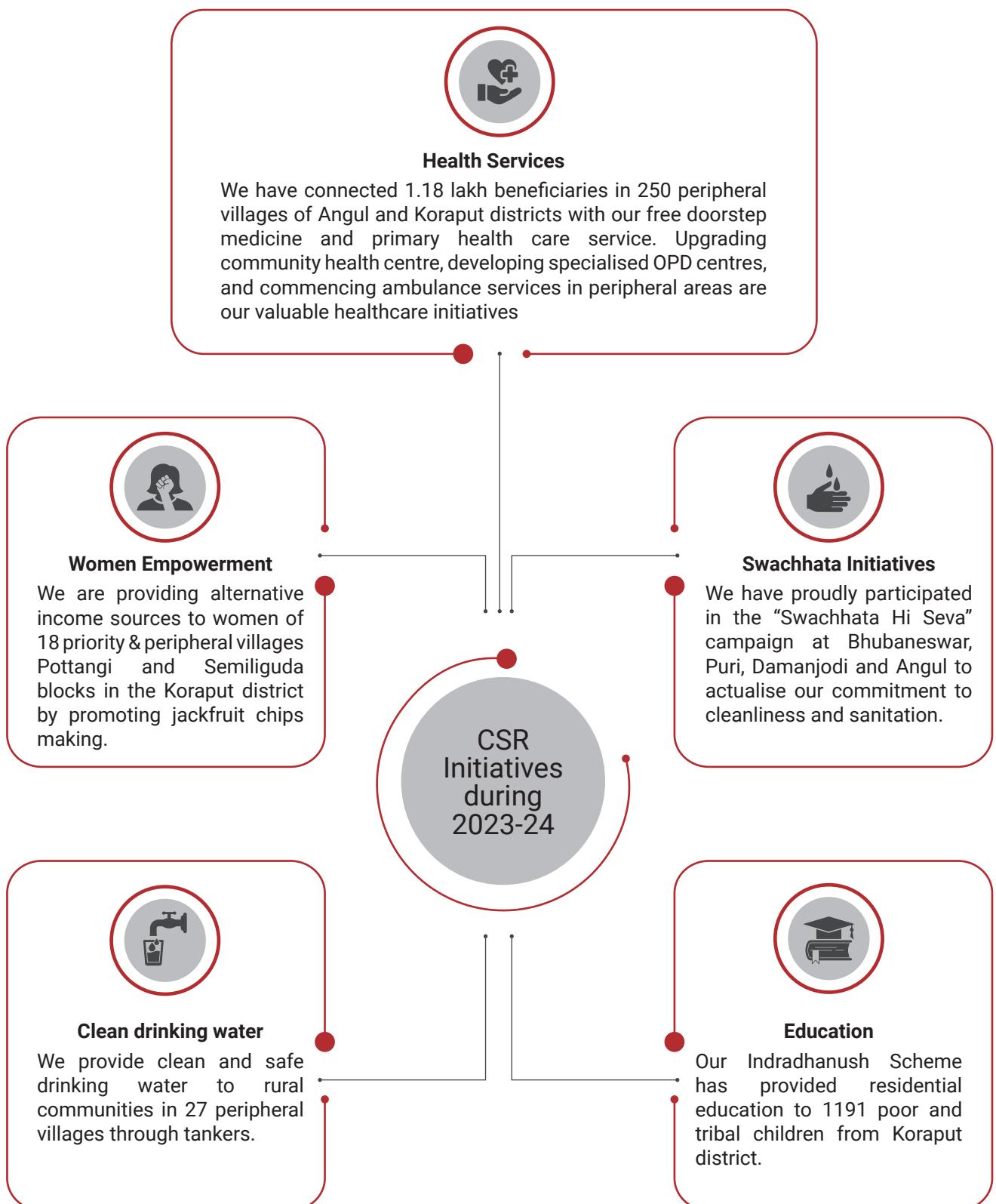
We periodically conduct social impact assessment studies for critical projects that span three or more years to measure their effectiveness. These assessments have led to improvements in project implementation.

- A study on the socio-economic contribution of NALCO in the M&R Complex, Damanjodi, was conducted by M/s. I-Land Informatics Limited, Kolkata during February 2005
- A socio-economic survey of peripheral villages of the S&P Complex, Angul, was conducted by M/s. National Institute of Rural Development (NIRD), Hyderabad during December 2008.
- A social impact assessment of NALCO Foundation projects was conducted by Central University of Odisha, Koraput during 2012.
- A social impact assessment of CSR projects implemented by NALCO was conducted by Utkal University, Bhubaneswar in 2017
- An impact assessment study was conducted with the support of Madras School of Social Work (MSSW), Chennai in 2019.



## CSR Initiatives

The following are some of the major CSR initiatives undertaken by the Company to engage with the disadvantaged and vulnerable communities.



### CSR Expenditure

FY 2023-24	50.54
FY 2022-23	39.54
Actual CSR Expenditure (in INR crores)	

Our Company has been following the mandates of the Company Act, 2013 while considering CSR projects. All the ideas and intended developmental actions have been evaluated against Schedule-VII of the Act. The initiatives are also taken up by consulting a wide range of stakeholders, including local people and local administration. The projects are prioritised as per needs of the community and continuous monitoring is done to improve their impacts.



### Health Care Services

- Mobile Health Units (MHUs): Our MHUs provided free doorstep primary healthcare services and medicines to approximately 1.18 lakh beneficiaries in 250 peripheral villages of Angul and Koraput districts.
- Specialist OPD Centre: The OPD centre at the S&P Complex, Angul, offered specialised services and free medicines to around 18,000 beneficiaries in the peripheral areas.
- Community Health Centre (CHC) Upgradation: We provided financial support to upgrade CHCs in Koraput districts.
- Ambulance Procurement: We supported the procurement of a battery-operated ambulance for the SCB Medical College & Hospital, Cuttack, to transport patients within the medical campus.
- Mortuary Freezer Cabinet: We supported the procurement of a mortuary freezer cabinet for the SCB Medical College & Hospital, Cuttack, to preserve dead bodies.
- Reimbursement of expenditure against operation of District Covid Health Centre (DCHC) at Nabarangpur.





## Safe Drinking Water

To address the water scarcity in Angul district during the summer months, we provided drinking water through tankers to 27 peripheral villages. This initiative ensured access to clean and safe drinking water for the local communities.

## Swachchata Initiatives

As part of our commitment to cleanliness and sanitation, we actively participated in the "Swachhata Hi Seva" campaign at Bhubaneswar, Puri, Damanjodi, Angul and Gopalpur.

## Education

To provide educational opportunities for underprivileged children from peripheral villages in Angul and Damanjodi, we have implemented initiatives such as residential education programs. Since 2012, our "Indradhanush Scheme" has offered residential education to 1191 poor and tribal children from Koraput district. These initiatives aim to enhance educational access and support the development of young people in underserved communities.

## Wildlife Rescue Support

We provided financial support to the State Wildlife Organisation for the procurement of wild animal rescue vehicles.

### A glimpse into our CSR Educational Projects

We extended our support to backward and tribal children living in the periphery villages of the M&R complex, Pottangi, and Damanjodi on residential education up to class 10. Approximately, 65% of the beneficiaries of the CSR project belonged to vulnerable and marginalised groups who received our education aid. Our educational assistance to beneficiaries is further extended beyond class 10, including Diploma and ITI courses. The project also arranged a travel allowance and interaction program for KISS-sponsored students.

We awarded the 25 best Matriculates of Peripheral High Schools of S&P Complex, Angul with the NALCO Merit Award for the year 2023. About 33% of students who received the award were from marginalised and vulnerable groups. Our CSR program in education also ensured transportation facilities to 52 students of Odisha Adarsha Vidyalaya, Kotia, Koraput, approximately 65% of whom belonging from the from vulnerable and marginalised groups.

We provided the English Medium School of Shree Ramakrishna Ashram, Kalahandi with financial assistance to construct additional classrooms. With this CSR project, we have benefitted 450 students, approximately 45% of them from vulnerable and marginalised groups.

NALCO has extended educational grants to about 1704 periphery students relying on Odia Medium Schools in Damanjodi. This project has benefited students belonging to vulnerable and marginalised groups totaling about 65% of project beneficiaries. We also allocated aid on education to benefit 3195 periphery students (33% approx from vulnerable and marginalised groups) other than the dependents of NALCO's employees in Odia medium schools in Angul.



## Rural Development

We have implemented various rural development initiatives, to improve the infrastructure and living conditions in peripheral villages. These projects include the construction of roads, drains, culverts, community centres, and mandaps. These initiatives aim to enhance the overall development and quality of life in these areas.

## Iconic City Projects

As part of the Government of India's Swachh Iconic Places initiative, NALCO has continued its efforts to conserve the national heritage of Puri, a historic city renowned for the Lord Jagannath Temple, its seaside beauty, and its scenic attractions.

### Our initiatives at Puri:

- Installed RO water purifier at Puri, JB Matha to arrange a provision for clean and safe drinking water
- Commenced operations of battery-operated vehicles from Shri Jagannath Temple and Railway Stations of Puri, Bhubaneswar, and Cuttack to Jagath Ballav Matha
- Taking initiatives to provide security service (Ward & Watch) at Gandhi Park, Puri
- Contributed to Horticulture, development, and maintenance work at Gandhi Park and Bira-harekrushnapur, Puri





## Skill Development and Livelihood

We have revived, strengthened, and facilitated 50 women self-help groups (WSHGs) to start alternative income-generating activities since FY 2018. One producer group has been formed, and we provide input support such as mushroom spawn, fish cultivation ponds, and high-yielding variety seeds. With our training, technical guidance, and support, an increasing number of WSHGs are engaging in mushroom cultivation, fish farming, and other agricultural activities in the district.

### Promotion of traditional art & handicraft

We have collaborated with the district administrations of Angul and Koraput to support and promote traditional art and handicrafts. Our initiatives include:

- Contribution of funds to Panchpatmali Natya Mahotsav in Damanjodi village. With this contribution, we endeavoured to provide cultural benefits to the village, about 65% of beneficiaries belonged to vulnerable and marginalised groups.
- Sharing of financial aid to Ekal Gram Sangathan, a social group of tribal people at Angul, to organise the 'Bharat ke Rang Ekal ke Sang' cultural program. We benefitted approximately 500 people through our support, approximately 33% of them were from vulnerable and marginalised groups.
- Extension of our financial support to organisations of 2042 villages in 26th State Level Tribal Festivals (PARAB-2023), Koraput. Approximately 65% of the total beneficiaries of our financial assistance in PARAB-2023 were from vulnerable and marginalised groups.
- We also provided financial assistance to organisations of 1871 villages (Approx. 33% of vulnerable and marginalised groups) for the celebration of Angul Zila Mahotsav 2023.

# ESG DATABOOK

## Economic Performance

### Financial & Sales Performance

Item	Unit	2021-22	2022-23	2023-24
<b>Sales Performance</b>				
<b>Export</b>				
Alumina	in Mt	11,54,691	11,82,054	11,12,216
Aluminium	in Mt	1,33,085	25,214	51,163
<b>Domestic</b>				
Alumina Hydrate & Other Chemicals	in Mt	77,995	64,583	55,970
Aluminium	in Mt	3,23,809	4,38,876	4,18,946
<b>Financial Performance</b>				
Gross Sales	in INR Crores	14,058.98	14,170.86	13070
Domestic Sales	in INR Crores	7,694.83	9,954.10	8794.39
Export Turnover	in INR Crores	6,364.15	4,216.76	4,275.73
Profit Before Tax	in INR Crores	3,955.00	1,955.00	2783
Profit After Tax	in INR Crores	2952	1544	2060
Net Worth	in INR Crores	12,554.64	13,238.45	14,571.66
Return on Net Worth	%	23.51	11.67	14.14
Book value per share (face value Rs. 5/-)	INR	68.36	72.08	79.34
Earnings Per Share	INR	16.07	8.41	11.22

### Production

Particulars	Unit	FY 2021-22	FY 2022-23	FY 2023-24
Bauxite	Mt	75,11,075	74,56,776	75,27,016
Alumina Hydrate	Mt	2122000	2123000	21,24,000
Aluminium	Mt	460000	460000	4,63,428
Power (net)-CPP	MU	5,711	5,788	6,386
Wind Power	MU	320	280	313

## Direct Economic Value Generated and Distributed

<b>Particulars</b>	<b>FY 2021-22</b>	<b>FY 2022-23</b>	<b>FY 2023-24</b>
<b>Direct Economic Value Generated (Values in INR Crores)</b>			
Revenue from operations	14,180.81	14,256.85	13,149.15
Revenue from other sources	297.42	233.64	250.71
Total	14,478.23	14,490.49	13,399.86
<b>Economic Value Distributed (Values in INR Crores)</b>			
Operating expenses (Excluding employees' wages and benefits)	8,167.56	10,703.44	8,582.23
Employee wages and benefits	2,355.80	1,832.06	2,034.06
Payments to providers of capital	1,101.98	918.32	734.65
Payments to government (Tax on PBT)			
Corporate Tax	1,051.75	294.41	839.71
Total economic value distributed	12,677.09	13,748.23	12,190.65
Economic Value Retained	1,801.14	742.26	1,209.21
<b>Additional information on Expenditures included in operating expenses (Values in INR Crores)</b>			
<b>Community investment</b>			
CSR expenses	36.91	39.54	50.54
Total community expenses	36.91	39.54	50.54
Horticulture (Green belts within and vicinity of the plants)	12.05	12.61	12.62

## CSR Expenditure

<b>Year</b>	<b>Mandatory CSR Expenditure Obligation (in INR crores)</b>	<b>Actual CSR Expenditure (in INR crores)</b>
<b>2021-22</b>	<b>28.60</b>	<b>36.91</b>
2022-23	36.64	39.54
2023-24	48.15	50.54

## Expenditure on R&D (INR Crore)

<b>Nature</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Capital	37.58	143.63	88.60
Revenue	27.64	17.95	17.76
Total	65.21	161.59	106.36
R&D Expenditure as % of Turnover	0.45	1.14	0.81

## Direct Employment benefits and financial implications

### Net Liability Arising from Defined Benefit Obligation (INR Crores)

<b>Liability</b>	<b>Post Retirement Medical Benefit</b>	<b>Settling in Benefit</b>	<b>NALCO Benevolent Fund Scheme</b>	<b>NALCO Retirement Welfare Scheme</b>	<b>Super-annuation Gift Scheme</b>	<b>Gratuity (Funded)</b>
Net liability arising from defined benefit obligation as on March 31, 2024	4.8	14.79	2.49	10.7	5.57	18.75 (surplus in fund)

## Highlights of Nalco's support to Ancillary Units & MSEs

<b>Nature</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Total value of goods & services procured from MSEs (Including MSEs owned by SC/ST entrepreneurs) (In INR Core)	713.8	960.00	1059.84
Total value of goods & services procured from only MSEs owned by SC/ST entrepreneurs (In INR Crore)	5.94	11.50	7.24
Total value of goods & services procured from only MSEs owned by women entrepreneurs (In INR Crore)	33.21	32.01	108.05
Percentage of procurement from MSEs (Including MSEs owned by SC/ST & women entrepreneurs) out of total procurement*	31.22%	29.88%	30.64%
Percentage of procurement from only MSEs owned by SC/ST entrepreneurs out of total procurement*	0.26%	0.36%	0.21%
Percentage of procurement from only MSEs owned by women entrepreneurs out of total procurement*	1.45%	1.00%	3.12%
Total annual procurement (In value) (In Rs. Crore)	2286.37	3212.99	3458.80*
Total number of Vendor Development programmes for MSEs	7	10	8

\*Total value of procurement through GeM

# Governance

## Ownership & legal structure - Shareholding pattern

(as on 31st march 2024)

SL. No.	Category	No. of Shareholders	No. of shares	% of shareholding
1.	Promoter (Government of India)	1	94,17,93,011	51.28
2.	Banks/ Financial Institutions	6	5,251	Negligible
3.	Mutual Funds	79	25,14,18,898	13.68
4.	Insurance Companies	26	9,33,67,548	5.08
5.	Foreign Portfolio Investor	175	16,49,71,738	8.99
6.	Bodies Corporate	1955	4,12,78,000	2.25
7.	Indian Public	8,82,987	32,81,16,953	17.87
8.	Others	8,883	1,56,80,388	0.85
TOTAL	8,94,112	1,83,66,31,787	100	

## Board of Directors

(as on 31st march 2024)

Name of Director	Role	Date of Appointment
Shri Sridhar Patra	Chairman-cum-Managing Director	17.12.2019
Shri Radhashyam Mahapatro	Functional Director	01.01.2020
Shri Ramesh Chandra Joshi	Functional Director	04.02.2022
Shri Sadashiv Samantray	Functional Director	22.03.2022
Shri Pankaj Kumar Sharma	Functional Director	01.02.2023
Shri Jagdish Arora	Functional Director	11.10.2023
Shri Sanjay Lohiya, IAS	Part-time Official Director	09.11.2020
Dr. Veena Kumari Dermal, IPoS	Part-time Official Director	20.01.2022
Shri Ravi Nath Jha	Non-official (Independent) Director	11.11.2021
Dr B. R. Ramakrishna	Non-official (Independent) Director	15.11.2021
Adv. George Kurian	Non-official (Independent) Director	12.11.2021
Dr Ajay Narang	Non-official (Independent) Director	16.11.2021
Shri Y. P. Chillio	Non-official (Independent) Director	11.11.2021
Dr Shatorupa	Non-official (Independent) Director	12.11.2021
Adv. Dushyant Upadhyay	Non-official (Independent) Director	12.11.2021
Shri Sanjay Ramanlal Patel	Non-official (Independent) Director	23.03.2022

## RTI Application and Appeals

The following are the details of RTI application and appeals during the year 2023

Heads	Requests	First Appeals
Under Process as on 01.01.2023	15	3
Received during the year (including cases transferred from other Public Authority)	380	76
No. of cases transferred to other Public Authorities	5	0
Decisions where requests/ appeals rejected	133	0
Decisions where requests/ appeals accepted and settled	235	75
Under Process as on 31.12.2023	22	4

# Materials

## Materials Used by Weight or Volume

Head	Material consumed	Unit	Source	FY 2021-22	FY 2022-23	FY 2023-24
Raw Material	Bauxite	Mt	Internal Production	73,77,009	73,28,937	74,50,372
	Calcined Alumina	Mt	Internal Production	8,91,723	9,15,770	9,09,540
	CP Coke	Mt	External Suppliers	1,73,727	1,83,222	1,96,690
	CT Pitch	Mt	External Suppliers	43,030	43,449	44,559
Associated Process Material	Caustic Soda	Mt	External Suppliers	2,64,677	2,56,170	2,64,514
	Aluminium Fluoride	Mt	External Suppliers	8,075	8,526	9,182
	Lime	Mt	External Suppliers	62,077	63,625	63,676
	Explosives	Mt	External Suppliers	427	51*	80.125*
Packaging Material	HDPE fabric	m2	External Suppliers	4,97,362	8,97,686	2,75,060
	Wood in wooden pallets	CFT	External Suppliers	45,247	72,513	74,209
	Steel Straps	Mt	External Suppliers	199	199	217
	Polyester Strap	m2	External Suppliers	88	106	109.76

\*Note- In the FY 2023-24, only 2% of Mines Excavation was done through Blasting using SME (Site mix emulsion) explosives through outsourcing, the rest 98% was done through blast free Mining Methods

## Recycled Input Materials

Material	2021-22	2022-23	2023-24
Total amount of Aluminium Scrap recycled	8665	8167	8422.470
Aluminium Scrap recycled as % of hot metal produced	1.7653	2.0055	1.8
Caustic Soda recycled from red-mud as % of total consumption of caustic-soda	11.22	12.64	12.85

# Energy

## Energy Consumption

<b>Material</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
HFO	8155057	8025770	8419415
LPG	727	734	868
LDO	160225	147218	200119
Diesel	292457	248164	455366
Coal	91657353	90159018	98023023
Indirect Energy consumption	4953024	4359616	2299542*
Total Energy Consumption	105218843	102940520	109398335

\*includes 321468 GJ from renewable sources Wind Power and roof-top solar

## Renewable Energy Generation (Wind Power)

<b>Location</b>	<b>Capacity (in MW)</b>
Gandikota, Kadapa, Andhra Pradesh	50.4
Jath, Sangli, Maharashtra	50.4
Devikot, Jaisalmer, Rajasthan	50
Luderva, Jaisalmer, Rajasthan	47.6

Total Wind Power generated (Gross) in 2023-24 is 324 MU.

## Renewable Energy Generation (Solar Power)

<b>Location</b>	<b>Capacity (in kWp)</b>
Corporate office complex	630
Alumina Refinery	40
Bauxite mines	180.76

Total Roof-top solar power generated in 2023-24 is 0.631 MU.

## Energy Intensity

<b>Energy Intensity</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>
Energy Intensity Aluminium Smelter (GJ/Mt)	55.93	55.34	55.06
Energy Intensity Alumina Refinery (GJ/Mt)	12.77	8.26	8.46

## Energy Conservation Initiatives

### Initiative

#### Mines

Replaced 150 nos. of old conventional 100W ceiling fans with 28W BLDC fans (having rated service value better than current BEE 5 star rated fans).

Completed replacement of 1x28W and 2x28W T5 lamps / luminaries with equivalent LED luminaries of 20W & 36W.

Commissioned a 50.76 kWp On-Grid roof top PV solar power plant in addition to its existing 130 kWp (2x35 kWp + 2x30 kWp) capacity.

Reduction of HSD oil consumption has been achieved by addition of fuel additives in HEMM, modification in methodology of operations, optimum selection of HEMM for bauxite generation and modification in methodology of loading of excavated ore in Central Block Sector-2 area. Approx. 530 kL of HSD oil has been saved owing to the same in FY 2023-24.

#### Alumina Refinery

Reduction of Specific oil consumption (HFO) in Calciners by application of HFO additives with reduction of 1.8 % from existing Specific oil consumption. Investment of 512 lakh for HFO saving of 3700 kL/yr.

Modification in BAT -A, B & D resulting in increase of Steam Economy from 2.9 to 3.05. Investment of 29 lakh for Coal saving of 3542 Mt/yr.

Replacement of existing low capacity aluminate liquor pump-128 in security filtration. Existing 800 m<sup>3</sup>/hr. pump is replaced with a 1200 m<sup>3</sup>/hr. pump. Investment of 45 Lakh for energy saving of 394200 kWh/yr.

Installation of 100 nos. of 190W LED floodlight fittings in place of 400W conventional flood lights in switchyards. Investment of 6 Lakh for energy saving of 87600 kWh/yr.

Installation of 200 nos. of 100W led high bay lights in place of 250W high bay fittings inside the plant. Investment of 8 lakh for energy saving of 374928 kWh/yr.

Installation of 3000 nos. of 18w led tube lights in place of 40w tube light in offices. Investment of 6 lakh for energy saving of 223200 kWh/yr.

Installation of 5000 nos. of 40W LED well glass fittings in place of 70W HPSV fittings inside the plant. Investment of 8 lakh for energy saving of 1051200 kWh/yr.

Rectification of steam loss from faulty steam traps and arresting bypass line steam leakages of Plant.

#### Smelter

35 pots have been Graphitised during 2023-24, resulting in reduction of specific electrical Energy consumption in pot line @ 55 kWh/Mt.

15 no. of pots operating on AP2XN technology as a trial project is successfully running resulting in saving of specific DC energy consumption around 150 kWh/Mt.

Replacement of Hot well Pump for cooling tower -1 EE by Energy Efficient Centrifugal Pump with IE-4 motor and VFD Panel resulting in a saving of 672 kWh/day.

Replacement of obsolete screw compressor by Energy Efficient Centrifugal Compressor resulted in overall saving of 2.55 MU, Year on Year.

Replacement of Conventional light fixtures with LED light fixtures resulting in total estimated energy saving of 49,64,146 kWh/annum.

Modification of the Winch trolley communication control system for ABF-2 & 3 has resulted in saving of electrical energy 237 kWh/day.

Installation of 4 nos. Exhaust Manifolds in ABF-1 has not only resulted in seamless fire change in ABF-1 without any fresh air ingress but also helped in reduction of HFO consumption.

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## **Initiative**

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### **CPP**

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Renovation & Modernisation of existing Air-Preheater in Unit- 2 & 4 with advanced profile heating element, double sealing arrangement and VFD drives, completed in May 2023 & July 2023 respectively. This has resulted in an increase in boiler efficiency more than 1% due to reduction in air leakage and increased heat transfer.

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Revamping of Cooling Tower was carried out in Unit-8, during November 2023, which improved the performance of cooling tower as well as improved condenser vacuum thereby reduction in coal consumption.

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De-staging of existing Condensate Extraction Pump (CEP-B) from 7 stages to 6 stages completed in Unit-8, during November 2023, which resulted in reduction of power consumption by 30 kW.

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Chemical cleaning of condensers in Unit-8 was carried out in November 2023. Improvement in condenser vacuum near to design value has been achieved, thereby resulting in saving of coal.

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Implementation of Variable Voltage Variable frequency Drive (VVVFD) panel in cooling tower fans of #1 to #5 has been commissioned on 29th March 2024- This will help in Reduction of power consumption of cooling tower fans.

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# Water Stewardship

## Water Withdrawal by Source

Surface Water	Unit	Source	FY 2021-22	FY 2022-23	FY 2023-24
Smelter & CPP incl. township	ML	Brahmani River	37,428.52	35,717.3	39,097.536
Alumina Refinery Incl. township	ML	Kerandi River	8,614.89	7,821.18	9,175.274
Bauxite Mines	ML	Jholaguda Stream	699.79	774.27	977.197
Total surface water withdrawal	ML	-	46,743.2	44,312.745	49,250.01

## Water Recycled and reused

Source	Unit	FY 2021-22	FY 2022-23	FY 2023-24
<b>Bauxite Mines</b>				
Total fresh water intake	ML	699.79	774.27	977.197
Recycled through ETP and STP	ML	76.65	76.65	87.947
Water Recycled/Reused as proportion of fresh water intake to Bauxite Mines	%	10.95	9.9	8.99
<b>Refinery</b>				
Total fresh water intake	ML	8,614.89	7,821.18	9175.274
Recycled through STP	ML	551	551	550.95
Recycled through Ash Pond	ML	8034.64	7836.44	4614.095
Recycled through Red Mud Pond	ML	4403.63	4227.6	8383.68
Water Recycled/Reused as proportion of fresh water intake to Alumina Refinery	%	150.78	161.28	147.66
<b>Smelter</b>				
Total fresh water intake (through CPP)	ML	1808.05	1733.88	1745.345
Emrion Nano DF Plant, Ion-Exchange DF Plant,	ML	806.39	762.04	718.773
Zero Discharge Sump, Sub soil water				
Water Recycled/Reused as proportion of fresh water intake to Smelter	%	44.6	43.95	41.18
<b>CPP</b>				
Total fresh water intake	ML	22,172.50	22,099.36	29,781.92
Recycled through STP	ML	50.5	50.5	63.87
Recycled through ETP	ML	5138.65	4533.88	2687.945
Recycled through Ash Pond decanted and Mine-void (Lean Slurry project)	ML	14477.86	22675.186	2,07,82.92
Water Recycled/Reused as proportion of fresh water intake to CPP	%	88.7	123.35	79.02

# Wastes & Effluents

## Non-Hazardous Wastes

Sites	Non-hazardous Waste	Unit	FY 2022-23	FY2023-24	Waste Management Method
Alumina Refinery	Lime Grit	Mt	26,096	25239	Disposal to red mud pond, part of Lime grit is utilised for Road embankment / land development inside plant and brick making purpose
	Fly Ash	Mt	648,626	680358	Discharged to the dedicated Ash Pond as Ash slurry and stored in the Silos as dry ash. Utilised for low lying area filling, brick making, supply to cement plants, Road development etc.
	Red Mud	Mt	32,53,223	3411271	To dedicated Red Mud Pond
Smelter	Ferrous Scrap	Mt	1367.375	1878.9	Ferrous Scrap are recycled/ reused/ sold to outside agencies
	Non-Ferrous Scrap	Mt	8.2	525.22	Non - Ferrous scrap having economic value are Recycled/ reused/ sold to outside agencies and not having economic value are disposed of at low lying areas inside the plant.
	Refractory Bricks	Mt	3457	4269.7	Refractory Bricks are used for hard surfacing and making roads inside plants.
CPP	Fly Ash	Mt	25,06,433	2917869	Ash used in eco-friendly manner like filling of abandoned mine void, road development, low land filling, brick units & ash pond dyke raising construction
Mines	Overburden	Mt	9,41,690	950775	These are completely reused in backfilling of mined out area

## Hazardous Wastes

Sites	Hazardous Waste	Unit	FY 2022-23	FY 2023-24	Waste Management Method
Alumina Refinery	Waste residue containing oil	Mt	0.1669	0.038	Through authorised co-processing cement plant
	Used Oil	Mt	95.82	88.56	Disposed through authorised recyclers
	Discarded Asbestos	MT	54.4	10.31	Disposed through authorised CHWTSDF, sukinda, Jajpur
	Empty Container	Nos.	3225	4048	Disposed through authorised recyclers
Smelter	Aluminium Dross	Mt	9669.8	9972.434	Majority portion of Aluminium dross is recycled in the process. Legacy stock of dross is sold to authorised recyclers.
	Spent Anode	Mt	69895	76729	100% recycled in anode making
	Cathode Residue including pot lining	Mt	2310	1925	1. Refractory portion is segregated & stored inside covered concreted sheds. 2. Carbon portion of SPL is being disposed of to authorised recyclers for detoxification and subsequent utilisation of energy value.

Sites	Hazardous Waste	Unit	FY 2022-23	FY 2023-24	Waste Management Method
	Waste containing oil	Mt	75.47	76	Waste containing oil is incinerated in the HW incinerator.
	Rejected Filter Bags	Mt		28.436	Rejected Filter Bags are incinerated in Pots for recovery of Fluorine.
	Rejected AlF3 Bags	Mt		26.483	Rejected AlF3 bags are incinerated in the HW incinerator.
	Used Oils	Mt		85.725	Used oils E-auctioned/ sold to re-processors/ recyclers having authorization from OSPCB, Odisha
CPP	Spent Resin	kL	5.8	7.45	Stored in impervious lines pits for final disposal
	Used Oils	kL	33	24.05	Disposed to authorised recyclers
Bauxite Mines	Used Oils	kL	81.695	80	These are disposed to authorised recyclers
	Used vehicle filter	Mt	6.7	12.09	Incineration

## Waste Utilisation

Parameters	2021-22	2022-23	2023-24
Ash utilisation at CPP (%)	85.63	121.29	89.77
Ash utilisation at Refinery (%)	100.37	100.63	100.6
Aluminium Dross recycling at Smelter (%)	65.2	75.6	64.5

# Emissions

## Air Emission & Pollutants

Parameter	Unit	FY 2021-22	FY 2022-23	FY 2023-24
<b>NOx</b>				
Smelter FTP/FTC stacks avg.	mg/Nm3	36.03	31.40	37.76
CPP Boiler Stacks avg.		283.96	257.76	290.16
Refinery Boiler Stacks avg.		225.20	232.00	276.00
Refinery Calciner Stack		426.20	450.00	420.00
<b>SOx</b>				
Smelter FTP/FTC stacks avg.	mg/Nm3	62.4	62.47	76.80
CPP Boiler Stacks avg.		533.98	514.66	499.41
Refinery Boiler Stacks avg.		367.50	461.60	478.00
Refinery Calciner Stack		316.50	319.70	282.00
<b>Particulate matter (PM 2.5)</b>				
Smelter FTP/FTC stacks avg.	mg/Nm3	25.76	30.63	32.28
CPP Boiler Stacks avg.		70.68	70.89	70.30
Refinery Boiler Stacks avg.		83.58	79.53	84.09
Refinery Calciner Stack		27.84	22.54	24.12
Volatile organic compounds (VOC) Smelter Bake Oven Stacks PAH emission	mg/Nm3	< 0.2	< 0.2	< 0.2
Other (Fluoride & Fugitive Fluoride emission from Smelter Potlines & Bake Ovens)	mg/Nm3	0.4118	0.4515	0.388

## Greenhouse Gas Emission

Fuel	Unit	GHG Emissions (2023-24)
HFO (Scope 1)	tCO2e	651663
LDO (Scope 1)	tCO2e	14829
Coal (Scope 1)	tCO2e	9420013
Diesel (Scope 1)	tCO2e	33743
LPG (Scope 1)	tCO2e	55
Emission from PFC (Scope 1)	tCO2e	130319
Process carbon Emission from electrolysis in pots (Scope 1)	tCO2e	721538
Process carbon Emission from anode baking (Scope 1)	tCO2e	67954
Electricity from Grid (Scope 2)	tCO2e	452210
Total Scope 1+ Scope 2 GHG Emissions	tCO2e	11492323

\*GHG emissions are estimated based on actual usage of fuels and electricity, IPCC emission factors, CEA grid emission factor, actual production figures and Aluminium sector GHG workbook

## PFC Emission

### Fluorocarbons in FY 2023-24

Particular	Unit	Value
CF4	kg/t of Al	0.0367
C2F6	kg/t of Al	0.0044

### Consumption of Ozone Depleting Substances (ODS)

Particular	Unit	CPP	Refinery	Smelter	Mines
R-22	kgs	60	Not in use	488	Not in use
R-124	kgs	NIL	Not in use	455	Not in use
R-134a	kgs	10	Not in use	62	Not in use
R227	kgs	NIL	Not in use	632.5	Not in use

# Land & Biodiversity

## Number of Saplings Planted (Nos)

Location	2023-24
Refinery & Township	15084
CPP	8050
Smelter and Township	3010
Bauxite Mines	1,20,359
safety zone of Utkal D Coal Mine	4214
Total	150717

## Mined Out Area Rehabilitated

Year	Unit	Mined Out Area Rehabilitated
FY 2021-22	Ha	16.55
FY 2022-23	Ha	15.54
FY 2023-24	Ha	14.55

# Employment

Differently abled Employees and workers

S. No	Particulars	Total	Male	Female
			No.	No.
<b>Differently Abled Employees</b>				
1	Permanent	32	29	3
2	Other Than Permanent	Nil	Nil	Nil
3	Total	32	29	3
<b>Differently Abled Workers</b>				
1	Permanent	59	51	8
2	Other Than Permanent	Nil	Nil	Nil
3	Total	59	51	8

Participation/Inclusion/Representation of women in Governance

	TOTAL	No. and percentage of women	
		No.	%
Board of Directors	16	2	12.5
Key Management Personnel*	7	0	0

\* Six functional directors are included in both BoDs and KMPs

Employees and Other Workers (category-wise)

Category	2022-23	2023-24
Supervisory	332	377
Highly skilled /Skilled	3150	2793
Semi-Skilled /Unskilled	120	115
Executives	1588	1589

## Employees and Other Workers (category-wise)

Number of Employees Hired		Number of Employees Separated	
By Gender		By Gender	
Male	418	Male	160
Female	16	Female	17
Others	0	Others	0
Age Group (years)		Age Group (years)	
<30	25	<30	109
30-50	20	30-50	67
50-60	389	50-60	1

## Parental Leave

Particulars	No. of Employees who availed Parental leave in 2023-24
Maternity Leave	5
Paternity Leave	36

# Training & Development

Safety & Health Training for Year 2023-24

Employee Category	No. of People Trained
Executives	669
Non-Executives	566
Total	1235
Contractors' Workers	9751

## Training & capacity building

Training Mandays for	Male	Female
Training Mandays in FY 2023-24	10963	1001
Health & Safety , wellness	1585	300
Skill Upgradation	5734	431
Human Rights	38	37
Anti-corruption and vigilance	193	16

# Safety & Human Rights

## Human Rights Related Complaints

Category	No. of complaints filed during the F.Y. 2023-24	No. of complaints pending as on 31.03.2024
Child labour/ forced labour/ involuntary labour	Nil	Nil
Sexual harassment	Nil	Nil
Discriminatory employment	Nil	Nil

## Injury Statistics

Unit	Category	Reportable Accidents (includes fatal accidents) (1)	Man-days worked (2)	Man-days lost (3)	Man-hours Worked (4)	Lost days Rate (5)	Rate of Injury (6)	Absentee Rate (7)
Category					(2)x8	(3)/(2) x100	(1)/(4) x10 <sup>6</sup>	(3)/(4) x10 <sup>6</sup>
CPP	Employees (both executives & non-executives)	Nil	209088	Nil	1672704	0	0	0
	Contractors' Labour	Nil	663458	Nil	5307664	0	0	0
Coal Mines	Employees (both executives & non-executives)	Nil	5524	Nil	44192	0	0	0
	Contractors' Labour	Nil	56120	Nil	448960	0	0	0
Bauxite Mines	Employees (both executives & non-executives)	Nill	102483	0	819864	0	0	0
	Contractors' Labour	Nill	209652	o	1677216	0	0	0
Port	Employees (both executives & non-executives)	Nill	9901	0	79208	0	0	0
	Contractors' Labour	Nill	26772	0	214176	0	0	0
Refinery	Employees (both executives & non-executives)	Nill	352473	0	2819784	0	0	0
	Contractors' Labour	2*	1218772	18000	9750176	1.477	0.205	1846
Smelter	Employees (both executives & non-executives)	Nil	573999	Nil	4591992	0	0	0
	Contractors' Labour	1	1329542	193	10636336	0.0145	0.0940	18.14

\* In refinery, one reportable incident caused two fatalities

## Safety Incidents

<b>Safety Incident/Number</b>	<b>Category</b>	<b>FY 2022-23</b>	<b>FY 2023-24</b>
Lost time injury frequency rate (LTIFR) (Per one million-person hours worked)	Employee (Executives)	0	0
	Workers (Both permanent & non-permanent)	Refinery - 0.3476 CPP - 0.149	Refinery - 0.159 Smelter - 0.071
Total recordable work-related injury	Employee (Executives)	0	0
	Workers (Both permanent & non-permanent)	5	Refinery- 3 Smelter- 1
Number of fatalities (safety incident)	Employee (Executives)	0	0
	Workers (Both permanent & non-permanent)	0	3
Health consequence work related injury or ill health (excluding fatalities)	Employee (Executives)	0	0
	Workers (Both permanent & non-permanent)	1	1

## PME Statistics

<b>Unit/Area</b>	<b>Employee</b>	<b>Contractors' Labour</b>
Captive Power Plant, Angul	684	1575
Bauxite Mines, Panchpatmali	477	26
Port facility, Visakhapatnam	23	94
Alumina Refinery, Damanjodi	1269	5523
Aluminium Smelter, Angul	2205	2645
Utkal D&E coal mines	15	Nil

# GRI CONTENT INDEX



CONTENT INDEX  
ESSENTIALS SERVICE

2024

For the Content Index – Essentials Service, GRI Services reviewed that the GRI content index has been presented in a way consistent with the requirements for reporting in accordance with the GRI Standards, and that the information in the index is clearly presented and accessible to the stakeholders.

Statement of use	NALCO has reported in accordance with the GRI Standards for the period 01.04.2023 to 31.03.2024 [FY 2023-24].
GRI 1 used	GRI 1: Foundation 2021

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	Page no.
<b>General disclosures</b>		
GRI 2: General Disclosures 2021	2-1 Organizational details	Page 13, 16
	2-2 Entities included in the organization's sustainability reporting	Page 4
	2-3 Reporting period, frequency and contact point	Page 4
	2-4 Restatements of information	Page 4
	2-5 External assurance	Page 4
	2-6 Activities, value chain and other business relationships	Page 14, 15
	2-7 Employees	Page 15, 102
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	2-9 Governance structure and composition	Page 20, 91
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	2-15 Conflicts of interest	Page 23
	2-16 Communication of critical concerns	Page 76
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	2-21 Annual total compensation ratio	Page 89
	2-22 Statement on sustainable development strategy	Page 27
	2-23 Policy commitments	Page 22
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<b>Material topics</b>		
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	3-2 List of material topics	Page 41
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GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	Page 89
	201-2 Financial implications and other risks and opportunities due to climate change	Page 45
	201-3 Defined benefit plan obligations and other retirement plans	Page 72, 73, 90
<b>Procurement practices</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 46
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<b>Anti-corruption</b>		
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GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	Page 25
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<b>Materials</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 56
GRI 301: Materials 2016	301-1 Materials used by weight or volume	Page 92
	301-2 Recycled input materials used	Page 57, 92
<b>Energy</b>		
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GRI 302: Energy 2016	302-1 Energy consumption within the organisation	Page 93
	302-3 Energy intensity	Page 93
	302-4 Reduction of energy consumption	Page 94

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<b>Water and effluents</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 59
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource 303-2 Management of water discharge-related impacts 303-3 Water withdrawal 303-4 Water discharge 303-5 Water consumption	Page 59 Page 60 Page 59, 96 Page 60 Page 60, 96
<b>Biodiversity</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics 304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	Page 63 Page 66
<b>Emissions</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 67
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions 305-2 Energy indirect (Scope 2) GHG emissions 305-6 Emissions of ozone-depleting substances (ODS) 305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Page 67, 99, 100 Page 67, 99, 100 Page 100 Page 99
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GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts 306-2 Management of significant waste-related impacts 306-3 Waste generated 306-4 Waste diverted from disposal 306-5 Waste directed to disposal	Page 69 Page 69 Page 97, 98 Page 97, 98 Page 97, 98
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GRI 3: Material Topics 2021	3-3 Management of material topics	Page 72
GRI 401: Employment 2016	401-1 New employee hires and employee turnover 401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees 401-3 Parental leave	Page 103 Page 72, 73 Page 103
<b>Occupational health and safety</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 76
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system 403-2 Hazard identification, risk assessment, and incident investigation 403-3 Occupational health services 403-4 Worker participation, consultation, and communication on occupational health and safety 403-5 Worker training on occupational health and safety 403-6 Promotion of worker health 403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Page 76 Page 79 Page 79 Page 77, 78, 79 Page 104 Page 79 Page 77, 78, 79

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	403-8 Workers covered by an occupational health and safety management system	Page 77, 78, 79
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GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	Page 80, 104
<b>Diversity and equal opportunity</b>		
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GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees 405-2 Ratio of basic salary and remuneration of women to men	Page 103 Page 74
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GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	Page 75
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# LIST OF ABBREVIATIONS

APIO	Assistant Public Information Officers
BEE	Bureau of Energy Efficiency
BRSR	Business Responsibility & Sustainability Report
BSE	Bombay Stock Exchange
CAG	Comptroller and Auditor General
CCTV	Closed Circuit Television
CDA	Conduct Discipline and Appeal
CEMC	Centre for Envotech and Management Consultancy Private Limited
CHWTSDF	Common Hazardous Waste Treatment, Storage, and Disposal Facility
CII	Confederation of Indian Industry
CMD	Chairman cum Managing Director
CPCB	Central Pollution Control Board
CPP	Captive Power Plant
CPSE	Central Public Sector Enterprises
CSO	Chief Safety Officer
CSR	Corporate Social Responsibility
CTE	Chief Technical Examiner
CVC	Central Vigilance Commission
CVO	Chief Vigilance Officer
DPE	Department of Public Enterprises
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortisation
ERP	Enterprise Resource Planning
ESG	Environmental, Social, and Governance
ESI	Employees State Insurance
ESP	Electrostatic Precipitator
ETP	Effluent Treatment Plant
FIMI	Federation of Indian Mineral Industries
FOREX	Foreign Exchange
FTP	Fume Treatment Plant
GACL	Gujarat Alkalies and Chemicals Ltd.
GeM	Government e-Marketplace
GHG	Green House Gas
GRI	Global Reporting Initiative
Ha	Hectare
HDPE	High Density Polyethylene
HFO	Heavy fuel oil
HIRA	Hazard Identification and Risk Assessment
HR	Human Resource
IBM	Indian Bureau of Mines
IDCO	Industrial Infrastructure Development Corporation
IEMs	Independent External Monitors
ILO	International Labor Organisation
IPCC	The Intergovernmental Panel on Climate Change
ISO	International for Standardisation
IUCN	International Union for Conservation of Nature
JV	Joint Venture
KABIL	Khanij Bidesh India Limited
kL	Kilo Litres
KPIs	Key Performance Indicators
LDO	Light Diesel Oil
LPG	Liquified Petroleum Gas
LME	London Metal Exchange
MCA	Ministry of Corporate Affairs
MECL	Mineral Exploration Corporation Limited
MHU	Mobile Health Unit
ML	Mega litres
MT	Million Tonnes
Mt	Metric Tonnes
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoC	Ministry of Coal
MoM	Ministry of Mines
MoP	Ministry of Power
MoCA	Ministry of Corporate Affairs
MoU	Memorandum of Understanding
MSEs	Medium and Small Enterprises
MSSW	Madras School of Social Work
MU	Million Unit
MW	Mega Watt
NALCO	National Aluminium Company Limited
NAPCC	National Action Plan on Climate Change
NGRBC	National Guidelines on Responsible Business Conduct
NOx	Nitrogen Oxides
NRTC	NALCO Research & Training Centre
NSE	National Stock Exchange
OBC	Other Backward Classes

OPD	Outpatient Department
OSPCB	Odisha State Pollution Control Board
PAT	Perform, Achieve & Trade scheme
PAT	Profit After-tax
PFCs	Perfluoro carbons
PSEB	Public Sector Enterprises Board
PSUs	Public Sector Units
PV	Photovoltaic
PWD	Persons with Disabilities
R&D	Research & Development
RMP	Red Mud Pond
RPDAC	Rehabilitation and Periphery Development Advisory Committees
RTI	Right to Information
SA	Social Accountability
SAP	Systems, Applications & Products (in Data Processing)
SC	Schedule Caste
SCOPE	Standing Conference of Public Enterprise
SDG	Sustainable Development Goal
SEBI	Securities and Exchange Board of India
SEC	Specific Energy Consumption
SIA	Social Impact Assessment
SHGs	Self-Help Groups
SOx	Sulphur Oxides
SPCB	State Pollution Control Board
SRM	Supplier Relationship Management
ST	Scheduled Tribe
STP	Sewage Treatment Plant
tCO2e	Tonnes of carbon dioxide equivalent
TPA	Tonnes per Annum
UN	United Nations
UNG	United Nations Global Compact

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13th Sustainable Development Report 2023-24

CIN: L27203OR1981GOI000920

NALCO Bhawan, Plot No. P/1, Nayapalli, Bhubaneswar - 751013, Odisha

Tel: 0674-2303197 | Email: [sustainability@nalcoindia.co.in](mailto:sustainability@nalcoindia.co.in) | Website: [www.nalcoindia.com](http://www.nalcoindia.com)