



12<sup>th</sup> Sustainable  
Development Report

2022-23

**INSPIRED & INCLUSIVE**



## 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 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.





**Lowest Cost Producer in  
the World \***

**Bauxite  
Alumina**



**A leading Net FOREX  
earning CPSE in India**



**EBIDT  
(in Rs Crore)  
2683.71**



### **social contribution**

Around **1,10,000** patients in  
the periphery of plant areas  
extended medical treatment  
by Mobile Health Units



### **green initiatives**

**1,32,057** Saplings planted  
Net **280** MU wind power generated  
**702537** unites solar energy  
generated

\* Wood Mackenzie Report for 2022

# CONTENTS

8	<b>Message from CMD</b>
10	Key Performance Indicators
11	Organisational Profile
12	Activities, brand, Products and Services
12	Ownership and Legal form
15	Awards and Accolades
16	Alignment with Sustainable Development Goals
18	<b>Corporate Governance</b>
29	Risk Management and Sustainability Strategy
35	Stakeholder Engagement
42	Economic Performance
42	Economic Scenario
48	R & D Initiatives
49	Climate Change related Risks & opportunities
50	Direct employment benefits & financial implications







Conveyor Belt from Bauxite Mines to Alumina refinery

51	Procurement Practices
53	<b>Environmental Performance</b>
55	Environmental Risk and Concern Management
58	Environment Management Highlights
59	Responsible Consumption of Materials
60	Energy
64	Water Stewardship
66	Biodiversity
70	Emissions
71	Waste
76	<b>Social Performance</b>
78	Employment
83	Occupational Health and Safety
86	Training and Development
87	Community Development
89	<b>Corporate Social Responsibility</b>
90	CSR Expenditure
90	CSR Initiatives
92	Stakeholder and community engagement Mechanism
92	Social Impact Assessment
93	<b>GRI Content Index</b>
97	<b>List of Abbreviations</b>



This, 12th annual Sustainability Report, covers the financial year 2022-23 from April 1, 2022 to March 31, 2023 in accordance with the GRI Sustainability Reporting Standards. Each year, we publish this report to provide a glimpse into our performance across the Social, Environmental, and Economic dimensions. Our previous Report corresponds to the year 2021-22.

Our reporting framework adheres to the GRI Sustainability Reporting Standards, encompassing all relevant aspects of our sustainability performance. It aligns with GRI Standard's reporting principles, 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 prioritization, 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 93. This report has been crafted in accordance with the GRI Standards 2021.

## Scope & Boundary

This report encompasses our operations in Odisha, including the Bauxite Mine, Alumina Refinery, Aluminium Smelter, Captive Power Plant, and the Vishakhapatnam port facility. Joint ventures and certain non-material topics are excluded from the scope of this report, with a clear delineation of the material topics boundary as provided within the report. Some non-material topics e.g 'policy for responsible sourcing of bauxite' have also been covered considering some of our stakeholders' interest in the same.

## Reporting Standards

The organisation reports its financial performance in compliance with national accounting standards. Our Units go through scheduled external audits in the areas of quality, environment, health and safety, energy, and social accountability

to ensure conformance with international standards and maintain data integrity. The effectiveness of various management systems is verified by accredited external agencies. Verification and calibration of monitoring and measuring equipment are performed in accordance with applicable Standards.

## Audience

This report is intended to reach all our stakeholders, aiming at offering clear information on material issues, sustainability strategies, performance metrics, significant organisational milestones, obstacles faced, and the measures taken to address stakeholder concerns.

## Data

In our organisation, data is screened for completeness and accuracy across different levels. The primary source of data is documentation reviewed by the Board, including the Annual Report and Financial Statements. Therefore, we do not consider third-party assurance as a pertinent requirement. In cases where actual measurements are not feasible, we utilize data calculated using standard assumptions and protocols. We ensure transparency by clearly explaining the assumptions, empirical formulas, and standardization used in data estimation and quantification.

## Restatement and Changes in Reporting

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

## Contact Details

We value feedback and welcome contributions and ideas from all of our stakeholders.

## The contact person details are:

Mr. 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)







*Alumina Refinery plant, Damanjodi*



# Message from CMD



## Dear Stakeholders,

I am delighted to share NALCO's 12th Annual Sustainability Report 2022-23, which adheres to the GRI Sustainability Reporting Standards. This report is a comprehensive account of our resolute commitment to sustainable development, encompassing the triple bottom-line of economic, environmental, and social excellence.

### Continuing the growth trajectory

With the a rebound economy, we embarked on a revitalized growth trajectory, fueled by concerted effort. We achieved significant milestones in 2022-23, registering all time high total sales of metal compared to previous year and domestic sales of metal. We registered a 35.54% increase in domestic metal sales and an overall increase of 1.58% in metal sales during 2022-23, mirroring the company's record-breaking metal production achieved during the year.

Our meticulously crafted recovery strategy, rooted in the unwavering principles of sustainable value creation, propelled us towards stellar performance, effectively counteracting the lingering effects of the adversity. We maintained our global leadership position as the lowest cost producer of alumina and bauxite. Our export turnover stood an impressive INR 4,217 Crores during FY 2022-23, out of our gross sales turnover of INR 14,171 Crores. Our profit after tax stood INR 1,544 crores, signaling strong value creation.

### Enhancing performance, innovation and resilience

Our impressive performance over the years, while battling

formidable challenges, is a testament to our unwavering commitment to enhancing operational excellence, innovation, and resilience. Our Alumina Refinery achieved Alumina Hydrate production of 21.23 lakh MT against normative capacity of 21.0 lakh MT, which is 101.1% capacity utilization. Our Aluminium Smelter achieved full capacity production of 4.6 lakh MT, with all 960 pots in operation for the 2nd consecutive year maintaining the highest-ever production of 4,60,000 tonnes of aluminum cast metal for the second consecutive year.

Our dedication to research and development (R&D) is evident in our increased R&D expenditure, which reached 1.14% as a percentage of turnover, compared to 0.45% in the previous year. This investment in innovation yielded several notable accomplishments, including the development of Certified Reference Material (CRM) of Bauxite, first of its kind developed indigenously, which can be made available to Indian users at a much lower price compared to imported materials. Our commitment to innovation was further underscored by the receipt of 5 patents and publication of 3 technical papers in international conference proceedings during the year.

We have taken strategic steps towards securing our raw material and fuel supply, ensuring adding to resilience for our operations. In addition to having secure mining leases for the Panchpatmali Bauxite Mines (Central & North Blocks) and South Block extending until 2032 and 2029, respectively, we have made significant progress in developing the Pottangi bauxite mines which is likely to be operational in the 1st quarter of financial year 2025-26. We had fast-tracked



operationalisation of the allotted Utkal-D and Utkal-E coal mines, and commenced mining operations in Utkal-D Coal Mines from November, 2022. The Coal dispatch from Utkal-D Coal Mines to Captive Power Plant (CPP) started from April 2023.

### **Environmental stewardship**

Our deep-rooted conviction on protection of environment has steered us to scale up our operations while preserving the delicate balance of the natural ecosystem.

Continuing our legacy of being at the forefront of environmental stewardship, with ground-breaking initiatives in pollution control and water conservation, we garnered a multitude of awards and accolades throughout the year for excelling in Environment Excellence, Pollution Control, Energy Conservation, and Sustainability and Business Excellence.

Recognizing the urgency of addressing climate change, we are fully aligned with India's national commitments and the 5-point agenda 'Panchamrut' to increase generation & share of renewable energy, reduce carbon emission and emission intensity while moving towards net-zero.

In line with these goals, we generated 280 MU of wind power and 7.03 MU of solar energy during FY 2022-23. Our commitment to renewable energy was further strengthened by the commissioning of a 50 kWp rooftop SPV Plant at our Bauxite Mines. Additionally, new installations are planned. We are also expanding our wind power generation capacity by installing a 25.5 MW wind project in Kayathar, Tamil Nadu.

Demonstrating our commitment to afforestation, we planted 1,32,057 saplings as part of our green-belt initiatives. Additionally, we distributed fruit-bearing seedlings to local villagers to foster environmental awareness and encourage community participation in plantation efforts. A coffee garden has been developed to encourage experimental plantation and a new 1500 square meter butterfly park has been commissioned at the Panchpatmali Bauxite Mines to boost biodiversity.

We are wholeheartedly committed to the concept of 'Lifestyle for the Environment (LiFE)' introduced by our honorable Prime Minister at COP26, imploring individuals and institutions towards "mindful and deliberate utilisation, instead of mindless and destructive consumption" to protect and preserve the environment.

### **Social Stewardship**

Reaffirming our steady commitment to social development in the surrounding areas, particularly among vulnerable and marginalized communities, we expended INR 39.54 Crore in FY 2022-23 for various CSR projects, exceeding our mandated CSR obligation of INR 36.64 Crore. We implemented thematic CSR activities focused on Health and Nutrition, with a special emphasis on community education measures. Our interventions encompassed Healthcare, Education, Drinking Water, Rural Development, Environmental Sustainability, and the Development of the iconic city of Puri.

Continuing the recognition that our employees are the cornerstone of our success, we prioritize their well-being and development. We foster a skilled and motivated workforce through comprehensive HR policies and practices that promote safety, occupational health, and employee growth. We have remained steadfast in our commitment to training and education, leveraging virtual platforms to ensure continuous learning opportunities for our employees. We have also implemented rigorous safety protocols, based on best practices, to address vulnerabilities and enhance our safety culture through comprehensive awareness drives and training programs.

### **Sustainability as the way forward**

As countries transit to clean technologies, in response to the urgent need for climate action and sustainable lifestyles, the shift to a 'Net Zero' economy is expected to be metal-intensive and aluminium has been identified as one of the critical metals that will aid this transition, catering to the emerging demand for clean energy solutions, green technologies and sustainable systems. We are constantly adapting to the evolving landscape, embracing emerging challenges, opportunities, and threats.

NALCO recognizes the myriad of Environmental, Social, and Governance (ESG) risks that our operations face, including the potential impact of changing policies and regulations. We are actively addressing these risks by continuously adopting new technologies and methodologies. From implementing Smart Mining, to harnessing the power of next-generation AI, robotics, and AR/VR, to intensifying our in-house and collaborative R&D efforts, we are committed to enhancing resource utilization and process reliability.

We are committed to continuously managing and mitigating sustainability-related risks, fostering systemic resilience within our operations. As an integrated alumina and aluminum producer, we acknowledge our significant environmental and social footprint and are dedicated to generating shared value and positive impact, aligned with the United Nations' 16 Sustainable Development Goals.

We strongly believe that effective stakeholder engagement will not only improve our performance but also will elevate our knowledge, social and relationship capital and will validate our mandate to operate. In our quest for achieving excellent stakeholder relationship, we have evolved from ad-hoc reactive approach to a planned & systematic approach and have now integrated it with our management of risks & returns and for sustainable performance.

I extend my gratitude to all our stakeholders who have been our partners in our journey of sustainable development, and I assure you that we will continue to surpass expectations. We welcome feedback and suggestions from our stakeholders to collectively create a truly sustainable company.

**Shri Sridhar Patra**

**Chairman cum Managing Director, NALCO**

# Key Performance Indicators

## Economic

### Revenue from Operations(in INR crore)

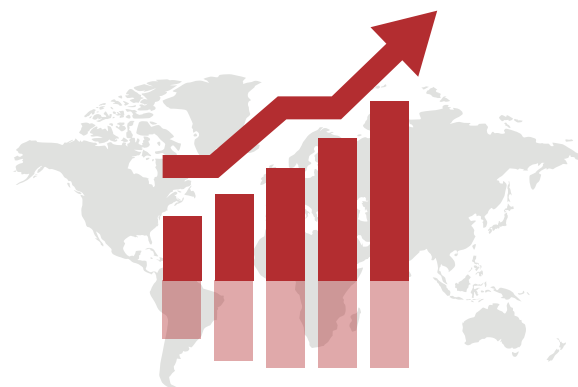
FY 2021-22	14,215
FY 2022-23	14,255

% Change 0.28%

### Profit After Tax(in INR crore)

FY 2021-22	2952
FY 2022-23	1544

% Change (-)47.69%



## Social

### Total CSR Spent(in INR crore)

FY 2021-22	36.91
FY 2022-23	39.54

% Change 7.12%

### Spending on Local MSE Suppliers(in INR crore)

FY 2021-22	430.7
FY 2022-23	562.98

% Change 30.71%

## Environment

### Plantation

FY 2021-22	1,32,087
FY 2022-23	1,32,057

### Total Surface Water Withdrawal (in kilolitres)

FY 2021-22	4,67,43,192 m <sup>3</sup>
FY 2022-23	4,43,12,745 m <sup>3</sup>

% Change (-)5.2%

### Mined Out Area Rehabilitation

FY 2021-22	16.55 Ha
FY 2022-23	15.54 Ha

% Change (-)6.1%



# Organizational Profile

## Location of the company

NALCO (National Aluminium Company Limited) is a premier integrated Bauxite-Alumina-Aluminium-Power Complex in the country, with its headquarters and registered office located at Nalco Bhawan, Nayapalli, Bhubaneswar, Odisha-751013, India. For more information, please visit our website at <http://www.nalcoindia.com>.

The company's operations include a Bauxite Mine with three blocks combined capacity of 99.75 lakh tonnes and an Alumina Refinery with a normative capacity of 21.00 lakh tonnes situated at Damanjodi, Koraput district, Odisha. Additionally, there is an Aluminium Smelter with a capacity of 4.60 lakh tonnes and a 1200 MW Captive Power Plant located at Angul, Odisha. NALCO utilizes bulk shipment facilities at Vizag port for alumina and aluminium export, as well as for the import of caustic soda. The company also leverages facilities at Kolkata and Paradeep Ports. With a significant presence in the domestic market, the company maintains seven operating stockyards at various locations across the country and registered sales offices in Delhi, Kolkata, Mumbai, and Chennai.

Since May 1989, NALCO has been the pioneer among Indian Public Sector Companies to engage in international markets with its registration on the London Metal Exchange (LME). In 1999, the company achieved listing on both the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE).



Registered office

**Bhubaneswar**



Regional Office

**New Delhi, Mumbai, Chennai, Kolkata**



Production Centres

**Angul, Damanjodi**



Port Facilities

**Paradip, Vishakhapatnam**



Stock Yard

**New Delhi, Jaipur, Baddi  
Chennai, Vishakhapatnam, Kolkata, Raipur**



Wind Power

**Ludarva, Jaisalmer, Rajasthan  
Devikot, Jaisalmer, Rajasthan  
Sangli, Maharashtra  
Gandikota, A.P**



Project Office

**Ahmedabad**



# Activities, Brands, Products, and Services

Established on January 7, 1981, NALCO (National Aluminium Company Limited) is a prominent Navratna CPSE under the Ministry of Mines. The company holds a 'NAVARATNA' category classification as a group 'A' CPSE, with an impressive track record in integrated mining, metal, and power operations contributing to national exchequer and self-reliance.

## Aluminium Products

### Product Range and Applications:

- Our product range includes Standard Ingots, Alloy Ingots, T-Ingots, Sow Ingots, Billets, Wire rods, Cold Rolled coils, and sheet, as well as Chequered sheets.
- Standard Ingots, Alloy Ingots, T-Ingots, and Sow Ingots can be further processed and cast into a wide array of end products.
- Billets serve as the primary raw material for the production of high-quality extrusions. Our high-speed alloy billets are designed to facilitate faster extrusion.
- Wire rod coils are primary inputs for the conductor and cable industries.
- Our Rolled products and chequered sheets find application in the manufacturing and automobile sectors, while Foil stock is in demand within the packaging industry

## Alumina Product Portfolio:

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

Calcined Alumina finds utilization in industries such as aluminium smelting, refractories, ceramics, and high alumina cement.

Alumina Hydrate is an essential ingredient for industries involved in the production of alum, poly aluminium chloride, and other specialty chemicals.

Specialty Alumina caters to the needs of the refractory, ceramic, and abrasive sectors.









Specialty Hydrates have a versatile range of applications as filler materials in plastic, rubber, paper, fire retardant chemicals, and in the manufacturing of alumina chemicals.

## Power

Products: Thermal, Co-generation, Wind, and Solar

Application and Use: Excess power exported to grid and own plant use

# Ownership and Legal form

Stakeholder	Percentage of Equity Shares Held as on 31.03. 2023
 Promoters (Government of India)	51.28
 Foreign Portfolio Investors	15.95
 Indian Public	16.36
 Mutual Funds	8.49
 Banks and Financial Institutions	4.91
 Corporate Bodies	1.61
 Others	1.41
 Insurance Companies	0.00

## Markets Served

We have built our presence across significant geographic regions, including nations such as Southeast Asia, Far East, Indian Sub-continent, the Gulf, China, and USA apart from the Indian domestic market. Calcined Alumina and Primary Aluminium make up the majority of our exports. In the year 2022-23, exports comprised of 29.89 % of the turnover.

For FY 2022-23, we have a presence in 24 states across the nation and operate in 8 countries internationally.

### Scale of the organization

#### Production

##### Bauxite

FY 2020-21	73,65,001	Unit- Mt
FY 2021-22	75,11,075	
FY 2022-23	74,56,776	

##### Alumina Hydrate

FY 2020-21	20,85,500	Unit- Mt
FY 2021-22	21,22,000	
FY 2022-23	21,23,000	

##### Aluminium

FY 2020-21	4,18,522	Unit- Mt
FY 2021-22	4,60,000	
FY 2022-23	4,60,000	

##### Power (net)

FY 2020-21	6,440	Unit- MU
FY 2021-22	5,711	
FY 2022-23	5,788	

##### Wind Power (net)

FY 2020-21	285	Unit- MU
FY 2021-22	320	
FY 2022-23	280	

#### Export Sales

##### Alumina

FY 2020-21	11,84,680	Unit- Mt
FY 2021-22	11,54,691	
FY 2022-23	11,82,054	

##### Aluminium

FY 2020-21	1,92,174	Unit- Mt
FY 2021-22	1,33,085	
FY 2022-23	25,214	

#### Domestic Sales

##### Alumina, Hydrate and Other Chemicals

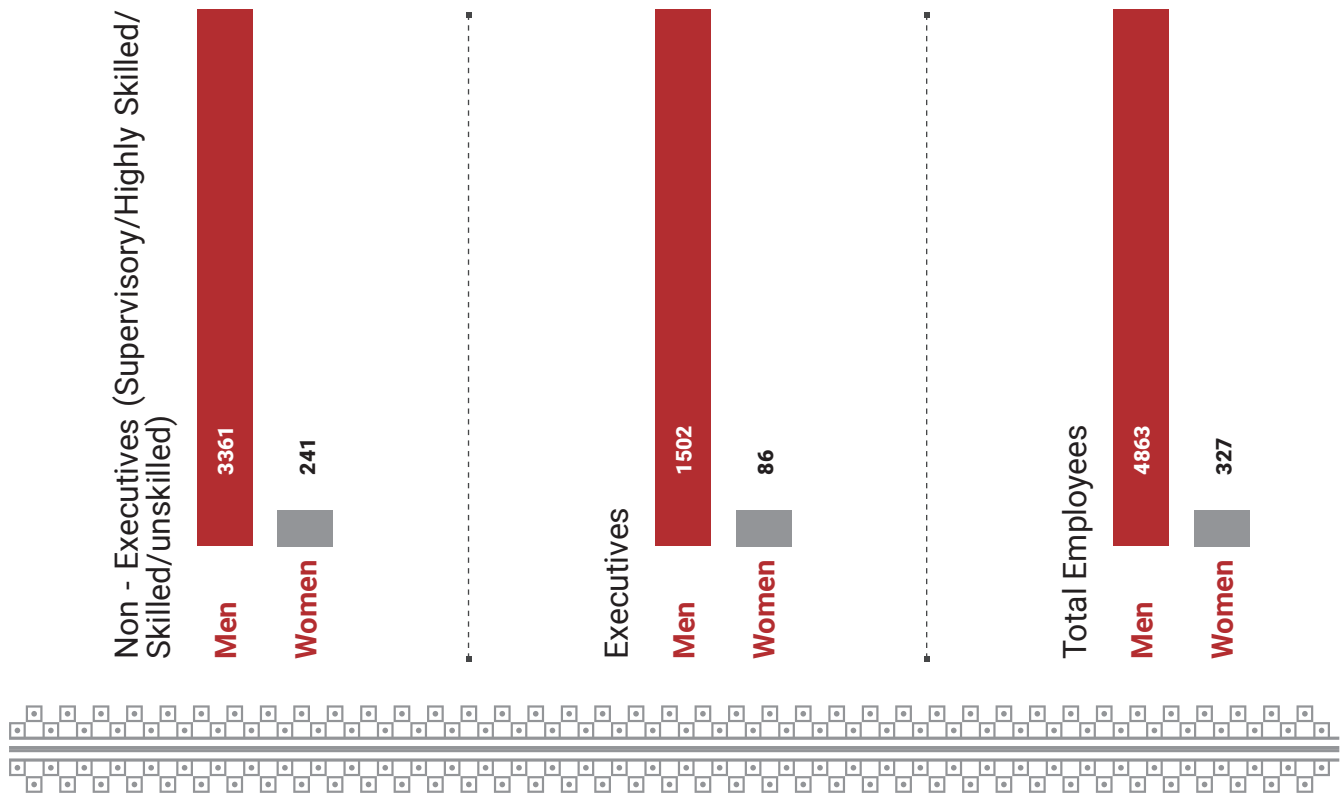
FY 2020-21	42,992	Unit- Mt
FY 2021-22	77,995	
FY 2022-23	64,583	

##### Aluminium

FY 2020-21	2,30,643	Unit- Mt
FY 2021-22	3,23,809	
FY 2022-23	4,38,876	

## Employees and Other Workers

As on 31.03.2023



## Supply Chain

In addition to our primary suppliers of raw materials, fuel, and machinery, we place special emphasis on local suppliers, particularly Micro and Small Enterprises (MSEs), located in the vicinity of our manufacturing units or in the state. These local suppliers are an integral part of our supply chain, and we offer extensive support to them. They not only hold a significant stake in our operations but also play a crucial role in our commitment to sustainable development. We are dedicated to minimizing resource consumption (energy, water, and raw materials) throughout the sourcing, production, and distribution processes within our entire supply chain. We achieve this through close collaboration with our suppliers. Furthermore, we ensure the credibility of our supply chain by diligently selecting the most suitable transportation methods and verifying the social responsibility practices of our suppliers.

## Significant Changes to the Organization and its Supply Chain

There has been no significant change in the organization and its supply chain.

## Precautionary Principle of Approach

We consistently adhere to the precautionary principle, particularly in matters related to environmental risk and human safety. Our approach to 'precautionary principles' is complemented by our up-to-date risk management guidelines, which encompass strategies for mitigating risks across environmental, social, and economic domains. We maintain a continuous learning process by staying informed about the latest findings and recommendations from reputable organizations such as the National Environmental Engineering Research Institute (NEERI), The Energy and Resources Institute (TERI), the Intergovernmental Panel on Climate Change (IPCC), and the UN Environment Programme (UNEP). Additionally, we implement guidance from audits on ISO standards including ISO 9001, ISO 14001, ISO 45001, ISO 50001, and SA 8000 provided by the international certification body Bureau Veritas.

Our commitment to the precautionary approach is further bolstered by a comprehensive set of policies, manuals, and guidelines within our organization. Before any project or procedure is implemented, a thorough assessment is conducted to evaluate its potential financial, environmental, and social impacts. Any anticipated impact is proactively addressed through



a consultative and inclusive process involving all stakeholders."

## External Initiatives

Our company's policies, manuals, and procedures are meticulously aligned with a wide array of globally recognized standards and initiatives. These include the UN Global Compact, GRI Standards, UN Sustainable Development Goals, the Universal Declaration of Human Rights, International Labor Organization (ILO), National Guidelines for Responsible Business Conduct of the ministry of Corporate Affairs of Government of India etc.

NALCO's commitment to Environmental, Social, and Governance (ESG) perspectives is reflected in the annual Business Responsibility & Sustainability Report (BRSR),

prepared in accordance with SEBI's Listing Obligation and Disclosure Requirements (LODR) guidelines. The BRSR report is an integral part of our Annual Report.

The Indian Bureau of Mines (IBM), an apex government organization established by the Ministry of Mines (MoM) under the Government of India (GoI), is dedicated to sustainable development of the nation's mineral resources. It achieves this through regulatory inspections, approval of mining plans, and environment management plans to minimize environmental impact. Our Bauxite Mines adhere to IBM's sustainability framework, complemented by regular audits and inspections.

We actively participate in various national developmental initiatives, including Swachh Bharat Abhiyan, Make in India, Digital India, and more.

## Membership of Associations








1. Aluminium Association of India
2. Confederation of Indian Industry (CII)
3. Standing Conference of Public Enterprise (SCOPE)
4. Chemical and Allied Products Export Promotion Council (CAPEXIL)
5. Federation of Indian Mineral Industries (FIMI)
6. Federation of Indian Export Organisation
7. National Institute of Personnel Management (NIPM)
8. International Chamber of Commerce
9. Indian Chamber of Commerce (ICC)
10. Indian National Committee- World Mining Congress










## Awards & Accolades

- Our Panchpatmali Central & North Bauxite Mines received "Five Star Rating" Award at 6th National Conclave of Mines & Minerals held at New Delhi in July, 2022
- CII Exim Bank Award for Business Excellence 2022 to our Alumina Refinery in Platinum category and to our Panchpatmali Bauxite Mines and Captive Power Plant in Gold Plus category
- Our Panchpatmali Bauxite Mines has received the Greentech Quality & Innovation Awards 2022 for outstanding achievements
- Our Alumina Refinery and Bauxite Mine received the prestigious QCFI-JUSE Award for the 5S workplace management system
- Kalinga Safety Award for Panchpatmali Bauxite Mines, Alumina Refinery and Smelter
- Kalinga Environmental Excellence Award for Panchpatmali Bauxite Mines, Alumina Refinery and Captive Power Plant
- Environmental Excellence Award from SPCB, Odisha to Captive Power Plant
- CII Eastern Region SHE Excellence Award and Apex India SHE award for Alumina Refinery

# Alignment with Sustainable Development Goals of United Nations

In 2015, the United Nations garnered the endorsement of all its member nations for the Sustainable Development Goals (SDGs), often known as the Global Goals. These goals represent a collective global initiative to eliminate poverty, protect the environment, and ensure universal well-being and peace by 2030. The SDGs serve as a comprehensive roadmap designed to address a range of critical objectives, encompassing the reduction of inequality, the fight against climate change, and the eradication of poverty.

SDG Goal	Elements of SDGs Mapped to GRI Standards	NALCO Contribution
<b>1 NO POVERTY</b> 	Earnings, wages and benefits (GRI 202-1) • Economic development in areas of high poverty (GRI 203-2) • Community Development (GRI 413-2)	• NALCO compensates employees in a generous manner. Non-permanent workers engaged through Contractors are consistently paid more than prescribed minimum wages. • The company's programme for sustainable livelihood and infrastructure development have been effective in impacting and uplifting the local economy in the area where it operates. • We implement local community development projects founded on diligent evaluation of needs of local communities.
<b>2 ZERO HUNGER</b> 	• Significant indirect economic impacts (GRI 203-2)	• Apart from directly or indirectly providing jobs for livelihood, NALCO has supported a sizable number of local suppliers • Our CSR programs also contribute to self-reliance & livelihood generation among local communities
<b>3 GOOD HEALTH AND WELL-BEING</b> 	• 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)	• OPDs, Mobile health Units and health camps providing free medical consultation & dispensing free medicines to people in the periphery of plant areas • Occupational Health Centers to prevent spread of occupational diseases. • Continual monitoring of emission and effluent parameters and spill containment
<b>4 QUALITY EDUCATION</b> 	• Education for sustainable development (GRI 2-17) • Employee training and education (GRI 404-1)	• Generous support to Schools and meritorious girl students in peripheral areas through CSR • Established fully-aided Schools in plant townships for children of employees and other meritorious students • In-house Training Institutes as well as sponsorship to external training for regular training and skill-enhancement of employees and workers
<b>5 GENDER EQUALITY</b> 	• 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)	• Policy for equal pay for both men and women • The recruitment and selection procedures designed to preclude any discrimination on the basis of genders, geographical regions, ethnic groups, religious groups, and social classes. • Discrimination of any kind is strictly refrained from
<b>6 CLEAN WATER AND SANITATION</b> 	• Water (GRI 303-1, 303-3) • Waste (GRI 306-2) • Wastewater quality (GRI 306-1) • Waste & Effluence (GRI 306-2)	• Rainwater harvesting, STP, ETP, and water conservation in plants and Mines • zero-discharge to outside minimizing negative impact on water bodies • Support for Swachh Vidyalaya Abhiyan and ODF (Open Defecation Free) village in peripheral areas
<b>7 AFFORDABLE AND CLEAN ENERGY</b> 	• Energy efficiency (GRI 302-1, 302-2, 302-3, 302-4)	• Operation with energy-efficient equipment and systems • Achievement of specific energy consumption targets set in the PAT (Perform-Achieve-Trade) cycles of BEE (Bureau of Energy Efficiency) • Generation of roof-top solar power and wind power

<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<ul style="list-style-type: none"> <li>• Infrastructure investments (GRI 203-1)</li> <li>• Earnings, wages and benefits (GRI 202-1)</li> <li>• Employment (GRI 401-2)</li> </ul>	<ul style="list-style-type: none"> <li>• No child labour or forced labour is employed in operations. Compliance to all provisions for decent work as per certification to SA8000 Social Accounting System. Watch on supply chain w.r.t social accountability norms.</li> <li>• Significant economic value created and distributed in a consistent manner</li> </ul>
<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<ul style="list-style-type: none"> <li>• Infrastructure investments (GRI 201-1, 203-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Support to Infrastructure development programmes for communities and Society;</li> <li>• Investment in R&amp;D; establishment of well-equipped R&amp;D centre</li> <li>• Consistent promotion of innovation among employees through various reward schemes</li> </ul>
<b>10</b> REDUCED INEQUALITIES 	<ul style="list-style-type: none"> <li>• Equal remuneration for women and men (GRI 405-2)</li> </ul>	<ul style="list-style-type: none"> <li>• Same Rank same pay without discrimination;</li> <li>• Sponsoring skill-development technical training for unemployed youth from peripheral affected families;</li> <li>• Assistance to underprivileged, needy, and differently abled individuals through CSR schemes;</li> </ul>
<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<ul style="list-style-type: none"> <li>• Infrastructure investments (GRI 203-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Energy-saving technology and equipments, wind and solar power</li> <li>• Controlled emissions and no discharge to the environment</li> <li>• Water conservation</li> </ul>
<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<ul style="list-style-type: none"> <li>• Energy efficiency (GRI 302-1, 302- 2, 302-3, 302-4)</li> <li>• Materials efficiency/recycling (GRI 301-1, 301-2)</li> <li>• Procurement practices (GRI 204-1)</li> <li>• Spills (GRI 306-3)</li> <li>• Transport (GRI 302-1 &amp; 302-2)</li> <li>• Water efficiency (GRI 303-3)</li> <li>• Water quality (GRI 306-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring of raw material and energy consumption with norms.</li> <li>• Hundred percent reuse of overburden; Reclamation of mined-out areas</li> <li>• Reducing energy consumption, implementing green technology, reducing pollution, protecting the environment, monitoring ambient air quality, controlling emissions, minimizing resource use, recycling and reusing waste, and preventing contamination of surface and groundwater. No water being discharged outside.</li> <li>• Optimisation of transport modes &amp; routes of products and raw materials</li> </ul>
<b>13</b> CLIMATE ACTION 	<ul style="list-style-type: none"> <li>• Energy efficiency (GRI 302)</li> <li>• Environmental investments (GRI 305, 306)</li> <li>• GHG emissions (GRI 305-1, 305- 2, 305-3, 305-4, 305-5, 305-6)</li> <li>• Risks and opportunities due to climate change (GRI 201-2)</li> </ul>	<ul style="list-style-type: none"> <li>• Investments have been made for the control of emissions and effluents;</li> <li>• Renewable energy generation and energy conservation measures</li> <li>• Monitoring and management of GHG emissions</li> <li>• Achievement of PAT Specific. Energy Consumption Targets</li> </ul>
<b>14</b> LIFE BELOW WATER 	<ul style="list-style-type: none"> <li>• Marine Biodiversity (GRI 304-1, 304-2, 304-3, 304-4)</li> </ul>	<ul style="list-style-type: none"> <li>• Since we maintain zero water discharge, the operations have no effect on marine life.</li> </ul>
<b>15</b> LIFE ON LAND 	<ul style="list-style-type: none"> <li>• Environmental investments (GRI 305, 306)</li> <li>• Forest degradation (GRI 305- 1,305-2,305-4,305-5)</li> <li>• Mountain ecosystems and Natural habitat degradation (GRI 304-1, 304-2, 304-3, 304-4)</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate Resources have been allocated to the management of emissions and effluents and waste.</li> <li>• Rehabilitation of mined-out areas and large-scale plantation for afforestation</li> <li>• A professional organization conducted bio-diversity investigations in the bauxite mine core and buffer zones, and PCCF (Wildlife), Odisha created and approved a wildlife management plan.</li> </ul>
<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<ul style="list-style-type: none"> <li>• Anti-corruption (GRI 205-1)</li> <li>• Compliance with laws and regulations (GRI 307-1, 419-1, 416-2)</li> <li>• Grievance mechanisms (GRI 2-16)</li> <li>• Non-discrimination (GRI 406-1)</li> <li>• Human Rights</li> </ul>	<ul style="list-style-type: none"> <li>• Uniform adherence to fairness, non-discrimination and human rights principles</li> <li>• Committed to ethics and transparency,</li> <li>• Robust Governance frame-work with contract manual, purchase manual, fraud prevention policy, whistleblower policy, CDA rules standing order, and integrity pact</li> </ul>



# Corporate Governance



# Governance is key to sustainability

Sound governance is built on the rock-bed of principles of transparency, accountability, and integrity, which, in turn, inculcate responsibility and ushers in ethical business practices. Our corporate governance embodies these key attributes: transparency, accountability, diligence, and financial discipline. These principles are deeply rooted in our core values, particularly the Value of Trust & Integrity.

Our company's overarching mission is to create value for all our stakeholders, and central to this mission is the core value of 'Sustainability,' which is integrated into our culture and systems. Our commitment to sustainability drives us to embrace responsible practices and make a positive impact on the communities we engage with.

Over time, our governance framework has been fortified by robust internal controls, ensuring unwavering compliance with the laws of the land and timely and unhindered flow of crucial information to stakeholders.

Our organisation keeps up a strong governance structure, supported by a well-crafted set of policies, guidelines, procedures, and standards.

## Governance Structure

At the pinnacle of our organizational hierarchy, the Board of Directors plays a pivotal role in laying down strategic roadmap and overseeing the operational performance of the company. Comprising of distinguished and capable individuals, the Board articulates the company's vision, mission, and objectives, consistently assessing their relevance in alignment with stakeholder expectations. Moreover, the Board firmly upholds the unalienable rights of shareholders as the true owners of the business, while also recognizing its fiduciary duty to serve as a guardian for all stakeholders.

The Board is accountable to all shareholders, and each board member carries the primary responsibility of advancing and safeguarding the company's best interests. Our corporate governance adheres to the regulations outlined in the Securities and Exchange Board of India's (SEBI) Listing Obligations and Disclosure Requirements of 2015.

As a public sector entity, Directors are appointed by the Government of India based on their qualifications, experience, and expertise. The Board conducts its affairs in accordance with the Companies Act of 2013, the SEBI Listing Obligations and Disclosure Requirement (LODR) Regulations of 2015, the Department of Public Enterprises' (DPE) guidelines for the operation of Navaratna Companies, and any other relevant rules issued by the Government as necessary.

The Board comprises a sanctioned strength of six full-time (executive) functional directors, including the chairman-cum-managing director, two part-time official directors, and eight part-time non-official Independent directors. The selection of full-time functional Directors and the part-time independent directors is carried out by the Public Sector Enterprises Board (PSEB).





## Details of Board of Directors

As on march 31, 2023

Name of Director	Date of Appointment
<b>Functional Directors</b>	
Shri Sridhar Patra, Chairman-cum-Managing Director	17.12.2019
Shri Radhashyam Mahapatro, Director(HR)	01.01.2020
Shri Manasa Prasad Mishra, Director (P&T)	01.11.2020
Shri Ramesh Chandra Joshi, Director (Finance)	04.02.2022
Shri Sadashiv Samantaray, Director (Commercial)	22.03.2022
Shri Pankaj Kumar Sharma, Director (Production)	01.02.2023
<b>Part time official Directors</b>	
Shri Sanjay Lohiya, IAS	09.11.2020
Dr. Veena Kumari Dermal, IPoS	20.01.2022



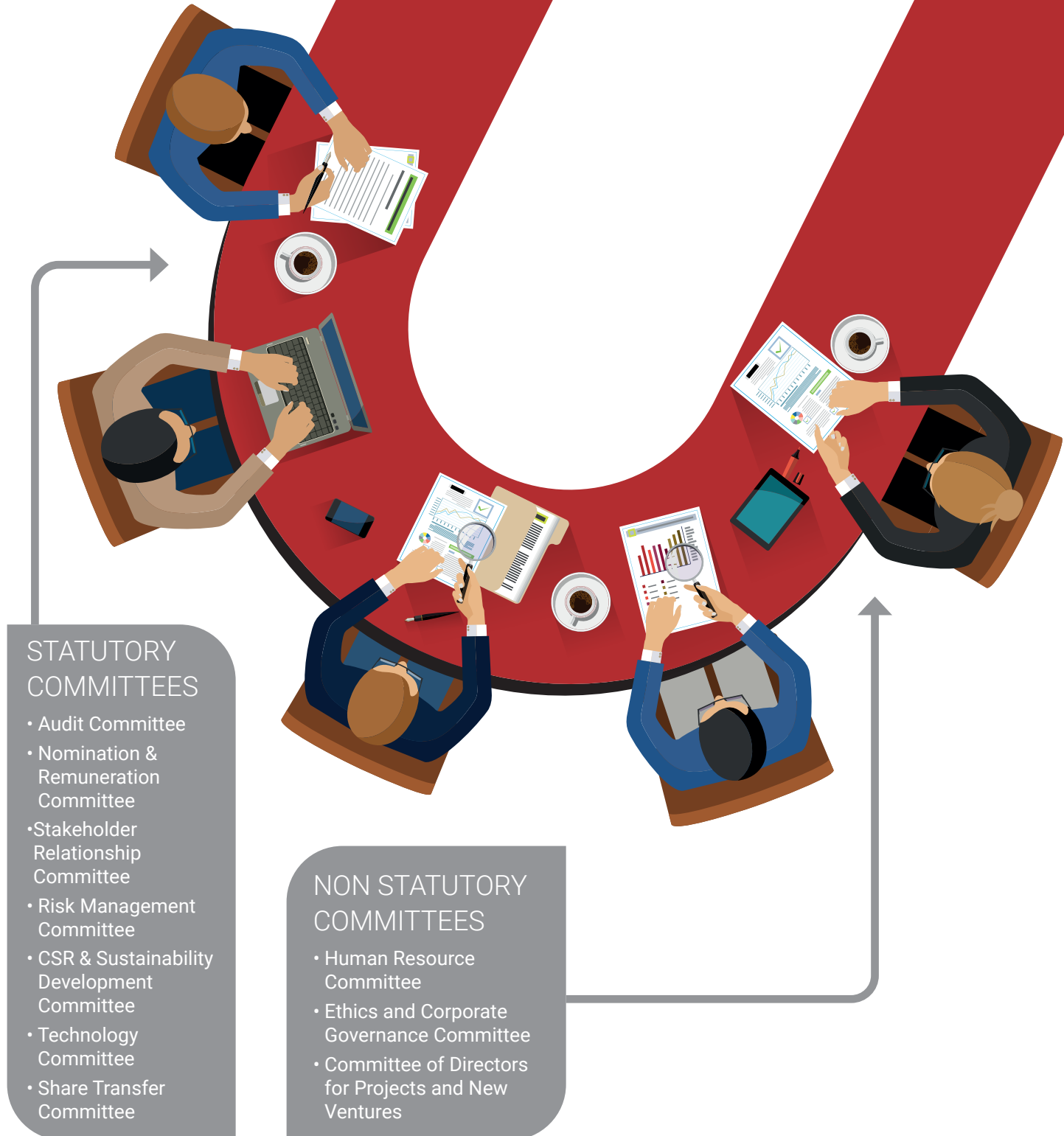
## Independent Director's List

Name	Date of appointment
Shri Ravi Nath Jha	11.11.2021
Dr. B. R. Ramakrishna	15.11.2021
Adv. George Kurian	12.11.2021
Dr. Ajay Narang	16.11.2021
Shri Y. P. Chillio	11.11.2021
Dr. Shatorupa	12.11.2021
Adv. Dushyant Upadhyay	12.11.2021
Shri Sanjay Ramanlal Patel	23.03.2022



## Board Level Committees

At the board level, specific responsibilities are delegated to a set of Board-level Committees, established to oversee activities falling under their respective domains. These Committees feature a well-balanced composition of both functional and independent directors, which enriches the decision-making process within their designated areas of oversight. NALCO has established both statutory and non-statutory committees to ensure effective and efficient governance. The non-statutory committees are voluntarily created to address specific issues and enhance the decision-making process. Committee meetings are conducted in accordance with the same secretarial standards as Board meetings, and the Terms of Reference for each Committee have been approved by the Board.



## Performance & remuneration of the governance body

Evaluation of directors in Government Companies is carried out by the Administrative Ministry. Thus, formal evaluation process for the Board, Committees, and individual directors, which necessitates reporting in the Board Report, is not required.

Given our status as a Government Company, the remuneration, benefits, and Performance Related Payments (PRP) of Functional Directors are regulated

in accordance with the prevailing Department of Public Enterprises (DPE) guidelines. The Ministry of Corporate Affairs (MCA) has exempted Government Companies from the obligation to formulate policies related to directors' remunerations, as mandated under Section 178 of the Act.

For further information about our performance evaluation and remuneration policies, please refer to our 42nd annual report, <https://nalcoindia.com > investor-services > annual-reports > 42nd Annual Report 2022-23.pdf>

## Ethics and Integrity

The attitudes, actions, and judgements of our business organization and the people working for the same are unshakably governed by moral and ethical principles.

## Values and Principle driven Company

NALCO is a company driven by a strong foundation of values and principles that have been nurtured over four decades. Our commitment to corporate excellence is underpinned by these enduring values, beliefs, and standards. Transparency, accountability, unwavering dedication to principles, fiscal prudence, and a profound responsibility to our stakeholders are integral to our ethos.

NALCO's framework for Good Governance Practices is firmly anchored in these values and principles, complemented by the regulatory guidance provided by the Indian government and other regulatory authorities. Our well-crafted policies and manuals are meticulously designed to ensure that every facet of our organizational activities is aligned with the cherished course of sustainable development.

Our contract and procurement manuals are designed to ensure fairness in all contract and procurement-related matters, while our marketing manual provides procedures and guidelines for ethical and trustworthy transactions, both domestically and internationally. The

company's unwavering commitment to integrity, ethical conduct, transparency, and, most importantly, creating value for stakeholders through responsible operations, is clearly articulated in our Sustainable Development Policy and Core Values.

The culture of integrity, transparency, and ethical conduct is reinforced through a range of policies and guidelines, including the Fraud Prevention Policy, Whistleblower Policy, Code of Business Conduct & Ethics for board members and senior management, Code of Conduct and procedures for the fair disclosure of unpublished price-sensitive information, CDA rules, and Certified Standing Order. These measures enhance our commitment to upholding ethical working practices.

To prevent any blatant deviations such as fraud, bribery, or appeasement in commercial transactions, we strictly adhere to guidelines outlined in the Company's vigilance handbook, CVC Norms, SEBI Guidelines, Code of Conduct, and other applicable directives. Additionally, in support of our transparency initiatives, the Integrity Pact is implemented for all contracts valued at 50 lakh and above.

Furthermore, the company follows the Public Information Disclosure and Protection of Informer (PIDPI) Scheme of the Government of India, offering protection to individuals who report complaints or irregularities.



celebration of NALCO Foundation Day



lighting of lamp by Hon'ble Union Minister of Coal and mines

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

## Code of Conduct

A Model Code of Business Conduct and Ethics has been developed by NALCO. All members of the board, as well as government nominees, independent directors, and senior management, are subject to the code. The Code of Conduct is available on the Company's website. The same includes provisions for ethical behavior, disclosure

of any conflicts of interest, accountability, compliance audits, and the protection of private information.

In the event of any breach of the code of conduct, we have procedures in place for the Board to take disciplinary action. During the period of the report, there were no complaints about its violations.



## Mechanisms for Advice and Concerns about Ethics

We have established multiple systems to follow through suggestions and address ethical concerns. Ethical issues are uncovered through various audits, including the Comptroller and Auditor General (CAG) audit, corporate governance audit, and secretarial audit. These external audits provide us with timely and valuable feedback that enables us to enhance our ethical processes. Our Vigilance department conducts routine inspections and proactive research to identify ethical risks. Deviations from contract terms are handled by Independent External Monitors in line with the Integrity Pact, which is developed in accordance with the Standard Operating Procedure (SOP) defined by the Central Vigilance Commission.

Depending on the severity of the issue, appropriate actions are taken in line with the Vigilance Manual, CVC Guidelines, the Code of Conduct, and any other relevant circulars or guidelines. Following established procedures, comprehensive investigations are carried out, expert advice is sought from the CVC depending on the circumstances and required actions and corrective measures are implemented. Regular steps are taken to ensure fairness, equity, and transparency in all operational areas, while upholding ethical values. In cases where it's necessary, we seek first-stage and second-stage guidance from the CVC as per the provisions and then proceed with the appropriate actions and corrective measures.

## Integrity Pact

According to in-force Central Vigilance Commission (CVC) Standard Operating Procedure (SOP), NALCO has implemented the Integrity Pact. This pact applies to all transactions and agreements with a total value of at least INR 50 lakh.

The Integrity Pact entails a mutual agreement between NALCO and the bidder to collectively prevent all forms of corruption. It enforces a fair, transparent, and impartial system, free from any undue influence or biased dealings throughout the entire transaction. To ensure that any procurement-related complaints and concerns are promptly addressed, meetings are conducted with Independent External Monitors (IEMs).

## Whistle Blower Policy

Whistle blowing is recognized as pivotal in facilitating the investigation of significant irregularities within an organization. Our policy is designed to provide robust protection to whistleblowers, fostering a culture where employees feel encouraged to report any wrongdoing. This includes activities related to corruption, business irregularities, misuse of authority, contract breaches, and other violations. Our Whistleblowing Policy addresses errors and incidents that involve:

- Abuse of authority
- Breach of contract
- Negligence leading to substantial and specific risks to public health and safety
- Manipulation of company data/records
- Financial irregularities, including fraud or suspected fraud

- Criminal offences or theft of confidential/proprietary information
- Deliberate violations of laws or regulations
- Wastage or misappropriation of company funds/assets
- Breach of employee Code of Conduct or Rules
- Any other instances of unethical, biased, or imprudent behaviour

## Fraud Prevention Policy

This policy applies to any instances of fraud, whether confirmed or suspected, involving all categories of NALCO employees, including full-time, part-time, and those employed on an as-needed/temporary/contract basis. It also extends to representatives of vendors, suppliers, contractors, consultants, service providers, or any external entities engaged in business with NALCO, directly or indirectly, who engage in activities that contravene established principles and procedures. We are committed to the rigorous application and meticulous adherence to this policy across all aspects of our corporate operations.

**During the year, no fraud by the Company or any material fraud on the Company by its officers or employees has been reported by the Auditors in their report under section 143(12) of the Companies Act, 2013.**



Vigilance awareness week observed at CPP and Smelter



## 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

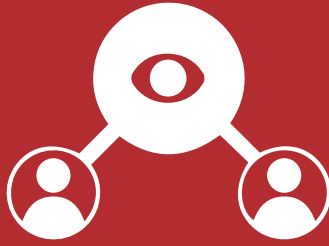


Conducting training programs for awareness among employees and general public as a part of preventive vigilance mechanism

The vigilance function plays a crucial role in reinforcing internal controls to prevent unethical behavior. At NALCO, the vigilance department is led by a Chief Vigilance Officer (CVO) appointed on deputation from the Government of India. Supporting the CVO, other vigilance officers are selected on a deputation basis with the CVO's approval. The vigilance function is established at three locations: the corporate office in Bhubaneswar, the S&P Complex in Angul, and the M&R Complex in Damanjodi.

\*\*\* 62 nos. of Vigilance complaints were received during FY22-23, while 08 complaints were pending from previous year. During FY 22-23, 69 such complaints resolved and 01 complaint was pending as on 31.03.2023.





The Charter of vigilance duties encompasses:

 **Pro-active Vigilance**

 **Preventive Vigilance,**

 **Predictive Vigilance**

 **Detective Vigilance**

 **Punitive Vigilance**

 **Corrective Vigilance**



To meet the diverse needs of the vigilance function, we have introduced the Online Vigilance Portal. This platform provides comprehensive information about the Vigilance Department's activities, procedures, initiatives, and other aspects of its role. It also offers a user-friendly interface for submitting complaints and tracking their progress online, streamlining the complaint process and bolstering the effectiveness of the vigilance function.



NALCO Corporate Office at Bhubaneswar

## e-Governance

Technology plays a pivotal role in enhancing transparency, integrity, and ethical standards. In our context, e-governance entails leveraging information technology to provide services, exchange data, facilitate communication, integrate various standalone systems between the organization and stakeholders, and streamline back-office operations and interactions across the entire organizational structure.

To standardize processes and improve information accessibility, NALCO has adopted the SAP Enterprise Resource Planning (ERP) application. This ERP system integrates key business functions, including Sales & Distribution, Finance & Controlling, Materials, Human Resource, and Production Planning. Electronic procurement of goods and services is facilitated through the Government e-marketplace (GeM), Central Public Procurement Portal (CPP) and SAP SRM. The integration of GeM Portal-based vendor purchase orders, invoices, and e-billing with the ERP system has streamlined the procurement process. Our digital application ecosystem comprises centralized employee applications and employee self-service applications. Our Company hospitals in Angul and Damanjodi have implemented computerized hospital management systems.

To enhance transparency, accountability, and efficiency in proposal handling, NALCO has implemented the e-Office system, a product from NIC. This solution, accessible through a secure VPN connection, enables authorized users to work remotely. The e-Office Knowledge Management System provides quick and secure access to digitally preserved information.

We have digitally enabled employee centric services such as payroll, attendance, and income tax including

work flow based self-service applications like appraisal, leave, loans, perquisites, tour, medical reimbursements and probation confirmation. Computerized Hospital Management system has been deployed at Company owned hospitals at Angul and Damanjodi to ensure timely medical care for employees and associates.

We have also introduced online vendor bill tracking system, Contract labour management system, Recruitment portal, e-Tender for export sales and a series of mobile apps for the benefit of stakeholders. The introduction of e-Bills and e-Measurement Book (e-MBS) and an on-line platform for service vendors will enable faster and transparent bill processing.

For governance and monitoring, online web- based applications such as capital expenditure monitoring, fund monitoring, compliance management system, bill tracking system, vigilance complaint management system, etc. are in place. These have resulted in timely monitoring and efficient management of capital expenditure, cash flow, statutory compliances and capital proposals.

To increase productivity and reduce costs, we are taking up initiatives leveraging the power of next generation technologies viz. AI, Robotics, AR/VR:

- a) Despatch Automation: Implementation of a fully integrated and automated system for aluminium dispatch. The project purpose is to bring in efficiencies and visibility in dispatch management.
- b) Smart Mines: A strategy is being put in place to move towards a connected Mines with visibility and integration of the complete mining value chain.

## Right to Information

Our Right to Information (RTI) response system comprises one appellate authority, one public information officer (PIO), and nine assistant public information officers (APIO). These dedicated officials are responsible for disseminating information to our stakeholders and the public in response to requests. We offer both physical and online responses to RTI queries and appeals. Beginning in January 2017, we have collaborated with the RTI portal of the Department of Personnel and Training, Government of India, accessible at [www.rtionline.gov.in](http://www.rtionline.gov.in).

The following are the details of the RTI applications and appeals during 2022-23

Heads	Requests	First Appeals
Under Process as on 01.04.2022	7	0
Received during the year (including cases transferred from other Public Authority)	424	62
No. of cases transferred to other Public Authorities	2	0
Decisions where requests/ appeals rejected	81	1
Decisions where requests/ appeals accepted and settled	333	58
Under Process as on 31.03.2023	15	3

## Operations Assessed for Risks related to Corruption

We have erected due safeguards and are constantly alert to prevent corruption from creeping into our operations. Every substantial transaction undergoes a meticulous review to ascertain compliance with our established policies and procedures. Furthermore, all significant transactions are rigorously audited as part of the CAG audit. Our vigilance department consistently conducts routine inspections.

We also implement a regimen of sample checks and comprehensive examinations of the CTE type on a regular basis. To ensure the adherence to anti-corruption regulations and processes, internal audits are conducted as well.

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

We recognize the crucial role of effective training and communication in cultivating an organizational culture rooted in ethical principles. Our employees receive ongoing training in vigilance and anti-corruption measures. We ensure that our personnel remain well-informed and become well-acquainted with new policies and procedures through consistent training. The training covers various aspects, including:

- Familiarity with company rules and regulations
- Understanding of CVC (Central Vigilance Commission) guidelines
- Knowledge of disciplinary procedures
- Proficiency in tendering and procurement procedures
- Awareness of commonly observed irregularities

In addition to the above, we also organise training where CBI Institute provides specialised training to vigilance officers to help them perform their duties well. Our training drive is supplemented by a variety of speeches, seminars, and discussions on vigilance and anti-corruption. During FY 2022-23, total 16 training programs for employees were conducted on anti-corruption and vigilance.

## Compliance of the guidelines on Corporate Governance

The Company diligently submits self-appraisal reports to rate its adherence to the Corporate Governance guidelines outlined by the Department of Public Enterprises (DPE) on a quarterly basis. We are proud to report that the self-appraisal for the financial year 2022-23 has earned the rating of 'Excellent.' For more details, you can access the self-appraisal reports for 2022-23 on our website at <https://nalcoindia.com/investor-services> > self evaluation report on corporate governance







Souvenir released by Board of Directors with CVO

# Risk Management and Sustainability Strategy

## Enterprise Risk Management

A robust risk management system that ensures the timely identification and mitigation of inherent and evolving business risks is in-dispensable for for an organization's sustained success within the intricate, ever morphing global business landscape.

We have established a Risk Management framework which combines the many facets of risk management such as anticipation, identification, mitigation, remediation and elimination, in a structured manner. Apart from having a Board-level sub-committee on Risk Management, we have a defined Risk Management Policy that seeks to ensure sustainable business growth with business stability.



With oversight, direction and course-correction from a Board-level risk management committee, the practice of risk management is seamlessly woven into the fabric of corporate plans. This committee periodically assesses exception Risk Reports and recommends corrective actions. To ensure that risks are addressed using a well-defined framework and established systems and procedures, risk mitigation measures undergo regular

The risk statement of NALCO summarises the Company's philosophy towards risk management:

"NALCO as a leading Indian Public Sector Aluminium Company recognises that managing risk is critical for Sustainable Development and is a Choice in the pursuit of business objectives. And thus, we are committed to the effective and efficient management of all risks to ensure continuity, profitability and business development as delineated in the Company's Vision and Mission."

reviews. Ongoing evaluations are conducted to identify new risk areas and devise corresponding mitigation strategies. The designated risk officers maintain risk registers in the required format for identified risks, which are also subject to review by the company's internal auditors and senior management. Any deviations are promptly disclosed to the Risk Management Committee

Risk		NALCO's Response	
<b>Risk from Pandemic, Natural Calamities, Global Warming</b>			
Climate change & global warming constitutes the biggest risk to business organizations in the form of extreme weather events, natural calamities and rapidly escalating directives on emissions reduction. Additionally, pandemics like COVID 19, are a ever-looming threat.		<p>The Company's geographical locations make it less vulnerable to extreme-weather events. Nevertheless, the Company has appropriate emergency-response plans and disaster management plans which are continually reviewed and improved.</p> <p>As for the business &amp; financial risks emanating from the global convergence on climate-action, the Company is evaluating options and taking up strategic action to deal with the same.</p> <p>Our resolute response to the Covid Pandemic, has built capability &amp; resilience for any such future scenarios.</p>	
<b>Raw Material Security</b>			
Ability to obtain key raw materials for current and future operations in tandem with Corporate Plans is a crucial concern.		<p>The company has secured extension of leases for Panchpatmalli Bauxite Mines' central , north, and south blocks. Additionally, allotment of Pottangi Bauxite Mine with estd.75 million tonnes of bauxite reserves is already in place for a reasonable span of time.</p> <p>Caustic Soda is a key raw material for the Alumina Refinery. With backward integration, a Caustic Soda plant has been set up at Dahej, Gujarat in JV with GACL .</p>	
<b>Fuel Security</b>			
Coal is the major component of our energy basket. Also, coal prices undergo wide fluctuations.		Supply of Coal is realized through linkages, participating in e-auctions and also by imports from time-to-time. Apart from renewal of linkages, coal supply from the allotted captive Utkal D coal mines and subsequently from Utkal E, having a combined extractable resource of 175 million tonnes, enhance fuel security considerably for present capacity and planned expansion.	
<b>Water Availability</b>			
Water availability in a sustainable manner, which is a crucial input to operations, is seriously threatened by declining availability, rising cost, and stronger regulatory actions.		In all of our units, we have achieved zero discharge of wastewater and sewage water. The production process makes use of recycled wastewater, while recycled sewage water is used for horticulture and gardening use. In addition, water conservation measures and rainwater harvesting has been taken up.	
<b>Emission Control</b>			
Emissions regulations are becoming more and more stringent necessitating large investments.		Electrostatic Precipitators (ESPs) for boilers and for calciners, de-dusting and dust-suppression systems, Fume Treatment Centres (FTC) in Potlines effectively minimize emissions of dust and fluorides keeping with the norms. We have taken timely action on revamping the existing ESPs at Al. Refinery, installed on-line fugitive fluoride monitoring system and SO2 analyser at Smelter.	
Opportunities		NALCO's Response	
<b>Business Growth and Diversification</b>			
There is strong positive outlook on expanding uses and rising demand of Aluminium metal & converted products. Aluminium is ideal for use in EV's, green Buildings and power cabling and thus is one of the critical metals that will aid transition to clean energy solutions and green technologies. In the electrical sector, the transition towards green energy sources will strengthen the sector's demand for Aluminium. Solar power requires over four times more Aluminium per installed megawatt than windpower and around 25 times more than coal. Also, in the domestic front, research has estimated that aluminium usage in India is likely to grow at a CAGR of 6.7 % annually riding on robust infrastructural investments.		We have adopted an ambitious expansion strategy for significant rise in output. Apart from significant capacity expansion of the Alumina Refinery and Aluminium Smelter, we are diversifying with JV for High-end Aluminium Alloy plant to meet the exacting demands of the automotive, aerospace, and defence industries.	



## Sustainability Policy and Strategy

NALCO's business strategy is intertwined with its commitment to sustainability. We diligently assess business opportunities to not only identify and mitigate risks but also to address the environmental and social impacts associated with our operations. Our sustainability strategy is firmly grounded in the belief that fostering inclusive growth and harmonious socio-economic development within the community is integral to creating sustainable value for both our business and stakeholders.

This sustainability strategy, a set of carefully selected priorities, is deeply rooted in our vision, mission, and core values. It guides us in channelling investments, improving performance, and engaging both internal and external stakeholders.

Our enduring objective is to create value and enrich lives through sustainable and responsible corporate citizenship. This purpose is underpinned by our meticulously crafted Sustainability Policy, which is firmly aligned with the National Guidelines on Responsible Business Conduct (NGRBC). To gauge progress, we utilize key performance indicators (KPIs) that help track departmental and functional goals in alignment with our organizational objectives. We conduct annual evaluations of our sustainability processes, making necessary refinements as we strive for continuous improvement.

## Sustainable Development Policy:

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

### 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 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.



Lunch of LiFE campaign





Sapling planted by Secretary, Ministry of Mines



Panoramic view of Panchpatmali Bauxite Mines



## Social Strategy

CSR Policy at NALCO reflects our unwavering commitment to fostering inclusive growth and equitable development. In accordance with the guidelines outlined in the Companies Act of 2013, our CSR Policy serves as a comprehensive framework for the formulation, execution, monitoring, evaluation, documentation, and reporting of our CSR initiatives aimed at creating sustainable communities in the areas where we operate. Our primary goal is to positively impact the lives of vulnerable and marginalized members of society by focusing on key areas such as education, healthcare, women's empowerment, livelihood improvement, rural infrastructure development, cultural heritage preservation, sports promotion, and more. Through these efforts, we aim to foster harmonious coexistence.

To facilitate the organized and coordinated implementation of our social objectives, we established the NALCO Foundation. This entity plays a pivotal role in promoting the socio-economic advancement of the nearby villages located in the vicinity of our operational zones. The NALCO Foundation follows a project-based approach that prioritizes accountability and responds to specific community needs. We emphasize the active engagement of key stakeholders at the grassroots level throughout the project management process. Moreover, the Foundation actively supports the capacity development of youth, women, Panchayati Raj Institution (PRI) members, and other community stakeholders.

## Raw Material & Fuel Security

The company has secured sustained supply of essential raw materials and fuel. We have extended the leases for the Central, North, and South blocks of the Panchpatmali Bauxite Mines. Additionally, NALCO has been allocated the Pottangi Bauxite Mines, which hold an additional 75 million tons of bauxite reserves, further bolstering our resource base. To enhance our resource linkages, we have obtained mining leases for the Utkal-D and Utkal-E coal mines, with the former already in state of operationalization.

### 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,

## Environmental Strategy

We are committed to minimising and addressing the adverse environmental impacts associated with our operations. Our environmental priorities include reducing environmental degradation, expanding renewable energy production, adopting cleaner fuel sources, implementing advanced technologies and energy-efficient practices, engaging in reforestation efforts such as tree planting, responsible resource utilisation, and effective waste management. All our operational units have achieved certification in line with ISO 14001:2015 Environment Management System Standards, reflecting our dedication to surpassing strict compliance with environmental laws and regulations.

## Responsible Mining

At NALCO, sustainable mining is a comprehensive approach that involves selecting the most suitable mining methods, employing appropriate mining equipment, following scientifically sound mine-closure plans, and actively engaging in land rehabilitation and afforestation.

Our mining operations prioritize minimal blasting, and we have stringent controls in place to manage noise, vibration, and air pollution. To reduce excessive noise and vibration and preserve topsoil fertility, we strictly avoid secondary blasting of hard strata. We also ensure that our mining machinery and equipment are well-maintained to further minimize noise and vibration.

As part of our commitment to responsible mining, we acknowledge the potential risks associated with mineral extraction and handling.

We continuously strive to improve our performance, proactively identify and mitigate risks of adverse impacts, and collaborate with central, state, and local government authorities, civil society, and affected third parties, as necessary.

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 its 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 dept 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 organized 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.



# Stakeholder Engagement At NALCO

We recognize the vital importance of nurturing lasting and mutually beneficial relationships with our stakeholders to foster inclusive and responsible growth. We are deeply committed to understanding the unique needs, interests, and expectations of our stakeholders. We believe that engaging with individuals, pressure groups or organisations that are affected by or can affect our activities, and responding to their concerns, improves our overall performance. It also increases our knowledge, builds social goodwill capital and validates our license to operate.

Stakeholder engagement is now recognized as a fundamental accountability mechanism, since it obliges an organisation to involve stakeholders in identifying, understanding and responding to sustainability issues and concerns, and to report, explain and answer to stakeholders for decisions, actions and performance.

Our dedication to transparent and open communication with stakeholders has helped us build strong and enduring relationships. Our identification of stakeholders is based on a comprehensive assessment of their impact on our operations and their influence on the achievement of our corporate objectives.



## Stakeholder Identification

Our identification of Stakeholder groups considers the scope of engagement and is guided by attributes such as -

**Dependency:** Groups or individuals who are directly or indirectly dependant on our activities, products or services and associated performance or on whom we are dependant in order to operate

**Responsibility:** Groups or individuals to whom we have, or in future may have legal, commercial, operational or ethical/moral responsibilities

**Tension:** Groups or individuals who need immediate attention from us with regard to financial, wider economic, social or environmental issues

**Influence:** Groups or individuals who can have an impact on the organisation's or a stakeholder's strategic or operational decision making

**Diverse perspectives:** Groups or individuals whose different views can lead to a new understanding of the situation and the identification of opportunities for action that may not otherwise occur

### Prioritized Stakeholders

#### Stakeholder



Suppliers & Vendors



Customers & Consumers



Employees



Government / Regulatory Bodies



Investors and Shareholders



Industry Associations



Civil Society/ NGO and Local Communities



Contractors/Other service providers



## Approach to Stakeholder Engagement

We actively and comprehensively engage with all of NALCO's stakeholders, tailoring the level of engagement to align with each stakeholder's influence or interest in the organization. To facilitate effective stakeholder interactions, NALCO has conducted a thorough assessment of both its internal and external stakeholders.

Our stakeholder engagement processes encompass an evaluation of the organization's interests within the context of its internal and external landscapes, particularly in relation to the three pillars of sustainability: economic, environmental, and social concerns. This inclusive approach involves introspection to identify any deviations from our responsible business strategy and to formulate corrective actions based on the gathered insights. We maintain an open and continuous flow of information through formal and informal channels of communication to ensure that our understanding of stakeholders and their evolving needs remains up-to-date.

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 functions</li> </ul>

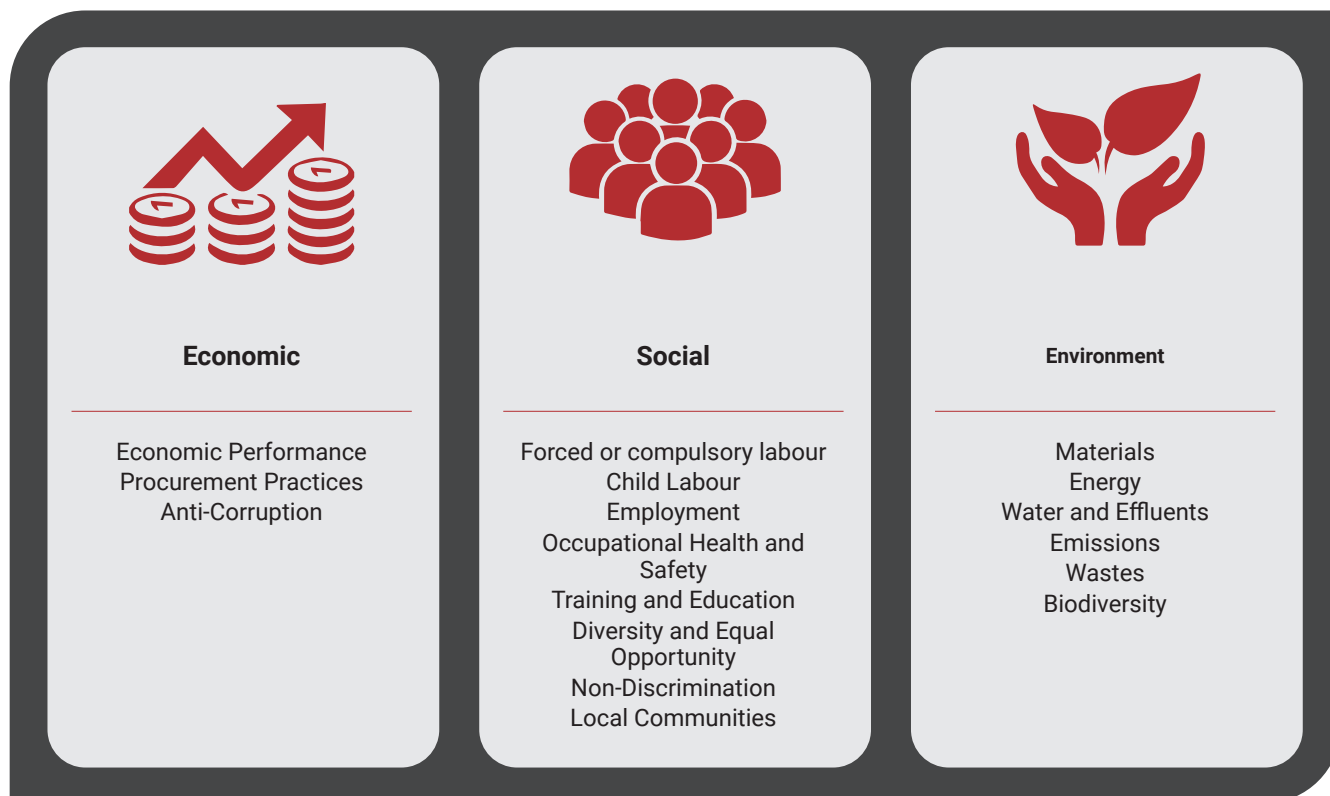


Stakeholder group	Mode of engagement	Concerns	NALCO's Response
Customers & Consumers	<ul style="list-style-type: none"> <li>● Regional and national customer meets</li> <li>● Customers plant visits and management interactions</li> <li>● Advertisements in print and audio-visual media</li> <li>● Feedback, 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</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 organizations	<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>	Community needs on infrastructure, employment, education, health, sanitation	<ul style="list-style-type: none"> <li>● Operating mobile health units &amp; organizing 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>	Active participation and sharing of common issues in different industrial and professional platforms, Mentoring and sponsoring programs of different industry associations & professional bodies
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>

## Materiality Assessment

### Key topics emerging out of stakeholder engagement

Key concerns emerging out of stakeholder engagement are listed below considering all aspects of the topic. These topics form the basis of evaluating and analysis of materiality.



Materiality Assessment exercise has been carried out by approaching our Stakeholders to find out how important specific environmental, social & governance issues are to them. This formal exercise identifies, prioritizes, and defines the features that are most significant to stakeholders and a company's management. Our sustainability strategy focuses on material concerns that represent over-riding opportunities and challenges in relation to sustainability. The level at which an issue or interest should be reported is known as materiality in this context.

During formulating and directing the materiality analysis process in line with GRI Standards, the Report Content Principles and Materiality Test are applied. For the purpose of capturing the viewpoints of various stakeholders, a systematic materiality assessment exercise has been conducted. In addition to informal

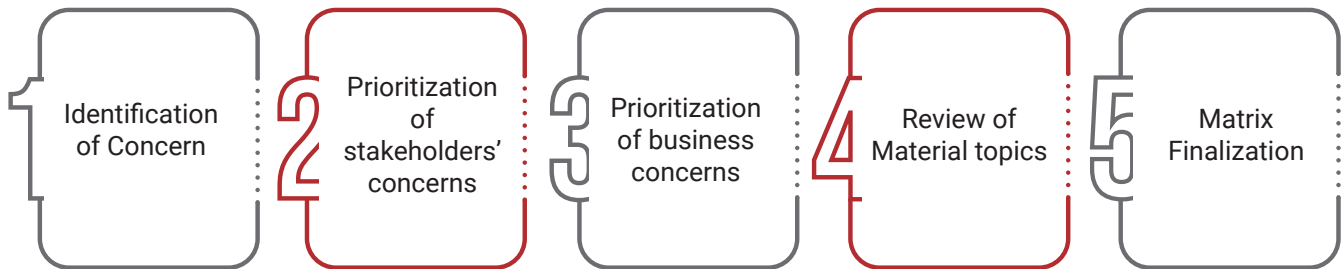
interactions, a stakeholders survey was conducted using a professionally crafted questionnaire, the inputs for which were based on GRI Standards, our experience, and current difficulties. Responses from stakeholders in various areas were collected by circulating the aforementioned questionnaire to a select representative group of stakeholders. The exercise's result has been evaluated, taking into account areas of business operations and applying knowledge gathered from the stakeholder engagement process.

Our understanding of the material aspects is based on the multiple inputs and conversations we had with various stakeholders. The primary concerns were plotted on a 2x2 matrix according to their importance to management on one axis and their influence on stakeholders on the other, as derived from the exercise.

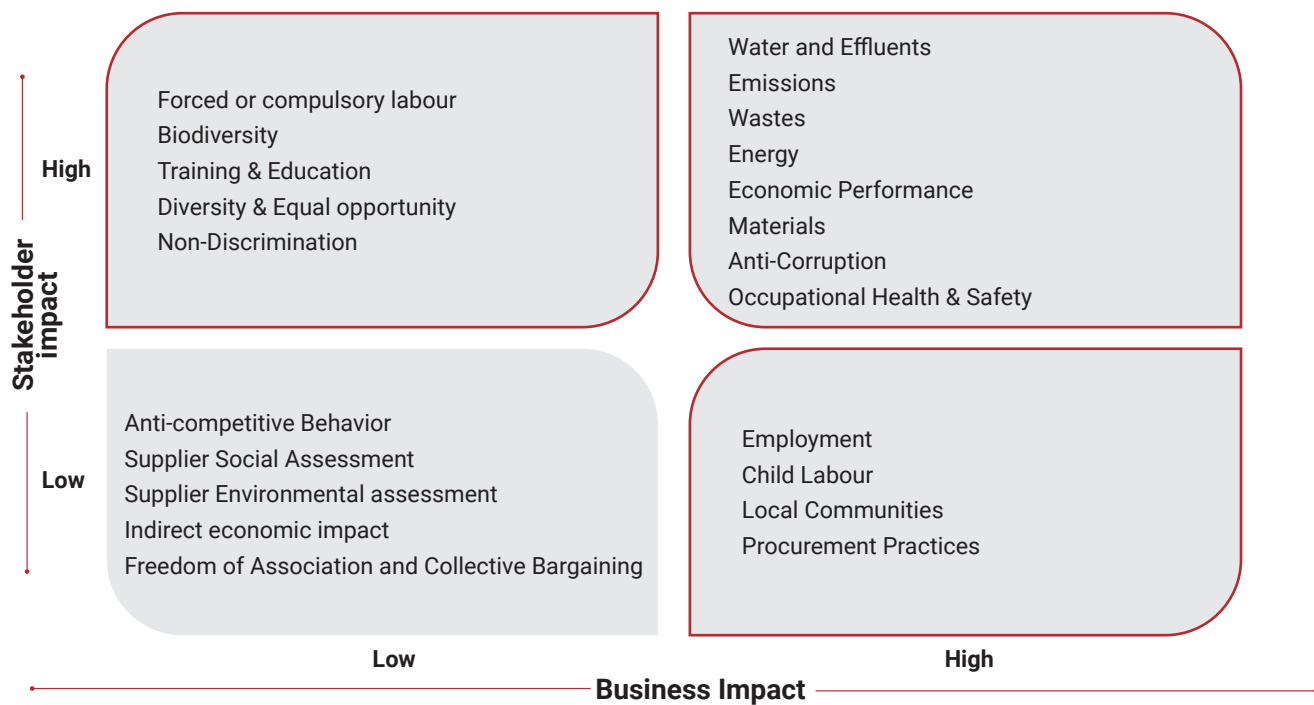
Material issues figuring High in both business impact and stakeholder impact constitute the mainstay of this report. There are no significant changes in scope or topic boundary compared to the previous report. Every effort has been taken to report on the identified material issues as per GRI 3: Material Topics 2021



## Materiality Process



## Materiality Matrix







NALCO R&D centre at Bhubaneswar

## Materiality Boundaries

Materiality Topic	Topic Boundary (Inside or outside the boundary)
Economic Performance	Inside
Procurement practices	Inside
Anti-Corruption	Inside
Materials	Inside
Energy	Inside
Water and Effluents	Inside
Emissions	Inside
Wastes	Inside
Occupational Health and Safety	Inside
Training and Education	Inside
Local Community	Outside
Biodiversity	Outside

# Economic Performance

## Economic Scenario

Consistent generation of economic value is the prime indicator of an organization's effectiveness and sustainability. For NALCO, an organisation that has yielded surplus since it started operating and continues to be debt-free, achieving a financial performance that meets the expectations of investors, shareholders, the government, and society has always been the top priority. At all levels, NALCO scrutinises each investment and expenditure proposal with diligence. The needs

and expectations of investors, partners in the value chain, financial institutions, and the local and international environment are duly factored in to make informed and judicious investments of the company.

At the end of the reporting period, the short-term economic outlook relevant to the Company's business called for caution, as the global projected demand and supply of Alumina in calendar year 2023 were closely matched, whereas for Aluminium metal, supply was projected to exceed demand by a small fraction. However, the long term outlook for Alumina and Aluminium metal provides ample ground for optimism.

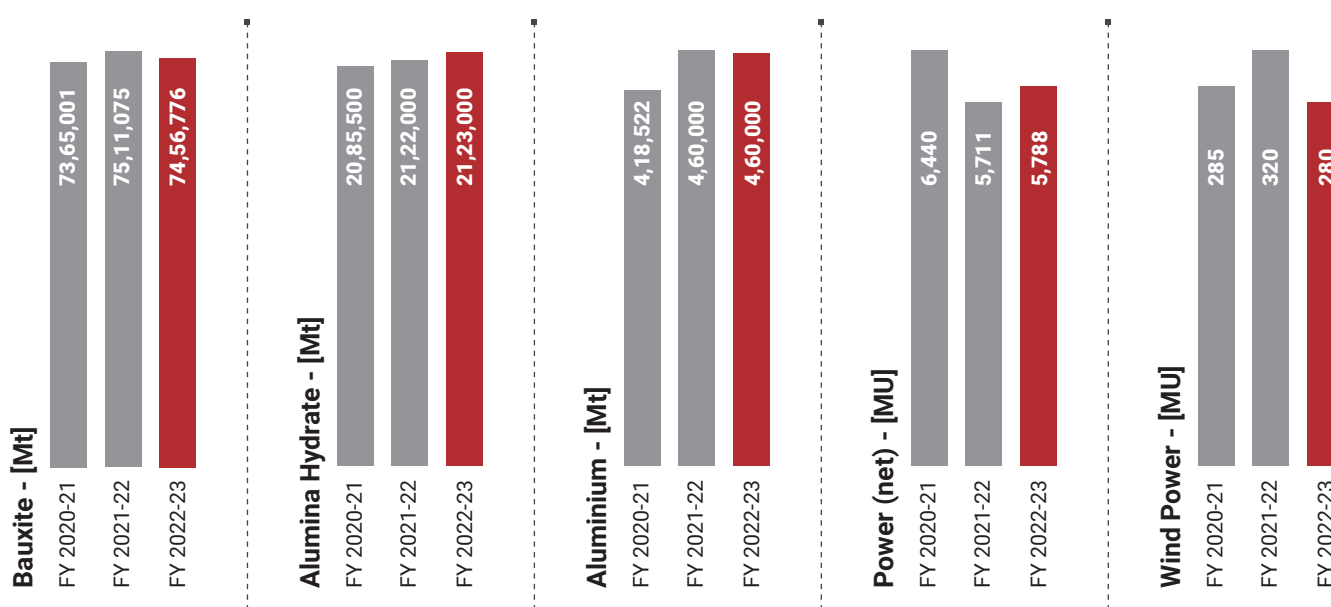








## Production performance during the year



## Financial & Sales Performance

Item	Unit	2020-21	2021-22	2022-23
Total Alumina Sale	in '000 Mt	1228	1,233	1247
Total Aluminium Sale	in '000 Mt	423	457	464
Gross Sales	in INR Crores	8,869.29	14,058.98	14,170.86
Domestic Sales	in INR Crores	3,706.35	7694.83	9,954.1
Export Turnover	in INR Crores	5,162.94	6,364.15	4,216.76
Profit Before Tax	in INR Crores	1316.52	3,955	1,955
Profit After Tax	in INR Crores	1299.53	2,952	1,544
Net Worth	in INR Crores	10,680.70	12,554.64	13,238.45
Return on Net Worth	%	12.17	23.51	11.67
Book value per share (face value INR 5/-)	INR	58.15	68.36	72.08
Earnings Per Share	INR	6.97	16.07	8.41



## Direct Economic Value Generated and Distributed

Particulars	FY 2020-21	FY 2021-22	FY 2022-23
<b>Direct Economic Value Generated (Values in INR Crores)</b>			
Revenue from operations	8,955.79	14,180.81	14,254.86
Revenue from other sources	146.6	297.42	235.63
Total	9102.39	14478.23	14490.49
<b>Economic Value Distributed (Values in INR Crores)</b>			
Operating expenses (Excluding employees' wages and benefits)	5,855.63	8,167.56	10703.44
Employee wages and benefits	1,930.24	2,355.80	1,832.06
Payments to providers of capital	460.61	1,101.98	918.32
<b>Payments to government (Tax on PBT)</b>			
Corporate Tax	177.7	1,051.75	294.41
Dividend distribution Tax			
Total economic value distributed	8,424.18	12,677.09	13748.23
Economic Value Retained	678.21	1,801.14	742.26
<b>Additional information on Expenditures included in operating expenses (Values in INR Crores)</b>			
<b>Community investment</b>			
CSR expenses	35.00	36.91	39.54
Total community expenses	35.00	36.91	39.54
Horticulture (Green belts within and vicinity of the plants)	11.92	12.05	12.61



Alumina transportation in BTAP wagons

## Economic Risks & opportunities

NALCO carries out assiduous study to grasp and dive into the advantages and problems the aluminium business faces both domestically and internationally. The organization's business plans and goals take into account a variety of factors, including the rise in high-consumption categories, price adjustments, geopolitical concerns, the budget of the Indian government, and its priority regions.

The organization's current economic opportunities and threats, are condensed and articulated below:

Opportunities	Threats
<ul style="list-style-type: none"> <li>● Global Aluminium demand (primary and secondary) is forecast to grow from 86.2 MT in 2020 to 119.5 MT in 2030. Around 37% of this growth is expected to come from China, followed by 26% from Asia ex.-China, 15% from North America and 14% from Europe.</li> <li>● The transportation sector is expected to contribute highest growth in terms of absolute demand, driven by de-carbonization policies and the shift to electric vehicles (EVs). The sector, will go from consuming 19.9 MT of aluminium in 2020 to 31.7 MT in 2030. 27% of the aluminium consumption growth coming from the transportation sector in Asia ex.-China is expected to come from India.</li> <li>● In the electrical sector, the transition towards green energy sources e.g solar and wind power will buoy up the sector's demand for aluminium, which will reach 15.6 MT in 2030 from 10.4 MT in 2020. The need for conductor cables for power distribution will also increase. Although these conductors have been traditionally made from copper, transitioning to aluminium represents a viable alternative.</li> <li>● Aluminium consumption from the packaging sector is expected increase from 7.2 MT in 2020 to 10.5 MT in 2030, driven mainly by the rise in popularity of canned drinks. The surge of demand for canned drinks in recent years and the subsequent demand of aluminium from the packaging sector, has been fuelled by the emergence of new products as well as a strong consumer preference for packaging options that are environmentally friendly.</li> </ul>	<ul style="list-style-type: none"> <li>● Escalation of geopolitical tensions, like the Russia-Ukraine war, can potentially lead to volatility in Aluminium supplies and prices, cause global inflation and disrupt trade and supply lines. Prices of Aluminium touched USD 4,000 per Mt during March, 2022, which prompted many aluminium producers to restart or ramp up their production capacities, resulting in excess output of aluminium. Abnormally high price of aluminium metal also adversely impacts demand for the metal, as consumers start looking for substitute materials.</li> <li>● Another threat from geo-political situations is the sharp rise in price of thermal coal in international market, which has caused excessive demand for domestic coal in the country and has created coal shortage for aluminium producers. This situation may lead to disruption in power supply to Aluminium Smelters, thereby forcing production cuts.</li> <li>● Other threats include risk of adverse government policies, downturn in the economy, fluctuations in global prices/exchange rate and cheaper aluminium imports.</li> </ul>



A Corporate Plan has been chalked out to address the opportunities and threats while taking into account the strengths and weaknesses. The plan consists of a three-year action plan, a seven-year strategy, and a fifteen-year vision.

The company has created commercial and functional initiatives that will provide it a competitive edge in order to counteract the long-term consequences of the commodities cycle.

The core business will grow through its expansion, value addition through forward integration, downstream facilities, selective diversification, and backward integration for raw material security in order to accomplish growth. The identified business and functional initiatives are being implemented in phases

## New Projects

Addition of 5th Stream in existing Alumina Refinery shall add 1.0 MTPY to existing installed capacity of 2.1 MTPY (total capacity 3.1 MTPY), based on improved Medium Pressure Digestion technology of Rio Tinto Alcan Limited (RTAL). The project is slated for commissioning in 2025.

Setting up of a crushing & conveying system to source bauxite for the 5th stream of Alumina Refinery, from existing Panchpatmali Mines South Block. The project is targeted to be completed in 2025.

Development of Pottangi Bauxite Mines (75 Million Tonnes). The Mine is expected to be operational in 1st quarter of 2025-26.

Development of Utkal-D and Utkal-E Coal Blocks (175 Million Tonnes). Mining operations in Utkal D coal mines commenced from November 2022. Development of Utkal E mines is in advanced stage.

Another wind power project of capacity 25.5MW at Kayathar, Tamil nadu

## Business Development

A JV company named M/s. GACL-NALCO Alkalies & Chemicals Pvt. Ltd. (GNAL) with 40% equity participation with GACL has been formed to set up a 2.7 Lakh TPA Caustic Soda Plant along with 130 MW Captive Power Plant at Dahej in Gujarat to meet the Caustic Soda requirement of Alumina Refinery, as a part of raw material securitisation.

A JV with M/s. Odisha Industrial Infrastructure Development Corporation (IDCO) has been formed with equity holding of 49% and 51% respectively for developing Angul Aluminium Park for promotion of Aluminium downstream industries in Odisha. The project is expected to be completed in FY 2023-24.

A JV with M/s. Mishra Dhatu Nigam Ltd. (MIDHANI) named M/s. Utkarsha Aluminium Dhatu Nigam Limited (UADNL) has been formed for establishment of 60,000 TPA High End Aluminium Alloy Plant for application in Defence, Aerospace and Automobile sectors as a part of import substitution and diversification with value added products.

A JV Company named M/s. Khanij Bidesh India Limited (KABIL) with HCL and MECL has been formed for acquisition of some strategic minerals in overseas locations to promote the "Make in India" initiative of the Government of India. At present, KABIL is focusing on sourcing battery minerals like lithium and cobalt, which are critical to the Country's energy transition.



CMD addressing on National Technology Day

## R&D Initiatives

### Expenditure on R&D: INR crore

Nature	FY 2020-21	FY 2021-22	FY 2022-23
Capital	0.79	37.58	143.63
Revenue	11.83	27.64	17.95
Total	12.62	65.21	161.59
R&D Expenditure as % of Turnover	0.14	0.45	1.14

## R&D Highlights

Under the umbrella MOU with BARC, Bauxite certified reference material, CRM BARC - B1201 was developed and the same was officially released on 24th March, 2023. Certified Reference Material (CRM) of Bauxite, first of its kind developed indigenously, can be made available to Indian users at a much lower price compared to imported materials

A new process developed in laboratory scale for production of high purity aluminium metal by low temperature electrolysis.

A new process developed for light weight Al-Mg-Si automotive components using additive manufacturing and powder metallurgy processes.

Project on "Development of process and suitable medium for selective extraction of Gallium from Plant liquor and setting up a demonstration plant in Refinery" with BARC was in progress.

Project activity was in progress on 'Technology development for holistic utilization of red mud among three companies viz. NALCO, HINDALCO and VEDANTA and three research institutes NML, IMMT and JNARDDC.

Development of a process for Spent Pot line Carbon (hazardous waste) treatment and recovery of valuables was in progress with JNARDDC and IMMT

A project on aluminium air battery development was in progress with CSIR-CECRI

In-house R&D trial taken up for production of grain refined EC grade Al wire rods and production of high thermal conductivity Al-Si alloy at Cast House of Smelter

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

At NALCO, we are well aware of the issues caused by climate change, the imminent adversities it poses, and the opportunities emanating from businesses and governments concerted action to mitigate the threat. Thus, while we are working on and formulating strategies to reduce our contribution to climate change causes, we also plan to take advantage of the possibilities that present themselves as mankind fights climate change. As a direct result of efforts to minimise carbon emissions, we clearly expect an increase in the usage of aluminium as the lightweight and conductive metal of choice in the automotive, renewable power generation, power transmission, railway traction,

packaging and building industries. In the packaging industry, it can replace polythene and plastic. It is well placed to take the place of wood in the construction industry.

On the flip side, we anticipate far stricter oversight and rules pertaining to emissions, biodiversity and ecosystems, energy use etc., which will force financial investment in those domains.

In order to maintain long-term sustainability, the mining and manufacturing industries place a high priority on environmental responsibility due to the aforementioned realities and the urgent need to decrease the dangers they represent. Wind and solar energy are examples of the renewable energy sources we have installed as part of our efforts to move towards a low-carbon future. Our contributions to mitigation measures consist of increasing the share of renewable energy, reducing energy use, and conserving resources. India is fully dedicated to stopping climate change and has created the National Action Plan on Climate Change (NAPCC).

Under the auspices of NAPCC, the Bureau of Energy Efficiency (BEE) defined the National Mission on Enhanced Energy Efficiency (NMEEE), which is in charge of implementing the market-driven initiative known as Perform, Achieve, and Trade (PAT). Both the Alumina Refinery and our S&P complex have surpassed goals.



# Direct employment benefits & financial implications

## Defined benefit plan obligations and other retirement plans

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

Liability	Post Retirement Medical Benefit	Settling in Benefit	NALCO Benevolent Fund Scheme	NALCO Retirement Welfare Scheme	Superannuation Gift Scheme	Gratuity (Funded)
Net liability arising from defined benefit obligation as on March 31, 2023	- 10.43	- 15.88	- 2.51	- 10.98	- 5.85	26.72

## Defined Benefit Plans

**a) Provident fund:** The Provident Fund receives set contributions from the Company at predefined rates. The corpus is invested in approved securities by a separate trust. The Government of India has stipulated a minimum rate of interest that the trust must pay its members on contributions.

**b) Gratuity:** Gratuity up to Rs. 20,000,000. Employees are entitled to gratuity payments under The Payment of Gratuity Act. The Company provides funding for the gratuity system, which is run by a trust.

**c) Post retirement medical benefit:** If retired personnel and their spouses have chosen to receive the benefit, they are eligible. According to business policy, medical care can be obtained as an in-patient at the government hospital, the company hospital, or other facilities. They may also receive treatment as an outpatient, subject to the Company's set maximum expenditure cap.

**d) Settling-in-benefit:** Employees and/or their families may use transfer benefits upon superannuation, retirement, or termination of employment, provided they choose the plan, to move from the previous headquarters to their hometown or any other location within a reasonable travel distance of their hometown.

**e) NALCO Benevolent Fund Scheme :** The scheme's goal is to give financial support to the families of participants who pass away while working for the company. As per the scheme there will be contribution by members INR 30 per member per death, in the event of death of a member while in the service of the company and matching contribution is made by the Company.

**f) NALCO Retirement Welfare Scheme :** The objective of the scheme is to provide financial assistance as a gesture of goodwill as post retirement support to

employees retiring from the services of the company. As per the scheme the recovery from each employee member would be INR 10/- per retiring member. The Company would provide equivalent sum as matching contribution.

**g) Superannuation gift scheme:** Recognising employees who are superannuating or departing from the company due to medical reasons is the scheme's goal. A gift item valued at INR 25,000/-will be given to each retiring employee as part of the scheme upon their superannuation or retirement.

## Defined contribution plans

**a) Pension fund:** The Company makes regular contributions to PFRDA's trustee bank, which then invests the funds with the insurers chosen by the relevant employee. Liability of the company is restricted to the fixed contribution amount only.

## Other long term employee benefits

**a) Compensated absences :** Upon separation, the accrued leave, sick leave, and half-pay leave are payable, subject to the maximum allowable amount specified in the company's leave regulations. Encashment of accrued leave is permitted throughout the service term in accordance with company policy.

**b) Long Service Reward :** An employee is eligible for a long service prize after 25 years of service, which is equivalent to one month's worth of basic pay plus bonus.

**c) NEFFARS :** In the case of disability or death, the Company will pay the employee or nominee a monthly benefit at their discretion up until the date of notional superannuation upon deposit of the prescribed amount as specified under the scheme.



Inauguration of MSE Trade Fair by Director (Commercial)

## Procurement Practices

We duly acknowledge that suppliers and vendors play a crucial part in NALCO's operations and that their collaboration is pre-requisite to our sustained success. The mutually beneficial connection has been fortified via discussion of issues, dispute resolution, and active engagement. At NALCO, we work hard to build a long-lasting relationship with our supply chain that is founded on trust and respect.

Transporters, service providers, suppliers of plant and machinery, and suppliers of raw materials are all part of our extensive network of vendors and suppliers.

We are committed to building long-lasting business relationships with suppliers who uphold our company principles and procedures in addition to meeting the required standards. Our dependable supplier management solution facilitates supplier value management. NALCO actively engages with the suppliers to guarantee that the highest ethical standards and best practises are adhered to in compliance with the Government of India's directions. To lessen supply chain risks and expedite the procurement process, regular reviews are carried out.

Our captive mine provides us with bauxite for refining to Alumina and a part of the coal requirement. Long-term linkage agreements secure supply of coal, sizeable base of reliable procurement sources have been established in order to manage the supply volatility of other essential raw materials. The procurement of raw materials is guided by the half-yearly procurement plan, which is developed at the beginning of the year.

Recognising the need of developing a sustainable vendor base and also to contribute to economic development, NALCO continues a steadfast commitment to support

nearby Micro & Small Enterprises (MSEs) and local suppliers in the vicinity of its operating units.

Frequent vendor meetings and supplier development programmes are open to MSEs, including local suppliers. These events serve as a platform for identifying requirements and developing plans of action that will be advantageous to both parties.

### Nurturing local suppliers

As part of our cherished mission, we actively pursue relationships with and participate in the growth of regional vendors. The Company has established MSEF Facilitation Cells at each of its Units to help these vendors become more competitive by offering them advice in both technical and commercial aspects+all+goods and services that MSE/ancillary units can offer are listed and prominently displayed. For increased visibility and circulation, we have also posted this information on our website and integrated it into the MSE App NAMASYA (NALCO Micro and Small enterprise Yogayog Application – Bi-lingual App for MSE).

NAMASYA is a mobile application designed for MSE vendors that provides them with necessary information regarding the vendor registration process, commodities that meet technical specifications, vendor development programmes, NALCO training programmes, and other related topics.

The products that MSEs can supply are displayed in display halls that the company has provided, located at both the S&P and M&R complexes. Micro & Small Entrepreneurs receive the product specifics, technical know-how for product development, and information about annual requirements, latest purchase price, etc. a loosening of the tendering procedures. To incentivize such units to engage in bidding, EMD is waived for them. 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

- 1 Procurement from MSEs of Odisha including Ancillary Units was up at INR 562.98 Crore from INR 430.72 Crore of last FY. The total procurement of products produced and services rendered by MSE units (including those from outside Odisha) stood at INR 960.00 Crore during FY 2022-23 (as against INR 713.80 Crore during FY 2021-22) and it is 29.88% of the total procurement of Goods and Services made against Govt. target of minimum 25%.
- 2 PLAC (Plant Level Advisory Committee) meeting for the year 2022-23 was conducted at Corporate Office, Bhubaneswar on 18.01.2023 in association with DIC & MSME Department, Govt. of Odisha.
- 3 Special efforts made for registration of women owned MSEs and SC/ST owned MSEs in association with National SC/ST Hub Office (NSSHO). We participated in 'Entrepreneurship Awareness Program for Women', organized by MSME Dept., Govt. of Odisha on 03.08.2022 at Bhubaneswar
- 4 Push for onboarding of all MSE vendors (including Ancillaries) in GeM Platform and registration in TReDS Portal (RXIL) to avail the benefits extended to MSEs.
- 5 10 vendor meets organised for MSEs (including 2 vendor meets for SC/ST owned MSEs) in 2022-23. The number of MSE vendors registered has increased from 1,589 in 2021-22 to 2,060 in 2022-23. The number of women owned MSEs registered has also increased from 118 in 2021-22 to 192 in 2022-23.
- 6 Procurement data from MSEs (Micro and Small Enterprises) are being uploaded on a monthly basis in "MSME SAMBANDH" App of MSME Department, Gol.

FY 2020-21  **536.73**

FY 2021-22  **713.8**

FY 2022-23  **960.00**

**Total value of goods & services procured from MSEs (Including MSEs owned by Women & SC/ST entrepreneurs) (In INR Crore)**

FY 2020-21  **16.498**

FY 2021-22  **33.21**

FY 2022-23  **32.01**

**Total value of goods & services procured from only MSEs owned by women entrepreneurs (In INR Crore)**

Nature	FY 2020-21	FY 2021-22	FY 2022-23
Total value of goods & services procured from only MSEs owned by SC/ST entrepreneurs (In INR Crore)	8.22	5.94	11.50
Percentage of procurement from MSEs (Including MSEs owned by SC/ST & women entrepreneurs) out of total procurement*	30.42	31.22	29.88
Percentage of procurement from only MSEs owned by SC/ST entrepreneurs out of total procurement*	0.466	0.26	0.36
Percentage of procurement from only MSEs owned by women entrepreneurs out of total procurement*	0.935	1.45	1.00
Total number of Vendor Development programmes for MSEs	8	7	10

\*The 'Total Procurement' value as above excludes procurement of Coal, fuel oil, caustic soda, ALF3, Synthetic flocculants, Steel, Cement, Bearings, Lubricants, grease, proprietary items, imported items and contracts for professional services /consultancy services/ major turn key contracts/ contracts linked to specific technology.





Earth Day celebration at Alumina Refinery

# Environmental performance

Sharing the global concern on climate change and environmental deterioration, environmental excellence has been elevated to a top priority for us. NALCO's environmental policy, accords top importance on promoting and maintaining a clean environment across all of our operations and lays special emphasis on the installation of appropriate pollution control systems. We carefully consider the effects and environmental implications of every operation and activity we carry out. Pollution control and environmental conservation are included in the Board level CSR & SD Committee charter. Each of our production sites conform to the ISO 14001:2015 Standard-based Environment Management System. Afforestation of mined-out areas, the utilisation of fly ash and red mud, and state-of-the-art pollution control facilities are among NALCO's primary environmental management initiatives.

Over the years, NALCO has demonstrated its commitment to environmental stewardship through a host of appropriate initiatives. These include the sustainable mining and rehabilitation of bauxite, the efficient use of resources, the effective control of emissions, the management of water pollution, including groundwater contamination, the conservation of water, the reduction of waste, and the optimisation of land use. An important component of our sustainability mission is energy efficiency. Our energy-intensive facilities,

such as the Alumina Refinery, Smelter, and CPP, have installed Energy Management Systems that meet ISO 50001 certification requirements.

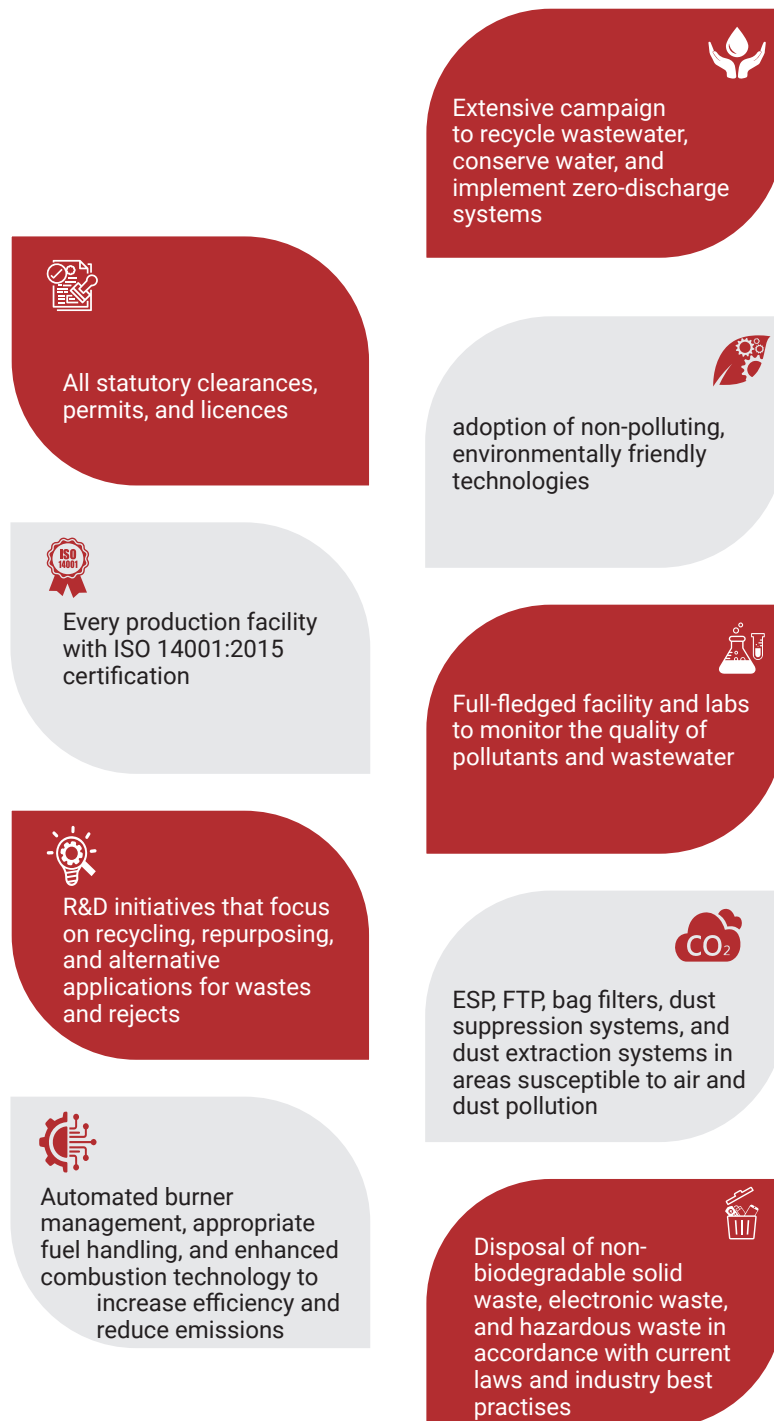
Full-fledged Safety, Health, and Environment Department has been established in our industrial sites to measure, monitor, assess, and control numerous environmental indicators as well as to implement environmental protection measures.

Enough resources are set aside to implement pollution-control techniques and embrace new technologies as required by ever-increasing regulations and standards. Retro-fitting ESPs and implementing high concentration slurry disposal are a couple of the steps being taken in this area. Emissions have been consistently brought-down and efficiency has increased as a result

of improved combustion technology, efficient fuel handling, automated burner control, and fume/gas treatment.

Through in-house and joint R&D initiatives, we have consistently advanced the quest for viable alternative applications for wastes and rejects. We are using state-of-art technology to minimise water pollution and attain zero discharge to aquatic bodies by recycling waste and sewage water. According to established protocols, all hazardous waste are handled, stored, and disposed. Particular attention is paid to fluoride pollution in the smelter plant because of potential for contamination. Our objectives and policies are periodically reviewed and updated. In order to lessen detrimental effects on biological resources and natural ecosystems, our mines and other units actively support biodiversity protection.





# Environmental Risk and Concern Management

The management and mitigation of environmental hazards emanating from Environmental Aspects & Impact Analysis is commensurate with our avowed focus of causing the least amount of environmental harm. Risks that have been identified are dealt with using the appropriate mitigation strategies in a priority-based manner. Our research and development endeavours in the fields of hazardous waste disposal and waste management have produced remarkable outcomes. The risk to our plants from the environment is shown in the matrix following.



## Mines

Concern	Mitigation
<b>Air Pollution:</b> <ul style="list-style-type: none"> <li>● Emission from heavy vehicles</li> <li>● Fugitive Dust emission 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 minimize emissions from vehicles</li> <li>● Water spraying on haul roads and stockpile area with 6 nos. of 28 KL mobile sprinkler and fixed automatic sprinklers to suppress dust from haul roads</li> <li>● Suitable blast design and delayed blasting using NONEL detonators to minimize dust generation</li> <li>● Fog cannons to suppress dust near stockpiles</li> <li>● Adoption of vacuum suction/wet drilling in all drill machines</li> </ul>
<b>Water Pollution:</b> Wastewater from Mining, Canteen, Vehicle Washing and sewage from toilets	<ul style="list-style-type: none"> <li>● Established as a water-positive mine in a study conducted by M/s Geoenvitech Services</li> <li>● In-situ peripheral barrier all around the active mining area to prevent rain water from going out</li> <li>● Check dam at strategic points to filter muddy water if any from mining area</li> <li>● Collection Of Rainwater In mining areas in ponds and percolation of collected water into ground</li> <li>● Canteen waste water treated in biological treatment units, wash water from vehicle washing areas treated in oil water separators. Treated water from the canteen and vehicle wash area fully re-used for dust suppression and plantation</li> </ul>
<b>Noise pollution</b> Noise during blasting and operation of heavy vehicles	<ul style="list-style-type: none"> <li>● Blasting has been replaced with ripping and dozing</li> <li>● Peripheral plantation to prevent propagation of noise</li> <li>● Selection Of Suitable Equipment Generating less noise, provision sound proof cabins HE and provision of PPEs to workers</li> </ul>
<b>Solid Waste Pollution:</b> Overburden material from excavation of minerals. Organic waste from the canteen	<ul style="list-style-type: none"> <li>● 100% reuse of topsoil and overburden fully reused for backfilling of mined out areas</li> <li>● Biogas Plant To Treat the Organic Waste</li> </ul>
<b>Land Degradation</b> Excavation of overburden and ore material by blasting and use of machinery	<ul style="list-style-type: none"> <li>● Concurrent mining and backfilling of mined out areas</li> <li>● Rehabilitation of mined out areas with extensive plantation convert barren land into a forest</li> </ul>

## Captive Power plant

Concern	Mitigation
1. Air Pollution i) Flue Gas from Boiler. ii) Fugitive Dust from Coal and Ash Handling Area. iii) Heat emission in flue gas to the atmosphere	1. Air Pollution: <ul style="list-style-type: none"> <li>● Ash and other particulate matters are extracted by ESPs provided in flue gas paths.</li> <li>● Dust Extraction and Sprinklers systems are provided in Coal and Ash Handling areas to control fugitive dust</li> <li>● Air Heater and Economisers are provided to recover heat from flue gas</li> </ul>
2. Water Pollution i) Effluent Waste water ii) Sewage Waste water iii) Surface runoff water	2. Water Pollution: <ul style="list-style-type: none"> <li>● Effluent treatment plant is provided for treatment of industrial waste water. The treated water is used for ash slurry making. Decanted water from the ash pond is reused for ash slurry making</li> <li>● Sewage Treatment Plant is provided for treatment of Sewage Waste water. The sewage wastewater after treatment is reused for Horticulture &amp; plantation purposes</li> <li>● Rainwater Harvesting and Recycling system has been implemented. This system includes a pond with a capacity of 50,000 m3 and two pumps with a combined capacity of 500 m3. The harvested and recycled rainwater is utilized for replenishing the Fire hydrant Fore bay of RCPH-1 and for various plant purposes. Further, roof-top rainwater harvesting systems have been installed at the CW pump house and RCPH</li> </ul>
3. Land Contamination: i) Mill Rejects ii) Ash iii) Scraps (Metallic and Non-metallic scraps)	3. Land Contamination: <ul style="list-style-type: none"> <li>● Mill Rejects are stored in demarcated low lying areas for disposal to authorized parties for reuse</li> <li>● Both bottom ash and fly ash from ESPs are disposed of in lean slurry mode to abandoned mine void at South Bharatpur (OCP) and also to Ash pond in slurry form. Dry Ash is also used for low lying area filling, disposed to ash brick making under a subsidy scheme</li> <li>● The Scraps are sold to recyclers</li> </ul>

Smelter	
Concern	Mitigation
1. Air Pollution i) Fluoride & particulate emission from the FTP/FTC stacks due to pot operation ii) Generation of PFC during anode effect	1. Air Pollution: <ul style="list-style-type: none"> <li>● Fluoride emission is controlled by adsorption of fluoride gas in alumina in FTPs &amp; FTCs. Total fluoride emission is being maintained below the norm. On-line continuous laser based fugitive fluoride monitoring system is installed in Pot Line - 1 to 4</li> <li>● A pneumatic transfer system of coke dust is in operation to minimize dust generation</li> <li>● The Smelter plant is equipped with ALPSYS pot regulation system, which minimizes anode effect by timely dosing Alumina</li> </ul>
2. Water Pollution: i) Generation of fluoride contaminated surface runoffs	2. Water Pollution: <ul style="list-style-type: none"> <li>● Surface run-offs are collected in three HDPE lined holding pools through dedicated drains. The fluorinated surface run-off is treated in De-fluoridation plants. (Operated on Ion Exchange technology and latest Emrion Nano Technology). The treated water is then recycled for cooling, horticulture &amp; other plant use. Garland drains around hazardous waste storage &amp; handling areas collect the contaminated surface run-off and transfers to holding pools for treatment</li> </ul>
3. Land Contamination: Generation of Hazardous waste like (i) SPL, (ii) Dross, (iii) Shot blasting waste etc.	3. Land Contamination: <ul style="list-style-type: none"> <li>● SPL is stored in impervious lined engineered landfill &amp; in concreted sheds to prevent land contamination. Carbon portion of SPL is segregated &amp; is stored separately in concreted floor sheds for future utilization in energy recovery. Total 13,965.910 MT SPL Carbon portion (HW) disposed to third party M/s. Green Energy, Sambalpur in 2022-23 for utilisation of its energy value</li> <li>● Aluminium Dross is recycled for making bath material for feeding into the pots. Legacy dross is sold to recyclers. Total 58,607 MT Dross sold to authorised vendors for recycling during FY 2022-23</li> <li>● Shot blasting waste, Induction furnace slag, Rejected lining of furnace, ladle cleaning residue etc. is being disposed off in common Hazardous waste landfill at Sukinda, Jajpur</li> </ul>

Alumina Refinery	
Concern	Mitigation
1. Air Pollution: i) Stack Emission ii) Dust in Calcined Alumina, Bauxite, Coal and Ash handling areas	1. Air Pollution: <ul style="list-style-type: none"> <li>● Electro-Static Precipitators (ESPs) are provided in Boiler for collecting particulate matters from Flue Gas of Boiler. ESP is provided in Calciners for collection of alumina dust generated in the calcination process</li> <li>● Bag filters and de-dusting systems are provided in alumina loading and unloading areas to prevent dust emission. Sprinkler and de-dusting system are provided in Lime handling area, Red mud pond area, Ash, Coal and Bauxite handling areas to control fugitive emission</li> </ul>
2. Water Pollution i) Waste effluent ii) Sewage & Waste water iii) Surface Run-off water	2. Water Pollution: <ul style="list-style-type: none"> <li>● Effluent water is collected in a holding pond, and recycled back in the process at Alumina Refinery</li> <li>● Recycling and reuse is being done for the waste water at the RMP / Ash Pond for process use at Alumina Refinery</li> <li>● Sewage Wastewater is treated in Sewage Treatment Plant and the same is reused for Horticulture purposes</li> <li>● Surface run-off &amp; storm water is stored in the Sabari Lake and disposed of outside after necessary treatment if required</li> </ul>
3. Land Contamination i) Lime grit ii) Red mud iii) Ash	2. Land Contamination: <ul style="list-style-type: none"> <li>● Lime Grit is disposed to red-mud pond. A part of Lime grit is utilized for Road /land development inside plant</li> <li>● Red mud is disposed to red-mud pond</li> <li>● Fly ash is disposed to ash pond. Dry ash is utilized in a number of ways like low lying area filling, brick making, supply to cement plants, Road development etc.</li> </ul>

# Environment Management Highlights in 2022-23



## Mines

- 1,10,773 numbers of trees were planted in and around Mines against the target of 1,10,000.
- Further, 5,000 numbers of fruit bearing seedlings were distributed to local villagers to improve awareness about plantation among the villagers.
- 7,000 square meter of grass-turfing was carried out inside the Mines as per the target. 4,000 numbers of bamboo plantation has been done near village Karidiguda to reduce propagation of noise from belt.
- A rock garden has been developed at Mines to improve the landscape. A coffee garden was developed to encourage experimental plantation.
- Two nos. of fog cannons have been procured to suppress dust near stockpiles. Fixed automatic sprinklers of 3.8 km length have been established in the South Block and Central Block to suppress dust generated from haul roads.
- Mines has been established as a water positive mine in the study conducted by M/s. Geoenvitech Services Pvt. Ltd., Bhubaneswar.
- 119 employees have been imparted EMS awareness training.



## Alumina Refinery

- Alumina Refinery has achieved 100.63% fly ash utilization against the utilization target of 100% given by statutory authority for the financial year 2022-23.
- Alumina Refinery has planted 16,006 trees against a target of 15,000.
- Renewal of license for storage and use of Naptha in favour of the Alumina Refinery has been issued by Dist. Collector, Koraput, license validity is upto 31.12.2024. NoC re-ceived from DOWR, for re-routing of two numbers of water courses passing through the proposed construction area of 2nd Red Mud Pond (a condition in the CTE) for Alu-mina Refinery.
- E-waste have been channelized to authorised collection centres/ Recycler as per E-waste Management & Handling Rule. Hazardous wastes (discarded asbestos and used oils) are channelized through the authorized agency. Plastic wastes (Used filter cloth) are disposed through authorized co-processing cement plant. Empty Chemical con-tainers/Barrels are being disposed of through authorized recycler.
- For disposal of high concentrated mud, the work for Red Mud Pond-2 has been award-ed and in progress, which will be completed in time.
- Retrofitting work for Boiler #2, Boiler #4 and Pass-A of Boiler #3 ESP have been completed.



## Smelter

- Total 13,965.910 MT SPL Carbon portion (HW) disposed to third party M/s. Green En-ergy, Sambalpur for utilisation of its energy value.
- Total 58,607 MT Dross (HW) sold to authorised vendors for recycling.
- Total 24 nos. of online fugitive fluoride monitoring system installed in Pot line - I, II & III and linked with OSPCB server. Installation and commissioning of surveillance cam-eras (3 numbers) for monitoring of fugitive emission and stack emission completed.
- Installation and commissioning work of SO2 Analyse in Bake oven stacks (FTC-1 & 2) completed.
- Contract has been awarded to M/s. Re Sustainability Ltd. (formerly Ramkey Enviro Engineers Ltd.) for disposal of Carbon Area hazardous waste.
- Re-calibration and data validation of PM-CEMS for Star Rating Programme carried out in June, 2022 and February, 2023 for ten major stacks (FTP-1 to 8 attached to Pot line & FTC-1 to 2 attached to Bake Oven) and submitted to OSPCB.
- Disposal of induction furnace slag through e-auction route to the recyclers started.



## CPP

- Consent to Establish (CTE) has been received from State Pollution Control Board (SPCB) in November, 2022 for construction of 5th phase ash mound by increasing the height of Ash Pond-II from 115 to 123 MRL. Consent to operate for ash filling at Alekha Mahima Temple, Angarabandha was granted by SPCB on 05.01.2023.
- DFDS (Dry fog dust suppression system) has been installed at CHP-II crusher house on 27.07.2022. Additional settling pit has been constructed at the ash pond of size as per the direction of SPCB on April, 2022.
- To further reduce the turbidity of ash slurry recycle water from Ash pond and mines void, another clarifloculator of 3,000 m3/hr capacity has been installed and commis-sioned on 22.11.2022 inside plant. The recycle water after treatment is being re-used for ash slurry making and other use in plant.
- The ash utilization for the year 2022-23 is 121.29%.
- In the year 2022-23 around 6,34,270 MT of dry ash has been supplied to brick manufacturer under fly ash incentive scheme.
- To further improve stack emission, revamping of 1st 4 fields of ESPs of Unit-5 & Unit-6 has been carried out during annual overhauling of the unit.
- 2 numbers of effluent monitoring system and HDIP camera has been installed i.e. one at the exit point of plant (towards Gotmara village) and another at the outlet of settling tank, as ash pond for monitoring of waste water quality.
- During the financial year 2022-23, 20,68,210 cubic meter of ash pond decanted water, 45,33,885 cubic meter of industrial drain water, 2,06,06,976 cubic meter of mine void overflow water, 33,18,120 cubic meter of water from rain water harvesting, 11,24,000 cubic metre of seepage water from ash pond were recycled back to plant and re-used in plant purpose.





# Responsible Consumption of Materials

Our raw material strategy entails ensuring the consistent availability of input raw materials and also, resource conservation through diligent monitoring and control of consumption.

In order to achieve the specific consumption benchmark targets established by our Board-level Technology Committee, raw material consumption is assiduously monitored. NALCO is committed to optimum usage of raw materials through technology, process redesign, and waste minimization.

Materials Used by Weight or Volume						
Head	Materials Consumed	Unit	Source	FY 2020-21	FY 2021-22	FY 2022-23
Raw Material	Bauxite	Mt	Internal Production	73,46,377	73,77,009	73,28,937
	Alumina	Mt	Internal Production	8,09,241	8,91,723	9,15,770
	CP Coke	Mt	External Suppliers	1,62,197	1,73,727	1,83,222
	CT Pitch	Mt	External Suppliers	38,742	43,030	43,449
Associated Process Material	Caustic Soda	Mt	External Suppliers	2,40,266	2,64,677	2,56,170
	AluminiumFlouride	Mt	External Suppliers	7,440	8,075	8,526
	Lime	Mt	External Suppliers	59,857	62,077	63,625
	Explosives	Mt	External Suppliers	574	427	51*
Packaging Material	HDPE fabric	m^2	External Suppliers	6,82,231	4,97,362	8,97,686
	Wood in wooden pallets	CFT	External Suppliers	74,836	45,247	72,513
	Steel Straps	Mt	External Suppliers	154	199	199
	Polyester Strap	Mt	External Suppliers	91	88	106

\* Explosives consumption in Bauxite Mines during 2022-23 was Nil as the blasting was stopped from April'22. However, 50.904 Tons of explosives (Site mix emulsion explosive) was used for trial blasts through outsourcing in 2022-23.

## Recycled Input materials

Aluminium can be infinitely recycled and recycling of aluminium scrap presents a opportunity for circular economy. We have recycled about 8167 MT of aluminum scrap, nearly all of it generated internally, by remelting in our furnaces and making products at our smelter.

Red mud is the indigestible portions of the bauxite ore during the alumina refining process. Red mud is thoroughly cleansed and thickened, to minimise the quantity of caustic liquor that is released along with it. After being cleansed, red mud is pumped into and stored in a pond with special lining. Solids in the pond sink to the bottom, and as the water rises to the surface, it gets clearer and is pumped back to the plant. The plant uses this surface water for mud washing and other purposes. Each litre has roughly two to three grams of caustic soda in it.



Caustic Soda recycling from red mud in (%)



## Energy

Driven by the energy-intensive nature of aluminium production, and also realise cost savings and gain competitive edge, we have focused on energy-efficient technology and also on taking up every energy-saving opportunity. Our resolve has been further strengthened with impetus from the National Mission on Enhanced Energy Efficiency, which was carried out by the Ministry of Power’s Bureau of Energy Efficiency. This mission requires firms to increase their overall energy efficiency. The use of sustainable energy, enhancements in energy efficiency, and energy conservation are all essential measures in mitigating the hazards associated with climate change.

NALCO’s energy policy places a high priority on maximising energy conservation and efficiency because the company is dedicated to improving its energy

performance. With an efficient Energy Management System in place, our Alumina Refinery, Captive Power Plant, and Aluminium Smelter have received ISO50001 certification. Qualified and accredited energy auditors conduct thorough on-site energy audits of all production units. The Energy Auditors identify opportunities for energy savings, which are then carefully assessed and gradually adopted for implementation. Under PAT cycles I and II, our Smelter-Power Complex and Alumina Refinery have met the SEC (Sp. Energy Consumption) standards set by BEE (Bureau of Energy Efficiency).

### Energy consumption within the organization

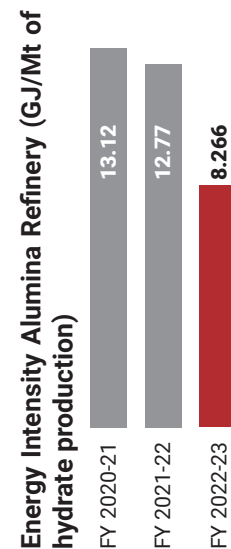
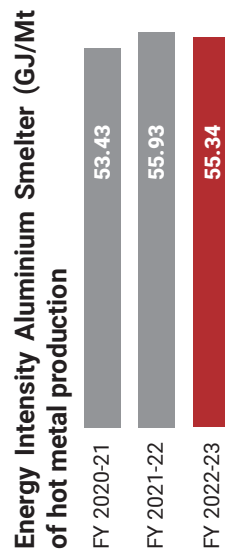
The total energy consumed from all fuels and imported electricity in our operations in 2022–2023 was 10,29,41 TJ. The energy consumption was computed using the site-specific calorific values. IPCC calorific values were used in the absence of site-specific values.

## Energy Consumption from Fuel & Electricity

Energy (GJ)	FY 2020-21	FY 2021-22	FY 2022-23
HFO	79,28,602	81,55,057	80,25,770
LPG	603	727	734
LDO	1,83,883	1,60,225	1,47,218
Diesel	3,11,098	2,92,457	2,48,164
Coal	10,00,22,337	9,16,57,353	9,01,59,018
Indirect Energy consumption (Net Electricity Imported)	1,42,255	49,53,024	43,59,616
Total Energy Consumption from Fuel and imported electricity	10,82,55,106	10,52,18,842	10,29,40,519

Roof-Top Solar Energy Consumption in FY 2022-23 : 2529 GJ

## Energy Intensity



## Reduction of energy consumption

Energy conservation is crucial to our sustainability strategy. Adoption of energy-efficient technology, acquisition of energy-efficient goods and services and designing for improved energy efficiency is explicitly stated in our energy policy. The same continues to be a key factor in forming our decisions on the technology and equipment to buy and shapes our planning process.

We encourage our personnel to come up with energy-saving ideas apart from engaging with project

consultants, equipment suppliers, and energy auditors to identify opportunities for energy savings.

Any kind of energy waste, misuse, or overuse is discouraged, and the company has been successful in creating awareness and instilling an energy-saving culture.

## Energy conservation initiatives

The ever-present emphasis on energy conservation in NALCO is exhibited through key initiatives listed below in the reporting year 2022-23.



### Bauxite mines



- Reduction in diesel consumption in dumpers by use of fuel additive has resulted in savings of around 41.625 KL of HSD.
- Reduction in diesel consumption by parking of vehicles at mining face has resulted in saving of around 128.5 KL of HSD.
- Reduction in diesel consumption by increasing usage of backhoe shovels in place of ripper dozers-wheel loader combination has resulted in savings of 104.9 KL of HSD.
- Reduction in diesel consumption by direct loading of Bauxite to tippers from Mining Pit has resulted in savings of 187 KL of HSD.
- Commissioning of new 50.76 KWp grid connected roof top solar plant was completed ready for hook up after necessary statutory clearances. This is in addition to existing 130 KWp Rooftop SPV plant commissioned in 2021.
- Modifications carried out in the logic and control circuits of conveyor system VFD and AC cooling system to reduce the idle energy loss.

### Alumina Refinery



- Energy saving of 4,77,000 KWH was achieved through installation of 5,350 nos. of LED systems in place of conventional light fittings.
- Replacement of low efficiency ACs & motors with energy efficient versions was carried out.
- Continued use of Fuel-additive in Calciners & Dewatering aid in Drum Filters, leading to reduction in HFO consumption (upto 1.5%).
- Steam traps renovation & steam leakages rectification was done to avoid steam loss.
- Control logic developed for auto start/stop of PH-3 turbid pump 750 A&B as per requirement, so as to save energy.
- Operation of Boiler-2 ESPs in charge-ratio mode has resulted in reduction in energy consumption.

### Smelter Plant



- Additional 44 pots have been Graphitised during 2022-23. Total 897 graphitized Pots are in operation 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 resulting in saving of Specific DC energy consumption around 150KWH/MT.
- A total of 374 nos. of motors (ranging from 0.37 KW to 55KW) were replaced in 2022-23 with energy efficient IE3 Motors leading to in energy saving of 10,25,515.34 KWH/annum (1.03 MU).
- 950 nos. of 18W/20W LED tubes against 40W T-12 FTL, 120 Nos. of 150W high bay LED light fittings against 400W HPMV lamps, 40 nos. of LED flood light fittings 400W flood light and 25 Nos. of 120W LED Street lights against 250W HPMV light fittings were replaced resulting in energy saving of 4,88,114.50 KWH/annum.
- 02 nos. of desiccant dryers were replaced with energy efficient Refrigerated dryers. Similarly, one old Reciprocating and one Screw Compressor were replaced with centrifugal compressors.
- Installation of 84 nos. Main Ring Dampers at Anode Baking Furnace (ABF)-I was commissioned to reduce Fuel oil consumption in Baking furnace.

### Captive Power plant



- Renovation and Modernization (R&M) of existing Air Preheater in Unit-5 with advanced profile heating element, double sealing arrangement and VFD drives for improvement of Boiler efficiency and reduction in Auxiliary power consumption has been completed in November, 2022. Boiler efficiency improved by more than 1%. Fan power consumption reduced by more than 400 KWH.
- Installation and commissioning of booster pump was done for ESP internal washing in place of high capacity firefighting pump for effective cleaning. Besides effective cleaning, there is a power savings of 7,013 KW in each overhauling.
- Chemical cleaning of condensers in Unit #7 was carried out in August, 2022. Improvement in condenser vacuum from 0.839 kg/cm<sup>2</sup> to 0.891 kg/cm<sup>2</sup> has been achieved, thereby resulted reduction in coal consumption.
- The old inefficient HPH-6 in Unit-5 has been replaced with new HPH in November, 2022. After replacement the feed water temperature to boiler has increased from 212°C to 232°C, which resulted in improvement of unit efficiency.



## Renewable Energy

NALCO generated 280 MU wind energy and 0.703 MU solar energy over the course of the reporting year.

Four Wind Power Projects, 50.4MW at Gandikota, Andhra Pradesh, 47.6MW at Luderva, Rajasthan, 50 MW at Devikot, Rajasthan and 50.4 MW at Jath, Maharashtra are in operation. Another Wind Power project of 25.5 MW at Kayathar, Tamil Nadu has been undertaken.

During the reporting year, total Roof-top Solar PV plants installation of capacity 800 kWp were operational at Corporate Office, NALCO Township, NALCO Research and Technology Centre (NRTC) at Bhubaneswar, Alumina Refinery and Bauxite Mines. Additional roof-top solar capacity of 50.76 kWp at Bauxite Mines was commissioned during the year.



Roof Top Solar installation at Mines



Wind power plant Devikot, Rajasthan

Wind Power Plant	
Place	Energy (in MW)
Gandikota, Kadapa, Andhra Pradesh	50.4
Jath, Sangli, Maharashtra	50.4
Devikot, Jaisalmer, Rajasthan	50
Ludarva, Jaisalmer, Rajasthan	47.6

FY 2020-21	5.2
FY 2021-22	7.3
FY 2022-23	7.03

### Solar Power Generation in Lakh Units

FY 2020-21	285
FY 2021-22	320
FY 2022-23	280

### Wind Power Generation in MU (Net)

# Water Stewardship

Together with nations and industrial sectors, NALCO is concerned regarding the availability of water and deeply committed to its responsible usage. Water is a special resource that forms the basis of all growth elements. India's industrial sector must carry the onus of managing and preserving precious water resources aggravated by the nation's fluctuating rainfall patterns and depleting groundwater reserves. In order to achieve responsible and sustainable water usage, the International Council on Mining and Metals (ICMM) released a new water stewardship position statement. This statement highlighted the importance of strong and transparent corporate water governance, effective

water management at operations, and collaboration. Taking cue, we have shown leadership in water management by conserving water, maintaining the quality of the water, and collaborating with nearby communities to maximise water resources.

An essential part of our management approach is the wise use of water resources. Our project planning includes water management as a critical component, which is carried through to success by utilising the latest technological advancements. To further preserve water, we have installed high-volume water recycling systems for Red Mud Pond and Ash Pond.

We have systems in place at all of our mines and plants to treat sewage and wastewater before using it for horticulture and production. Following the successful implementation of a wastewater zero discharge policy, we are currently pursuing prospects for groundwater recharge and rainwater collection.



At our smelter plant, a first-of-its-kind water treatment facility for treatment of fluoride contaminated surface run off & subsequent recycling as cooling water based on "Emrion Nano Technology" is operational. In the reporting year, 296260 cubic meters of waste water was recycled through the same. Augmentation of the Plant from 1.0 MLD to 2.0 MLD in 1st phase has been taken up.

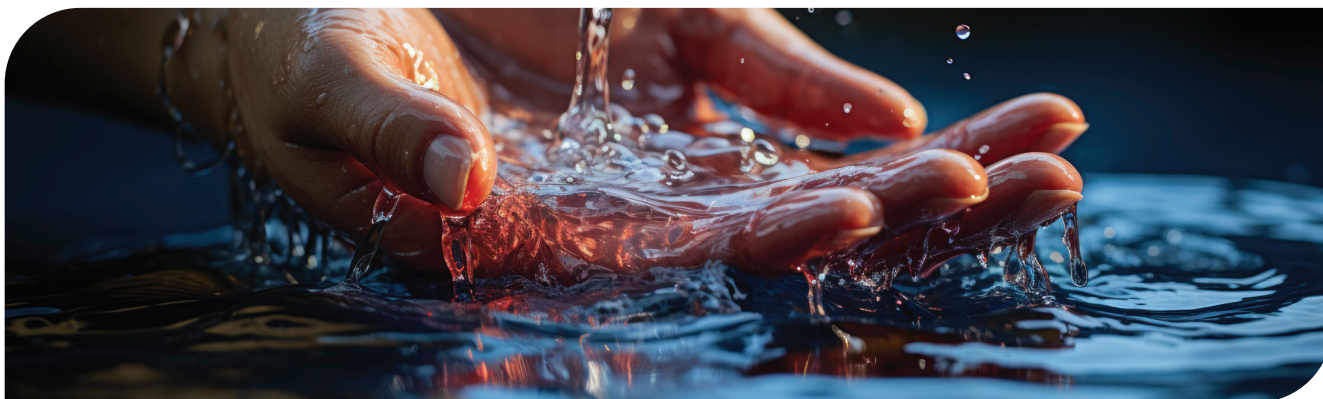
## Water Withdrawal by Source

Surface Water	Unit	Source	FY 2020-21	FY 2021-22	FY 2022-23
Smelter & CPP incl. township	ML	Brahmani River	40,116.40	37,428.52	35,717.3
Alumina Refinery Incl. township	ML	Kerandi River	8,759.98	8,614.89	7,821.18
Bauxite Mines	ML	Jholaguda stream	624.44	699.79	774.27
Total surface water withdrawal	ML		49,500.82	46,743.2	44,312.745

## Water discharge by quality and destination

Our organisation runs production facilities that use Zero Liquid Discharge (ZLD). Reused water is used in horticulture and other plant activities. We have established the proper treatment facilities for ash pond overflow water, industrial effluent, and sewage water.





## Water Conservation measures in 2022-23

### Mines

Several measures have been adopted at Mines for conservation of water. Better management of pumping of water to overhead tanks was being done to reduce overflow. Fixed water sprinklers were used on haul roads which reduce water consumption as compared to mobile sprinklers. Sensor based fittings are used in toilets to reduce wastage. There is 100% reuse of treated waste water from canteen and vehicle wash area. Rain water harvesting ponds have been constructed for collection of rainwater and use for plantation, etc. with a total storage capacity of appx. 65880 cub.mtr. An in-situ peripheral barrier has been constructed all around the mine pit which prevents any rain water from going down below the valley. The entire runoff from the mining pit percolates into the ground thus recharging the groundwater.

### Refinery

Apart from all the measures to prevent wastage or overflow of water and to maximize recycling of waste water through STP, Ash-pond water recycling system and Red-mud pond water recycling system, rain-water harvesting was taken up to conserve water. In the reporting Year, four nos. of roof-top rain-water harvesting projects were operational at Administrative Building, training Centre and ED's residence.

### Smelter

Surface run-offs of Pot-line area & Carbon area along with waste water from the shop floor is collected and stored in three nos. of Holding pools of capacity 100,000 m<sup>3</sup>, 51000 m<sup>3</sup> & 38000 m<sup>3</sup> respectively which is then treated in Ion-Exchange De-fluoridation plant & Emrion Nano De-fluoridation plant. Treated water from Ion-Exchange De-fluoridation plant is used for Plantation and anode cooling at Carbon area. Treated water from Emrion Nano De-fluoridation plant is used as cooling water make-up. Non-fluorinated surface run-off from MES, Cast House, 220KV Sub-station and Utility area flowing through Drain-1 is collected in Twin sump (Zero Discharge sump) and recycled for horticulture use, vehicle washing and civil construction. A portion of surface run-off previously flowing outside is re-routed to Holding pool by changing its gradient which is subsequently treated in ETPs for plant use. A concreted reservoir with pump house have been constructed along with garlanding drain around SPL Shed and Dross storage area to prevent land contamination and the accumulated water is pumped to holding pool through dedicated pipelines which is subsequently treated in ETPs for plant use. Another concreted reservoir with pump house have been constructed near Hazardous Waste Landfill to prevent land contamination and the accumulated water is pumped to holding pool which is subsequently treated in ETPs for plant use. A dam has been constructed near Watch Tower 23 for conservation & reuse of non-plant water flowing through culvert. Consultancy Proposal to utilize this water after treatment is underway. Around 150 to 200 KLD water is conserved through recycling of subsoil water collected below the pot- line 3 & 4 which is used as makeup water for compressor cooling and fire fighting. Effluent water of Hazardous Waste incinerator is being recycled in to the scrubbing system after filtration. Sewage water from canteen, kiosk, toilets and urinals is treated in STP of capacity 0.65 MLD . Treated water from STP is sent to Holding pool for further treatment at ETPs and subsequently recycled inside Plant premises. A project has been undertaken to reuse treated water from the STP of S&P township for horticulture, gardening, etc. Rain water Harvesting has been implemented in township expansion buildings. The rainwater from the roof tops of new quarters is channelized to 3 charging wells to charge the ground water.

### CPP

Recycling of waste water through the STP and ETP was duly operational. Wastewater from Ash-pond was recycled back into the process. A Clariflocculator with a capacity of 3000 m<sup>3</sup>/hr has been installed to further reduce turbidity in the recycled water obtained from the Ash Pond and mine void. This treated water is used for reuse in various plant processes, including ash slurry preparation and other plant purposes. A rainwater Harvesting and Recycling system has been implemented. This system includes a pond with a capacity of 50,000 m<sup>3</sup> and two pumps with a combined capacity of 500 m<sup>3</sup>. The harvested and recycled rainwater is utilized for replenishing the Fire hydrant Fore bay of RCPH-1 and for various plant purposes. Further, roof-top rainwater harvesting systems have been installed at the CW pump house and RCPH.

## Water Recycled and reused

We have successfully maintained zero discharge of sewage water and wastewater from our facilities. Rainwater collection, surface run-off containment, sewage and effluent treatment and recycling, and groundwater replenishment systems are operational in our production Units. Utilising the water from the ash and red mud ponds for recycling is another noteworthy achievement.

### Conservation and Recycling of Water

Source	Unit	FY 2020-21	FY 2021-22	FY 2022-23
<b>Bauxite Mines</b>				
ETP and STP	ML	76.65	76.65	76.65
Water Recycled/Reused as proportion of fresh water intake to Bauxite Mines	%	12.27	10.95	9.9
<b>Refinery</b>				
STP	ML	551.00	551.00	551.00
Ash Pond	ML	7427.77	8034.64	7836.44
Red Mud Pond	ML	3443.25	4403.63	4227.6
Water Recycled/Reused as proportion of fresh water intake to Alumina Refinery	%	130.00	150.78	161.28
<b>Smelter</b>				
Emrion Nano DF Plant, Ion-Exchange DF Plant, Zero Discharge Sump, Sub soil water	ML	851.182	806.39	762.04
Water Recycled/Reused as proportion of fresh water intake to Smelter	%	48.00	44.6	43.95
<b>CPP</b>				
STP	ML	50.5	50.50	50.5
ETP	ML	4772.807	5138.65	4533.88
Ash Pond decanted and Mine-void (Lean Slurry project)	ML	18570.28	14477.86	22675.186
Water Recycled/Reused as proportion of fresh water intake to CPP	%	80.15	88.7	123.35

## Biodiversity

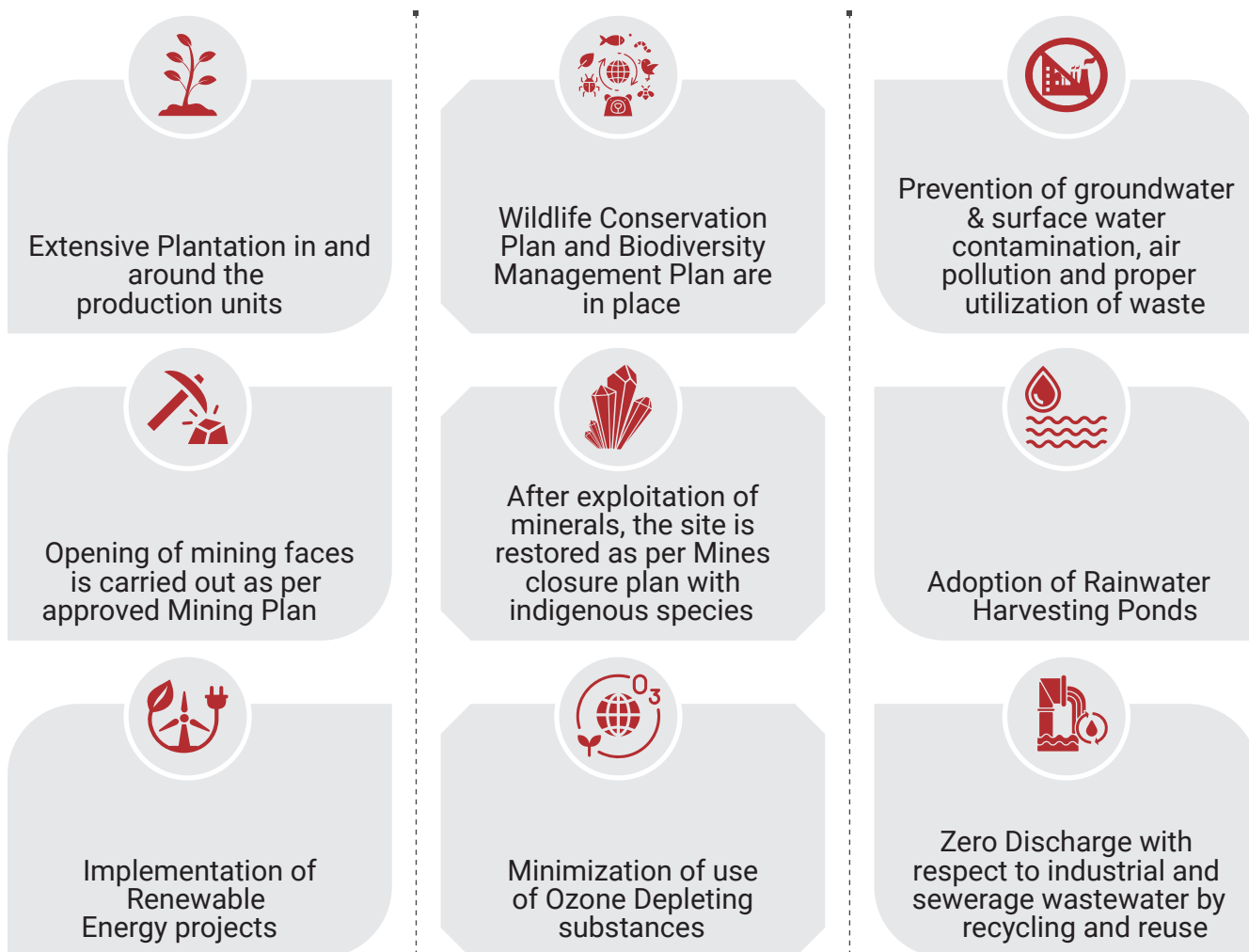
The diversity and abundance of organisms and ecosystems found in nature, or biodiversity, is a fundamental focus of global sustainability. There is universal agreement on the need to halt and reverse the loss of biodiversity and the deterioration of the world's ecosystems. Governments and corporations are geared up address biodiversity across the globe as led by the United Nations. Sustainable forest management, along with halting desertification, reversing land degradation, and preserving biodiversity, are the goals of SDG 15.

Ecosystems may be substantially impacted by mining operations, which may also have a detrimental effect

on biodiversity. Direct impacts include air emissions, degradation of the land, and discharges into aquatic bodies. Changes in the social or environmental sphere always have an indirect effect.

We have worked hard to ensure that our operations are managed in a way that complements the surrounding forest cover and the development of green belts. None of our locations are close to a World Heritage Site or a hotspot for biodiversity. The International Union for Conservation of Nature (IUCN) lists areas that are protected or have high biodiversity values and are at risk of directly affecting ecosystems that could jeopardise species on the IUCN Red List as being more than ten kilometres away from the bauxite mine.

## Preservation of Natural Resources, Ecosystems & Biodiversity





As part of environmental & societal obligations NALCO had commissioned a study on biodiversity near the Panchpatmali Bauxite Mine by the Botany Department of Utkal University. A wildlife management plan for both leases was prepared duly approved by the State Forest Department. NALCO has implemented the suggested measures for the conservation of biodiversity. Even though our bauxite mines are situated in high terrain, the hill-tops where bauxite is found are barren, with only a few scattered bushes and there is minimal chance of damage from mining. Large-scale plantation operations have improved the vegetation on the hillsides. Every year, more than one lakh indigenous variety saplings that are economically valuable, provide fruit, and support forests are planted in the Mines and their environs.

## Afforestation activities & wildlife conservation



Stop soil erosion and restore the area's ecology



Prevent the spread of noise



Plant native trees to restore the mined-out regions



To prevent dust from spreading to other areas, create a green belt around the mining area's perimeter



Fulfil the community's needs for fuel, feed, and timber



Increase ground water recharge and restore the area's visual appeal

Dry Deciduous Forest (Forests that are characterised by tall trees they shed their leaves during winter) and Dry Deciduous Savannah (Forests that have open woodland and dry period for a longer time) are present in the mining lease area. Local species of trees have been introduced to the region through subsequent afforestation. The afforestation plan was created keeping in mind the potential changes in land use that the core area's mining operations could bring about.

Apart from Bauxite Mines, plantation of saplings and afforestation activities are carried out continually in the available space in our Refinery plant & township, Smelter & power complex at Angul through the Horticulture departments operating full-fledged nurseries

Plantation and green development



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

We have a wildlife management plan in place despite the fact that there are no species in the Mines region that are included on the IUCN Red List. The wildlife management plan developed by M/s CEMC, Bhubaneswar, anticipates some effects as a result of mine activities.

Their assessment indicates that there is no tree growth in the mine leasing area (core area) and that the vegetation is mostly composed of scrub, which is home to a few small animals.

The following are the key recommendations that the M/s CEMC report made about the implementation of the established wildlife management plan.

- When working in mines, use appropriate substitute techniques to stop, lessen, or mitigate the adverse impacts on animals nearby the mine.
- Maintaining or increasing food and cover levels in buffer habitats is important while balancing decimating forces.
- To save and improve the essential habitat, start research on the wildlife's usage habits.
- Objectives Prevent harm to wild animals in order to boost public acceptance of conservation management and foster cooperation with ongoing safeguards.

A 1500 square metre butterfly park that is meant to be both entertaining and instructive has been established at the mines. It improves the surrounding wildlife in addition to serving as a venue for employees and guests. Throughout the year, roughly 5000 fruit-bearing seedlings were distributed to local villagers in an effort to spread awareness about planting trees.



# Emissions

NALCO uses appropriate technology and equipment, works on enhancing combustion controls, and implements best practices, with a resolve to lowering GHG and other harmful emissions and limiting emissions to the lower end of the spectrum in compliance with current protocols. In addition to closely monitoring stack emissions of CO<sub>2</sub>, CO, NO<sub>x</sub>, SO<sub>x</sub>, and particulate matter, real-time monitoring stations are also put up to monitor ambient air quality. The OSPCB system receives data from monitoring stations for recording and monitoring purposes. During the reporting period, emissions were within permissible limits. Each year, regulatory agencies receive an Environmental Statement that contains data on emissions

Sites	Source	Pollutant	Unit	Norm	FY 2022-23
CPP	Emission from ESP	PM	Mg/Nm <sup>3</sup>	100	70.89
Smelter	Emission from Pot line FTP Stack	PM	Mg/Nm <sup>3</sup>	100	30.25
Smelter	Emission from Pot line FTP Stack	Fluoride	Kg/Mt	0.3	0.170
Smelter	Emission from Bake Oven	PM	Mg/Nm <sup>3</sup>	50	32.15
Smelter	Emission from Bake Oven	Fluoride	Kg/Mt	0.1	0.0115
Alumina Refinery	Emission from Boiler Stack	PM	Mg/Nm <sup>3</sup>	100	79.53
Alumina Refinery	Emission from Calciner stack	PM	Mg/Nm <sup>3</sup>	50	22.54

\* all figures are yearly average

## Total GreenHouse Gas Emissions

Fuel	Unit	GHG Emissions 2020-21	GHG Emissions 2021-22	GHG Emissions 2022-23
HFO (Scope 1)	tCO <sub>2</sub> e	613,674	631,201	621,195
LDO (Scope 1)	tCO <sub>2</sub> e	13,626	11,873	10,909
Coal (Scope 1)	tCO <sub>2</sub> e	9,612,147	8,808,272	8,664,282
Diesel (Scope 1)	tCO <sub>2</sub> e	23,052	21,671	18,389
LPG (Scope 1)	tCO <sub>2</sub> e	38	46	46
Electricity from Grid (Scope 2)	tCO <sub>2</sub> e	31,217	1,132,426	9,86,969
Emission from PFC (Scope 1)	tCO <sub>2</sub> e	94,166	98,484	107,473
Process carbon Emission from electrolysis in pots (Scope 1)	tCO <sub>2</sub> e	639,641	714,760	710,310
Process carbon Emission from anode baking (Scope 1)	tCO <sub>2</sub> e	59,315	55,725	66,823
Total Scope 1+ Scope 2 GHG Emissions	tCO <sub>2</sub> e	11,086,876	11,474,458	11,186,395

\*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



## Emissions of perfluorocarbons

The principal aluminium reduction process at the smelter produces per-fluorinated compounds (PFCs) such as tetrafluoromethane (CF<sub>4</sub>) and hexafluoroethane (C<sub>2</sub>F<sub>6</sub>), which are continually released during anode effects. They are monitored on a regular basis. By precisely injecting ammonia into the pot at the proper time, the most sophisticated ALPSYS pot regulation system at the Smelter Plant contributes to a reduction in the frequency and duration of anode effect. The findings of calculating the PFC emission from the Smelter Pot line using the AP (Aluminum Pechiney) overvoltage method are as follows:

Particular	Unit	Value
CF <sub>4</sub>	kg/t of Al	0.0305
C <sub>2</sub> F <sub>6</sub>	kg/t of Al	0.0037

Consumption of Ozone Depleting Substances (ODS)					
Particular	Unit	CPP	Refinery	Smelter	Mines
R-22	kgs	305	Not in use	671	Not in use
R-124	kgs	Not in use	Not in use	325	Not in use
R-134a	kgs	Not in use	Not in use	62	Not in use
R227	kgs	Not in use	Not in use	608	Not in use

## Waste

At NALCO, the waste management plan constitutes an essential part of project planning. The types, nature of the waste that is generated, prevalent best practises, along with the regulatory framework and accessible options, all play a role in selecting the appropriate methodology and technology. We keep up with new technological advancements and evolving regulatory requirements while reviewing the waste management plan. We have obtained ISO 14001 environmental management certification for our industrial plants. Environmental management plans and environmental impact assessments duly complement waste management planning. Our waste management system is also verified by external auditors during surveillance audits, and any gaps found are swiftly remedied.

Regulatory agencies that monitor include IBM, the State Pollution Control Board, and the Ministry of Environment, Forests, and Climate Change (MoEF&CC).

Reduce, Reuse, Recycle, and Recover is the 4R idea that guides our waste management practises. Repurposing the wastes that are produced during the process is an important part of NALCO's waste management plan.

The management of waste materials includes the identification, categorization, and responsibility

assignment for their handling, collection, reception, storage, treatment, transportation, and disposal.

- E-waste and battery waste are segregated and disposed of at authorised Collection Centers/ Dismantlers/Recyclers.
- Bio-medical waste generated at medical facilities in Angul and Damanjodi is treated at our own biomedical waste treatment plant facility in accordance with the authorization order issued by the State Pollution Control Board.
- Details of other hazardous waste materials are specified, including their category, authorised quantity as per the Hazardous Waste Authorization granted by OSPCB (Odisha State Pollution Control Board), source of generation, method of storage, and method of disposal.
- The carbon portion of Spent Potlining (SPL) is disposed of to authorised recyclers for detoxification of hazardous components and utilisation of its energy value in an eco-friendly manner. Refractory and mixed fines of SPL are stored under a covered shed. Permission from OSPCB is awaited to dispose of them in CHWTSD (Common Hazardous Waste Treatment, Storage, and Disposal Facility).
- Aluminium Dross is cooled, crushed in an Autogenous mill of an additional bath handling system, where the



*Celebration of World Environment Day at Damanjodi*

metallic portion is recovered, and the remaining dross portion is mixed with bath and used in POTs for anode covering. Legacy stock of dross is disposed of to authorised recyclers.

- Spent Anode Butts are 100% recycled for anode making. Carbon Area Hazardous waste, which includes floor sweeping waste, shot blasting waste, and rejected lining of furnaces, is disposed of at the Common Hazardous Waste Landfill (CHWTSDF).
- Used oil generated during various processes and maintenance activities is kept in secured drums or barrels and stored under a covered shed, equipped with a facility for collecting spilled oil. Used oil is auctioned or sold to authorised reprocessors/recyclers approved by the Odisha State Pollution Control Board.

#### **Non-Hazardous waste:**

- Overburden generated at bauxite mines is 100% re-used in the reclamation of mined-out areas.
- Red mud and Lime Grit generated at the Alumina Refinery are disposed of in the red mud Pond.

- CPP (Captive Power Plant) ash is disposed of in the abandoned mine void of South Bharatpur OCP (Open Cast Project) through pipelines in lean slurry mode. Ash Pond-I is kept in an active stage and used for emergency disposal. Fly ash generated at the Alumina Refinery is used for filling low-lying areas and brickmaking, among other purposes.
- CPP Coal mill rejects are stored in a dedicated reject handling yard for further disposal.
- Ferrous scrap is recycled, reused, or sold to outside agencies. Non-ferrous scrap with economic value is also recycled, reused, or sold to outside agencies.
- Used refractory bricks are used for hard surfacing and road construction inside the plant. Mixed debris is disposed of in low-lying areas.
- Food waste, such as canteen waste and horticulture waste, is converted to compost using a solid waste mechanical waste converter.

## Waste by type and method of disposal

Separation is done at the point of generation of hazardous and non-hazardous wastes. Hazardous wastes are safely disposed of while meeting all applicable statutory requirements, which are listed in the table below and are in line with the established procedure designed for their treatment.

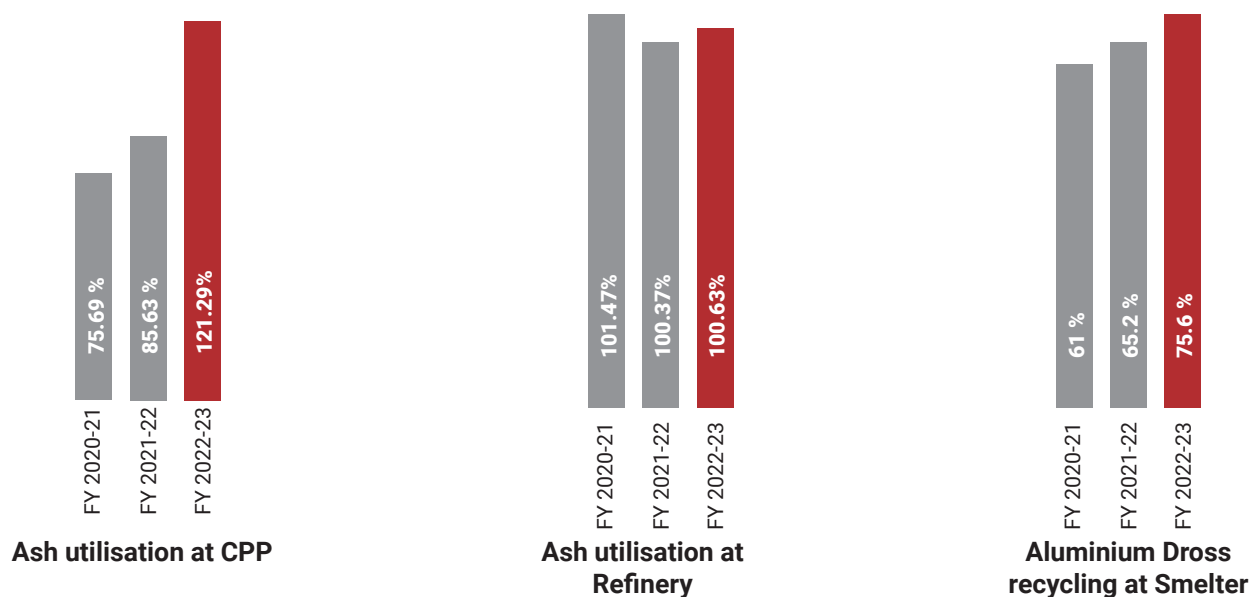
Non – Hazardous Waste Generation Details					
Sites	Non – Hazardous Waste	Unit	FY 2021-22	FY 2022-23	Waste Management Method
Alumina Refinery	Lime Grit	Mt	25,138	26,096	Disposal to red mud pond. A part of Lime grit is utilised for Road /land development inside plant and brick making
	Fly Ash	Mt	616,224	648,626	To Ash Pond and Silos. Utilised in a number of ways like low lying area filling, brick making supply to cement plants, Road development etc.
	Red Mud	Mt	32,41,445	32,53,223	To Red Mud Pond
Smelter	Ferrous Scrap	Mt	1650.535	1367.375	Ferrous Scrap are recycled/ reused/ sold to outside agencies
	Non-Ferrous Scrap	Mt	715.38	8.2	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	5188.74	3457	Refractory Bricks are used for hard surfacing and making roads inside plants
CPP	Fly Ash	Mt	26,93,582	25,06,433	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	9,63,225	9,41,690	These are completely reused in backfilling of mined out area



### Hazardous Waste Details

Sites	Hazardous Waste	Unit	FY 2021-22	FY 2022-23	Waste Management Method
Alumina Refinery	waste residue containing oil	Mt	0.0966	0.1669	Through authorised co-processing cement plant
	Used Oil	kL	91.49	95.82	Disposed through authorised recyclers
	Discarded Asbestos	Mt	32.4	54.4	Disposed through authorised CHWTSDf
	Empty Container	Nos.	2277	3225	Disposed through authorised recyclers
Smelter	Aluminium Dross	Mt	8515	9669.8	Majority portion of Aluminium dross is recycled in the process. Legacy stock of dross is sold to authorised recyclers.
	Waste containing oil, Rejected Filter bags, Rejected AIF3 Bags	Mt	60.39	75.47	disposed of in the HW incinerator.
	Spent Anode	Mt	64609	69895	100% recycled in anode making
	Cathode Residue including pot lining	Mt	4290	2310	carbon portion of SPL is being disposed off to authorised recyclers for detoxification and subsequent utilisation of energy value Refractory portion is segregated & stored inside covered concreted sheds.
	Used Oils	kL	263.355	85.725	Used oils E-auctioned/ sold to re-processors/ recyclers having authorization from OSPCB, Odisha
CPP	Spent Resin	kL	6.2	5.8	Stored in impervious lines pits for final disposal
	Used Oils	kL	137.99	33	Disposed to authorised recyclers
Mines	Used Oils	kL	94.28	81.695	These are disposed to authorised recyclers
	Used vehicle filter	Mt	4.3	6.7	Incineration

## Reusing and recycling of waste



## Overburden Control

The development of bauxite mining results in the scraping off of overburden and topsoil, which is then dumped in the backfilled or mined out area or suitably stacked for reclamation. The recovered ground is suitable for reforestation after the lateritic overburden has been levelled, and enough benches and terraces are created. Topsoil is then applied and appropriately treated. The mined-out area is restored concurrently with reclamation, as per the authorised Mining Plan/Progressive Scheme's Mine Closure Plan. The technique used for the full restoration of the mined-out zones includes backfilling, replanting, and the installation of water basins at strategic sites to ensure proper drainage. Fruit-producing native plant species have been replanted in the backfilled regions.

Soil erosion and the preservation of the virgin area's natural topography are important factors that need to be properly taken into account. The rich foliage that currently envelops our bauxite mine is evidence that these areas were heavily vegetated when they were first planted.



# Social Performance

Social performance is an indispensable enabler in the survival and growth of an industrial unit. To a certain extent, the vitality of any organisation stems from the contribution of its people resources. NALCO assiduously prioritises the social component and fulfils its responsibilities to people in a model manner in order to maintain socio-economic balance. This is imprinted in the value it creates for all of its stakeholders, which includes society, the public, and its employees. As sustainability is ingrained in the DNA of our organisation, we are naturally adept in using thoughtfully designed social development activities to have a positive, meaningful impact.

We have an established track record of enhancing the quality of life for members of the neighbourhood and society at large, and we are ardent proponents of inclusive growth. Through our operations, we create both direct and indirect employment opportunities for individuals and help to accelerate economic activity in the region. Over time, as community development projects have been carried out, the surrounding landscape

has flourished. Community Development's primary focus areas are healthcare, education, drinking water, rural development, environmental sustainability, and the development of Puri, India's iconic city.

We fully commit to the well-being of our employees, which is demonstrated by the policies we have put in place on health and safety, employee benefits, work-life balance, human rights protection, and a safe workplace. Our friendly, open, and growth-oriented work environment allows our staff to perform at the best possible level. The unwavering commitment of employees enables the business to weather challenging business and market conditions and come out stronger. In compliance with current laws and social norms, the Company ensures that no employee falls victim of workplace discrimination on any grounds. Our commitment to bring equitable quality of life for our workers is demonstrated in their pay, benefits, engagement, capability development, social security, and professional advancement.





Flower Show



Hindi Pakhwada



Safety day



Yoga Day

# Employment

Many employee-focused policies, such as adequate remuneration, opportunities for professional growth, fair & friendly working relationships, non-discrimination, and protection of human rights, have been put into place. By fostering a unique, collaborative workplace culture, we are committed to promoting health, safety, and employee empowerment. People are encouraged to realise their full potential and contribute to the growth of the company in the welcoming and encouraging work environment that NALCO provides. We do not discriminate against any of our employees based on their caste, creed, gender, religion, or nativity sticking to the resolve of being we are an equal opportunity employer. The goal of the company's HR procedures is to find, develop, and retain the right personnel in the right positions.

A comprehensive approach to learning and development makes it possible to have a fulfilling career with lots of opportunities for advancement. Procedures are followed to settle any disagreements or complaints between management and staff. Employees and supervisors can more easily communicate when the HR department projects the employees' perspectives, arranges meetings, and addresses valid grievances.

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 were able to maintain a positive and cordial environment for industrial relations the entire reporting year. This year was no exception, with no lost man-days as a result of labour disputes. Respect for government directives, consultation in decision-making, and conformity with relevant labour regulations have all remained steadfast when it comes to employee benefits and welfare matters.

## Employee Benefits

Contentment among employees is a pre-requisite for an organization's success. To guarantee their happiness, NALCO provides a range of concrete and intangible benefits to its workers. NALCO provides one of the best compensation packages in comparison to other similar companies. Apart from remuneration, the organisation provides an extensive array of additional advantages and benefits, including health care, travel concessions, subsidised housing, subsidised electricity and water, different allowances, parental leave, pension plans, incentives for pursuing higher education, loans and

advances, social security benefits, dependent child scholarships, etc.

The organisation has set aside funds for a number of defined benefit schemes, including provident funds, pension fund, settling-in benefits, long-service awards, gratuities, benevolent fund, post-retirement medical benefits, etc. At the plant locations, entire townships with modern infrastructure—such as well-managed schools, hospitals, retail shopping centres, clubs, parks, gymnasiums, stadiums, etc.—have been developed. Contractor workers also receive a number of benefits, such as paid time off per week, health insurance, and provident funds.

In addition to these stated benefits, the company offers a number of other perks, including guest houses, transit houses, 24-hour security in townships, and discounted canteens and community transport services.

Benefits provided to contract and temporary workers are framed by government legislation and the idea of a living wage. Benefits like PF, overtime pay, canteen allowance, bonuses, etc. are available to contract workers.

				
Provident Fund	Cafeteria Allowance	Leave travel concession	Benevolent Fund	Contributory Pension Scheme
				
Leave Encashment	Medical Benefits	Post-retirement Medical benefits	House Building Advance	Scholarship for children of employees
				
Performance related Pay	Multipurpose Allowance	Best Performance reward Scheme	Accident insurance cover	Subsidized canteens
				
Gratuity	Employee Family Benefit Scheme	Parental Leave	Settling-in Benefit	Retirement Welfare Scheme
				
	Superannuation Gift Scheme	Long Service Award	NEFARS	



Employee Diversity

NALCO values diversity and understands that the a multitude spectrum of skills combine to form a cohesive, productive organisation that benefits stakeholders. This creates a positive work environment and motivates everyone to give their best effort.

All forms of discrimination, including those based on caste, religion, disability, gender, sexual orientation, race, colour, ancestry, marital status, and membership in trade unions or majoritarian or minoritarian groups, are unacceptable to our company and we actively support diversity in hiring, advancement, training, and employee benefits. In accordance with Government of India regulations, the recruitment and selection processes are made to ensure that a wide range of regions, ethnic groups, religious beliefs, and socioeconomic strata are represented.

Number of Employees Hired

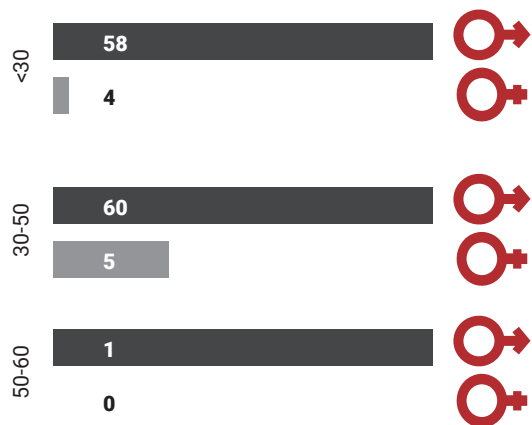


Gender Diversity

We encourage female employment because it will empower women and broaden the gender diversity of the workforce.

Men and women receive the same base wage at every position in the company. The policy of "Equal Remuneration for Men and Women Workers for Work of Equal Value" is strictly adhered to by our organisation. The organisation provides equal possibilities for male and female employees in terms of salary and benefits, opportunities for professional growth, social security benefits, and other areas.

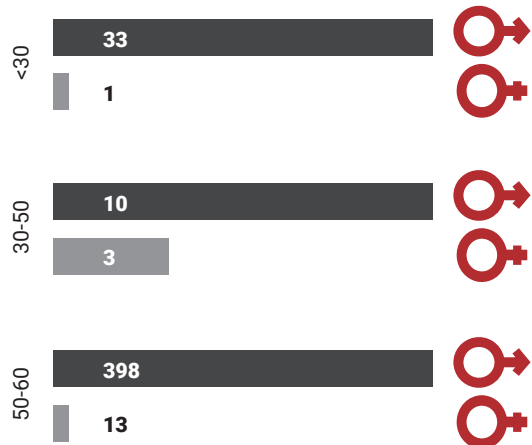
Age Group (years)

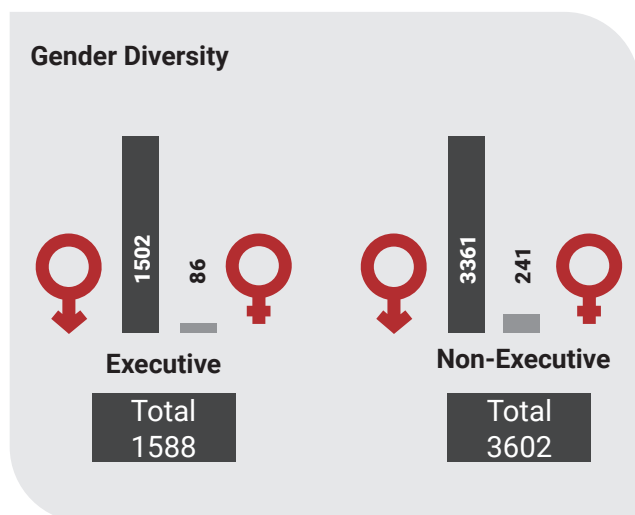



Number of Employees Separated



Age Group (years)





Parental Leave		
	Particulars	No. of Employees who availed Parental leave in 2022-23
	Maternity Leave	8
	Paternity Leave	84



## Employee Engagement

Intranet portal, emails, websites, web-based applications (Apps), press releases, circulars, announcements, official events, and functions all serve to provide employees access to a wide range of information. Employee interactions also take place through union-management meetings, organised meetings with officer associations, wage negotiations, safety committee meetings, training and seminar closing sessions, employee grievances, shop-floor council meetings, etc. Mass communication activities include interactions with large groups of employees by the Top Management.

Employee productivity and a sense of belonging to the firm are enhanced when they can more effectively match their work with the company's aims and objectives disseminated through these meetings. Email and website communication is enhanced by the use of IT tools. We also use additional channels, like employee feedback, Kaizen, and suggestions given through the Sarjana Scheme, to measure employee involvement. Our corporate communications team constantly adds fresh information to our websites to keep our employees up to date on business advancements.

The Quality Circle activity has proven to be an excellent instrument for employee engagement through its process steps of team formation, problem identification, problem brainstorming, solution finding, and presentation at various forums.

## Human Rights and Forced labour

In every aspect of our supply chain and business activities, we are committed to respecting the UN

Global Compact on Human Rights and the Universal Declaration of Human Rights. Our employee-related policies follow many labour laws, the Indian Constitution, and the principles of human rights.

The Factories Act of 1948, the Industrial Disputes Act of 1947, the Mines Act of 1972, the Contract Labour (R&A) Act of 1970, and the Payment of Gratuity Act of 1972 are only a few of the pertinent statutes that the Company strictly adheres with regards to human rights. Significant human rights issues, like forced labour, discrimination, pay, and work hours, are suitably handled in the conditions of the employment contracts for contractors and suppliers. SA8000 Social Accountability Management System implementation has also been into account.

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

Every vendor, contractor, and supplier that is hired to provide products and services signs a written, well-documented agreement with the terms and conditions that mandates compliance with relevant labour laws. 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 Labour (Prohibition and Regulation) Act of 1986, and the Contract Labour (Regulation & Abolition) Act of 1970 are among the acts that are covered by the various agreements according to their applicability. NALCO makes certain that the contractor's labour is handled legally and equitably. A centralised e-portal for contract labour management, which promotes openness and facilitates prompt decision making, strengthens the contract labour management system even further.

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 pledge to never use forced or involuntary labour of any kind. All workers get the service condition along with their appointment letters, which provide a detailed statement of the terms of their appointments.

The service rules and regulations manuals are available for use and reference by each unit. The workers receive

a copy of the certified Standing Orders, which include the general terms and conditions governing service conditions. The intranet site provides access to the HR Manual for reference.

The corporate office and operational divisions of NALCO have earned certification to SA 8000:2014 Social Accountability Standard.

The details of complaints relating to child labour, forced labour, involuntary labour, sexual harassment in the year 2022-23 are given below:

Details of Complaints		
Category	No. of complaints filed during the FY 2022-23	No. of complaints pending as on 31.03.2023
Child labour/ forced labour/ involuntary labour	Nil	Nil
Sexual harassment	Nil	Nil
Discriminatory employment	Nil	Nil

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 of NALCO's employees have equal access to service conditions, possibilities for advancement, and other matters; our policies and manuals reflect this.

A standardised collection of rules that apply to all employees without exception for factors like as gender, caste, religion, race, etc. can be found in the HR manual. All hiring procedures are transparent and equitable, giving all competent candidates an equal opportunity of success. The organisation adheres to equal opportunity in all aspects of employee recruitment, placement, promotion, transfer, pay, training, and benefits. These decisions are made based on the individual's merit and competence as well as the organization's business needs.

We follow all relevant government guidelines when it comes to employing SC, ST, or OBC candidates. People with varying abilities are also considered for work under the terms of the Persons with Disabilities Act of 1995. To oversee reservation concerns for SCs, STs,

OBCs, and PWDs and to keep an eye on the execution of government and presidential instructions, liaison officers for SCs, STs, and OBCs have been designated.

## Grievance Redressal Mechanism

Important stakeholders such as employees, shareholders, vendors, and customers have access to a systematic grievance redressal structure at NALCO, where they can file complaints and have them addressed in line with established procedures.

Depending on their conditions of employment, executives and non-executives have distinct formal grievance procedures for the impartial and fair processing of complaints. A disgruntled worker has other options for voicing their grievances: they can write a request to the department head if they are not satisfied with the response they receive. Should the issue persist, a grievance committee might be called. The committee carefully considers each grievance application that is filed by an employee, and after that, actions are made to resolve the issue within the confines of company policy.





Safety Week observed

## Occupational Health and Safety

Our employees' health and safety come first. We aim to prevent harm to employee in all of our operations, and we do not tolerate unsafe work practises or a disdain for safety regulations. Our occupational health and safety policy places due emphasis on preventing accidents and addressing workplace health issues. Procedures such as SOPs, work instructions, maintenance schedules, etc. safeguard operators and employees. Safety is a factor in all technological decisions, equipment purchases, shop floor plans, PPE recommendations, etc. The ISO 45001:2018 Occupational Health & Safety Management system has been certified for all of our industrial sites, including the port complex located in Vizag.

Assessments of safety risks and hazards serve as the foundation for the development of safety management policies and procedures. Internal safety audits and inspections are conducted on a regular basis, and appropriate remedial actions are done to improve safety. Corrective measures are implemented to tackle fundamental issues that are identified via a methodical root-cause analysis of the incidents. Controls are put in place to prevent such occurrences. Behaviour-based safety, which has been identified as one of the most effective approaches to improving safety performance and leading to a significant decrease in events caused by human error, is given a lot of attention.

Adherence to all relevant statutes and regulations concerning occupational health and safety is done proactively. Employee participation in health and safety management enhances the effectiveness of NALCO's safety management. A safety committee, with representatives from management and employees, is present in every unit to assist in recognising hazardous situations and actions as well as suggesting remedies.

To promote safe practices, a range of safety signages are placed at strategic locations. When a fire occurs, being able to quickly respond is ensured by the location of the usage instructions for fire extinguishers. Safety campaigns are implemented through a variety of techniques, including the distribution of pamphlets and safety badges, acting out skits, and utilising audio-visual messaging.

Personal protective equipment, or PPE, is utilised in compliance with the prescribed requirements. Examples of PPE include helmets, safety goggles, gloves, and safety shoes. Using safety equipment and obtaining a safety permit are prerequisites for working at heights and in other hazardous environments. Every contract includes a clause mandating adherence to legal requirements for workplace safety. Depending on the severity of the infraction, vital actions like as contract termination, warnings, and fines may be taken in the event of a violation. Cases of accidents and near-misses are thoroughly recorded and investigated in order to quickly put the required corrective actions into place.

## Safety highlights for 2022-23

### Health & Safety Highlights 2022-23

Mines	Alumina Refinery	Captive Power Plant	Smelter
<ul style="list-style-type: none"> <li>Safety Gathering/ Safety talk are being conducted in every department on monthly basis. Nalco Suraksha Mobile App has been successfully implemented for reporting of online unsafe conditions, unsafe acts, near-miss, fire hazards etc. Safety Training Kiosk has been installed for visitors.</li> <li>Dump Truck Simulator has been installed for basic safety training and skill up-gradation training for HEMM operators. Behavioural Based Safety training are being conducted for executives of Mines by outside agency.</li> <li>Nalco Suraksha Chakra, a cross functional team has been constituted to manage safety matters. Quarterly mock drills and Internal Safety Audit have been carried out successfully during the financial year 2022-23.</li> </ul>	<ul style="list-style-type: none"> <li>Implementations of 10 point actions (Annual Safety Calendar, AAINAA: Advance Action in Industries to Abate Accidents, Safety Buddies, Safety Mobile App, Safety Gathering, Safety Touch, Safety Hot Spots, Use of Technology, Safety Compliance by Contractors, Mock Drill)</li> <li>Safety awareness program including simultaneous awareness at all workplaces (24 locations) of Alumina Refinery including Township Civil &amp; Electrical maintenance office, Hospital, etc. was done every month</li> <li>Plant safety observations were also carried out by Suraksha chakra members at various schedules for identification of unsafe act and unsafe conditions.</li> <li>Installation of CCTVs in vulnerable workplaces for capturing unsafe behaviour/unsafe conditions as regards to prevention of accidents is under process, in addition to existing CCTVs already installed inside the plant including installation of ANPR camera to capture the unsafe vehicle movement inside the plant.</li> <li>Periodical road safety checking was done with the help of CISF personnel for checking of the unsafe driving of vehicles including heavy vehicles.</li> <li>The contractor workers were imparted safety awareness training. Total 1,860 nos. contractor workers have undergone training through CLMS, 121 employees undergone the classroom safety training. 4,673 numbers of workers have been sensitized in safety gathering for achieving zero reportable accident in Alumina Refinery.</li> <li>02 (Two) numbers statutory mock drills were conducted.</li> <li>Initiatives for Road Safety Survey was done.</li> </ul>	<ul style="list-style-type: none"> <li>Internal Safety Audit was carried out</li> <li>Quantitative Risk Assessment (QRA) study was carried out</li> <li>Vertigo test of contractor workers who are engaged in height work has been carried out</li> <li>LOTO (Lock Out Tag Out) system has been successfully implemented in CHP area for electrical safety.</li> <li>Audio-Video training programs were conducted for contractor workers in the safety training hall. In 2022, 115 safety awareness training programmes have been conducted covering 1,622 contractor workers.</li> <li>Regular safety inspections carried out by the safety officers to monitor the unsafe acts/conditions in the shop floor.</li> <li>02 numbers of full scale on-site mock drill was carried out</li> <li>High Pressure Hydro-jetting Suit for use during high jetting cleaning operation of Boiler &amp; Condenser tubes was put into use.</li> <li>Circular Rescue Saw which is a Rescue item issued to CISF Fire Wing for use during rescue operation. 01 Breathing Air (BA) Compressor was installed at CISF Fire Station.</li> <li>Reflective Signage Boards were displayed at the conspicuous locations of the plant for Safety &amp; Environment awareness.</li> <li>New good quality first aid boxes have been provided to replace the old first aid boxes at 85 locations within the plant.</li> <li>CCTV cameras were installed at various locations inside the plant for safety surveillance.</li> <li>Action taken for installation of 08 numbers of ANPR cameras inside the plant for Road Safety Management.</li> <li>Action taken for installation of Lifeline Systems for height work safety.</li> </ul>	<ul style="list-style-type: none"> <li>904 nos. of safety inspection points were raised through NALCO Suraksha Mobile App.</li> <li>Safety Committee meetings, Safety Campaigns, Safety gathering and safety oath taking held regularly on monthly basis.</li> <li>Initiatives taken for work at height safety:             <ol style="list-style-type: none"> <li>A survey for fixing rooftop permanent lifeline systems has been carried out by an expert agency</li> <li>Vertigo test of 282 workers who are engaged at work at height was carried out.</li> <li>Procurement of 41 mtr. boom lift to carry out work safely at extreme heights was processed.</li> <li>Battery-operated portable camera is being used at 'work at height' locations to monitor the live footage on mobile for the purpose of identifying unsafe acts and practices.</li> </ol> </li> <li>Road Safety initiatives:             <ol style="list-style-type: none"> <li>Road safety audit of the Smelter plant was conducted. Process initiated for implementation of recommendations of road safety audit in phase-1.</li> <li>Installation and commissioning of 14 nos. Automatic Number-Plate Recognition CCTV Cameras are were in progress. This will help to monitor speeding vehicles and traffic rule violation.</li> </ol> </li> <li>Emergency preparedness and Fire Safety:             <ol style="list-style-type: none"> <li>Revised on-site emergency plan of Smelter plant prepared by the consultant</li> <li>2 numbers of full scale mock drills were held as per schedule. In addition, every month 2 fire mock drills were also held.</li> </ol> </li> <li>As a new practice, monthly safety performance evaluation audit of O&amp;M areas is being conducted every month since May, 2022.</li> <li>External Safety Audit of Smelter plant was carried out by Regional Labour Institute, Kolkata.</li> <li>Eye testing camp was organized. During this camp, 144 numbers of heavy vehicle operators were tested.</li> <li>Safety buddies programme was conducted at Sakuntala Aluminium Industries (P) Ltd., Angul during which firefighting training &amp; demonstration, interaction on best safety practices and mitigation of emergencies, distribution of safety leaflet and masks were carried out.</li> <li>Safety training programmes were held covering 1,262 employees and 265 half day induction safety training programmes were held covering 3,393 contractor workers.</li> <li>93 numbers of firefighting and fire demonstration were held covering 1,823 of employees and contractor workers.</li> </ul>

At the production facilities during the reporting year, a number of events were observed, including Fire Service Week, National Safety Week, and Road Safety Week. The safety oath, leaflet distribution, badge distribution, safety march, street play, slogan chanting shouting, traffic management system checking, firefighting training & demonstration, poster and hoarding display, various competitions among school children & employees, safety play, display of safety message in electronic display board & local TV channel are just a few of the activities planned during these observation days.

#### Safety & Health Training for Year 2022-23

Employee Category	No. of People Trained
Executives	460
Non-Executives	559
Total Employees	1019
Contractors' Workers	6452

## Worker Health and Safety Committee

Senior authorities and union representatives comprise the unit-level safety committee in each unit. The committee examines Safety Performance, makes recommendations, and develops action plans for continuous improvement during meetings. All incidents, near-misses, and dangerous situations are investigated once a month. The convenor of the committee is CSO. Other important executives and workers are members. From time to time, the safety committee dispatches representatives to different industries to get knowledge about the latest advancements in 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. According to the ISO 45001 management system, accidents are examined in order to implement preventative actions. Below are the details regarding the accidents, the severity rate, and the fatalities:

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)
					(2)x8	(3)/(2) x100	(1)/(4)x10 <sup>6</sup>	(3)/(4)x10 <sup>6</sup>
CPP	Employees	nil	225313	0	1802504	0	0	0
	Contractors' Labour	01	696957	34	5575656	0.004	0.179	6.097
Mines (Both Blocks combined)	Employees	nil	100087	0	800696	0	0	0
	Contractors' Labour	nil	261055	0	2088440	0	0	0
Port	Employees	nil	9936	0	79488	0	0	0
	Contractors' Labour	nil	21098	0	168784	0	0	0
Refinery	Employees	nil	424806	0	3398448	0	0	0
	Contractors' Labour	nil	660331	0	5282648	0	0	0
Smelter	Employees	nil	608500	0	4868000	0	0	0
	Contractors' Labour	nil	1359442	0	10875536	0	0	0



## Fatalities Statistics

Unit/Area	Employee	Contractors' Labour
Captive Power Plant, Angul	NIL	NIL
Bauxite Mines, Panchpatmali	NIL	NIL
Port facility, Visakhapatnam	NIL	NIL
Alumina Refinery, Damanjodi	NIL	NIL
Aluminium Smelter, Angul	NIL	NIL

## Occupational Diseases

There are operating occupational health centres in both our S&P Complex and the M&R Complex, equipped with all the tools needed to manage and prevent the spread of occupational illnesses among staff members. Doctors, paramedics, and experienced technicians make up the medical staff of the centres. They monitor the development of any occupational diseases and take appropriate measures to stop those that are likely to happen. The well-equipped hospital complexes at the S&P and M&R complexes provide treatment for any sickness, including occupational diseases, to our

employees and their families. Employees and their families may need to be referred to other government and specialty hospitals, depending on the severity.

Programmes for raising awareness are carried out to improve employees' overall health and well being

PME is a procedure we frequently perform for both contract and permanent employees. The PME data for the reporting year is available below NALCO employees do not have a high risk of any specific occupational disease, based on the nature of their current work and working environment.

## PME Statistics

Unit/Area	Employee	Contractors' Labour
Captive Power Plant, Angul	910	2132
Bauxite Mines, Panchpatmali	487	354
Port facility, Visakhapatnam	36	97
Alumina Refinery, Damanjodi	1328	3980
Aluminium Smelter, Angul	2531	2971

# Training and Development

When considering knowledge as a capital, training and retraining assume crucial importance. An organization's intangible worth, which is made up of its expertise, procedures, and unique technical know-how, must be updated in order to have an impact. In order for the workforce to realise their full potential and enable the organisation improve its capacities to address future challenges, we have consequently created a culture where learning, competency, and talent are recognised. Performance is elevated when workers' and executives' competencies and skills are strengthened through classroom instruction, on-the-job training, coaching, and mentoring. The training programmes are designed with the needs of both employees and workers in mind.

Training is managed by the centralised training centre of the corporate office as well as the training institutions located in the S&P and M&R complexes. The performance evaluation and each employee's training

needs are mapped together to find the competency gap. The requirements for training are gathered at the beginning of the year. Organisational needs, individual training requirements, and compliance with government directives are all taken into account while planning training programmes. A training schedule is established based on the inputs, and internal faculty or outside specialists instruct people at our training facilities.

In order to improve functional and behavioural competency, match individual needs with organisational business objectives to enhance production and productivity, and improve organisational business culture, the Company has consistently worked to provide skill and behavioural training to its employees. We also designate employees for in-person or virtual training at different professional organisations in India and abroad, based on the demand. Employees receive health care, stress alleviation, relaxation techniques, lifestyle management, meditation, and other training for their well-being. Our organization's commitment to social responsibility and sound corporate governance includes offering skill development training to contract employees, apprentices, and students from managerial and technical institutes.

## Training Performance Highlights (2022-23)

Average Hours of Training Per Year Per Employee	
Particulars	Total
No. of persons trained	5,129
Training Person-Days	15,857

Our Company has imparted training to 5,129 employees with 15,857 training man-days during the year 2022-23. Further, 404 executives were given virtual external training from MDI (Gurgaon), ASCI-Hyderabad, IIM-Ahmedabad, IIT-Kharagpur, C-DAC-Pune, Institute of Directors (IOD), CII, IICA, Ne-MSME, SP Jain School of Global Management, Mumbai, SCOPE, NPC, DPE, ICC, Mumbai and AIMA, New Delhi etc. on management development programmes during 2022-23.



# Community Development

With demonstrated improvement in the quality of life in the areas in which we operate, NALCO's community development projects has paved the way for inclusive growth. Our community development initiatives have always been marked by accountability and dedication. We have always understood our duty to the community and have contributed to better health and education even before the idea of corporate social responsibility was even mulled.

## Driving Local Employment for Inclusive Growth

Direct and in-direct job creation is one of the best strategies for improving a marginalised and vulnerable group. We know that employment will raise their standard of living by reducing the obstacles to education and health that come with living in poverty. It will impact the community's development in a cascading manner.

In light of this fact, we support the establishment of both direct and indirect employment opportunities in our peripheral regions via outsourcing, capacity building, contractual engagement, etc. Candidates who have registered with local employment agencies are given consideration based on their employability and skill level.

The locals who lost a substantial amount of land during the land acquisition for the NALCO project have also been given provided with jobs. Local populace get access to new job prospects when different contractors, like those in the transportation, security, maintenance, and project sectors, hire workers to fulfil their contractual commitments.

In the reporting year, Contractors in a variety of businesses, including hospitality, maintenance, sanitation, conservancy, and project operations, have employed 12,882 people to meet their contractual obligations. A significant section of the local community benefits from work prospects, as evidenced by the fact that the bulk of these individuals are from Odisha.





Women SHG group



# Corporate Social Responsibility

Our well-crafted CSR Policy aims to promote inclusive growth of the bottom-most strata of society through thoughtful initiatives. The full set of CSR activities outlined in the CSR Policy includes needs assessment, societal involvement, intervention planning, execution, monitoring, impact evaluation, and review. Participating in the community allows us to get fresh viewpoints and feedback, which we use to further our people-centric approaches and give vulnerable and marginalised communities extra consideration. Our community-based programmes address a variety of issues, such as women's empowerment, sports, education, healthcare, sanitation, skill development, improving livelihoods, and rural infrastructure.

NALCO believes that development is the absence of disparities and satisfaction of needs, in every possible way. Thus, establishing an equity based society has been of prima facie importance for the company. Consequently, all its resources are being driven to ensure equity based development in the society as it knows growth is always inclusive and "No one can grow in isolation". Welfare of all its stakeholders is embedded into the very business process of our Company. All the CSR activities/initiatives of the Company are driven towards one end i.e. spearheading happiness. Developmental, equitable and inclusive growth orientation is the only acceptable business model which can be sustainable. Hence, all such activities that ensures a better quality life to all are given importance which ultimately contributes in mainstreaming the marginalized.

To assess the state of CSR activities in connection to the plans, the Board level subcommittee on CSR & Sustainable Development convenes on a regular basis. An independent director serves as its chairman. Separate Monitoring & Evaluation mechanism has also been built to ensure timely completion of the suggested initiatives.

The Company's CSR activities are directly carried out by the NALCO Foundation, NALCO, and the Rehabilitation and Periphery Development Advisory Committees (RPDACs). The company's CSR arm, NALCO Foundation, is registered under the India Trust Act, 1882 and manages CSR initiatives on the company's behalf. CSR projects are selected and implemented through a community engagement approach, establishing sustainable models at the local level.

A variety of factors are taken into consideration when developing social interventions and implementing specific activities. These include the need assessment conducted by the CSR coordination cell, the recommendations made by the Rehabilitation & Peripheral Development Advisory Committee (RPDAC), feedback from the CSR arm, such as the NALCO Foundation, and the need projections made by the local population and their representatives regarding their developmental issues. To ensure that these programmes are implemented as intended and meet the real needs of the community, they are constantly monitored and observed.

# CSR Expenditure

In contrast to the required CSR obligation of INR 36.64 crore, a total of INR 39.54 crore has been spent on CSR activities for the fiscal year 2022–23. The Company has undertaken theme based CSR activities on “Health and Nutrition” as per Department of Public Enterprises, Government of India OM dated 5th April, 2022.

The thrust areas of implementation are Healthcare, Education, Drinking Water, Rural Development, Environmental Sustainability and Development of Iconic city, Puri.

## CSR Expenditure

Year	Mandatory CSR Expenditure (in INR lakhs)	Actual CSR Expenditure (in INR lakhs)
2020-21	3342	3,500
2021-22	2,860	3,691

2022-23	3,664	Mandatory CSR Expenditure
	3,954	Actual CSR Expenditure

# CSR Initiatives

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



## HEALTH CARE SERVICES

MHU Services and OPD services: In the reported year, around 1,10,000 patients in the periphery of the plant areas both at S&P complex, Angul and M&R complex, Damanjodi are treated through 8 MHUs. The intervention has been able to enrich quality of life of the vulnerable sections of the society by making basic health care facilities accessible to them.

A specialist OPD center has been operating at NALCO Township which provides free health consultation and free medicine to periphery villagers of S&P complex. In the year, around 20,000 patients are treated in the specialist OPD. At S&P Complex, patients of peripheral areas were provided ambulance service for better treatment in Lifeline Express at Railway Station, Angul.

## SAFE DRINKING WATER

- i. Pipe Water Supply: At Angul, the water scarcity and contaminated surface water has been a matter of threat due to heavy industrialization. As a more sustainable solutions to the water scarcity problem pipe water supply to different villages are being undertaken along with district administration. MoU has been signed with Rural Water Supply and Sanitation (RWS&S) to undertake following projects –
- ii. Drinking water supply through tanker: Supply of drinking water through tanker in water scarcity village of S&P Complex, Angul during summer. Similarly, bottled drinking water was provided to the devotees during Ratya Yatra at Puri.

## EDUCATION

Supporting residential education to poor, backward and tribal children from periphery villages of M&R complex, Damanjodi & Pottangi: Considering the widespread illiteracy in the periphery areas of Koraput, the Company emphasized on the access to education in these areas. NALCO Foundation has supported students from the periphery villages of Damanjodi & Pottangi Mines under the 'Fully funded residential education program' Indradhanush. The project was started during the year 2012-13 with an objective to provide quality education in residential mode to the students of periphery villages at KISS, Bhubaneswar, Bikash Vidyalaya & Adarsha Vidyalaya, Koraput.

## LIVELIHOOD PROMOTION

Women Empowerment through SHGs: Empowering the tribal women by enabling them to improve their food security, incomes and overall quality of life through natural resource management, the villagers are facilitated through formation of Community Based Organizations (CBOs) like Self Help Groups (SHGs) & Village Development Committees (VDCs). Thereafter, the members were trained & engaged with organization

like Krishi Vigyan Kendra (KVK) & Indian Council of Agricultural Research (ICAR), Sunabeda, Odisha Rural Development and Marketing Society (ORMAS), Odisha Livelihoods Mission (OLM), financial institutes for learning sustainable agricultural practices, and other income generating activities under their guidance. Through convergence with the horticulture & agriculture department, farmers have been benefitted by availing different schemes and packages of Govt. Keeping the success of mushroom farming by SHG members in mind and the growing demand and interest shown by them for adopting other alternative ways of income generation, several steps have been undertaken. Vegetable seeds are being provided to women farmers. With Mushroom and Jack fruit chips, women earned handsome income from ginger, cabbage, green chillies cultivation. Also SHGs have earned a good income from selling fish which they have cultivated from the pond renovated by NALCO. Technical guidance and hand-holding support are also given in other similar areas with support to bring sustainability in farmer's income.

## ENVIRONMENTAL SUSTAINABILITY

Large scale plantation had been undertaken to restore the green coverage which was hugely damaged after the severe cyclonic storm Fani. Sixty thousand seedlings are planted and maintained in Chandaka-Damapada Wild Life Sanctuary, Bhubaneswar in collaboration with Forest Department.

## ICONIC CITY PROJECTS

Under the Swachh Iconic Places initiative promoted by Government of India, NALCO as a corporate partner continuing its pioneering work of conservation of national heritage, NALCO has contributed towards developing Puri, the old and historical city famous for Lord Jagannath Temple, sea and scenic beauty, as a Swachh Iconic Place. In this direction, the following initiatives are continued in the holy city, Puri.

- a) Repair, Restoration, Beautification and maintenance work at Gandhi Park were carried out along with deployment of security for watch and ward
- b) The Battery Operated Vehicles for transportation of aged and handicapped persons have been operated between Shree Jagannath Temple and Jagannath Ballav Math of Puri, the parking place for visitor's vehicles.
- c) NALCO has provided RO based clean water posts in various places of Puri which would benefit Lakhs of devotees.

## Reconstruction & redevelopment of Kedarnath & Badrinath Town:

Under this plan of Government of Uttarakhand, NALCO extended financial support for construction of Pilgrim Accommodation Block in Badrinath.





Flagging off MHUs



Livelihood promotion



OPD centre



Lunching Smart classrooms

## Stakeholder & Community Engagement Mechanism

Sustainability of the projects depends upon the acceptance and adoption of the change by the beneficiaries. A participatory approach from the conception and during implementation of the CSR projects, keep the Company in the advantageous position in establishing acceptance. Since before implementation all projects are checked through the lens of need and expectation of the community and projects are being prioritized by mutually involving the beneficiaries, community started owning the projects as their own and become responsible for its output and outcome. The identification of needs are done through the community engagement process and the communities involved are capacitated to prioritize their needs through the application of Participatory Rural Appraisal (PRA) tools. Further, the Community Based Organisations (CBOs) like- Self Help Groups (SHGs), Village Development Committee (VDC), Youth clubs, farmer's group etc. are being formulated and nurtured through capacity building programs, who work as the change agent and ensure positive transformation at the ground level. These change agents work towards increasing acceptance and adoption by the community. Further. Sensitization workshops and village level meetings are organized from time to time leading to the strengthening of these community based projects, leading to adoption.

NALCO also explore the avenues of collaborations with Government bodies, NGOs and with other Programme Implementing Agencies (PIA) to implement community development initiatives in the thematic areas of health, education, livelihoods, rural development, environment (Plantation) and ethnicity for larger coverage and increased adaptability.

## Social Impact Assessment

Social Impact assessment studies are undertaken from time to time for the critical projects implemented for a period of three or above to measure the efficacy and effectiveness of its project as per the CSR policy of the Company. The regular impact assessment and monitoring has resulted in the improvement of the projects in terms of their effectiveness and streamline the process of implementation. Some of the studies undertaken so far are given below.

- i) A Social Impact Assessment (SIA) study on socio economic contribution of NALCO in M&R Complex, Damanjodi was undertaken by M/s. I-Land Informatics Limited, Kolkata during February, 2005.
- ii) Socio Economic Survey of Periphery villages of S&P Complex, Angul was done by M/s. National Institute of Rural Development (NIRD), Hyderabad during December, 2008.
- iii) Social impact Assessment of projects of NALCO Foundation was conducted by Central University of Odisha, Koraput during the year 2012.
- iv) Social Impact Assessment (SIA) of the CSR projects implemented by Nalco were carried out by the premier institute Utkal University, Bhubaneswar in 2017.
- v) An Impact Assessment Study was made with the support of Madras School of Social Work (MSSW), Chennai in 2019.

# 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 01.04.2022 to 31.03.2023 [FY 2022-23]	
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 11
	2-2 Entities included in the organization's sustainability reporting	Page 11
	2-3 Reporting period, frequency and contact point	Page 6
	2-4 Restatements of information	Page 6
	2-5 External assurance	Page 6
	2-6 Activities, value chain and other business relationships	Page 12
	2-7 Employees	Page 14
	2-8 Workers who are not employees	Page 14
	2-9 Governance structure and composition	Page 19
	2-10 Nomination and selection of the highest governance body	Page 20
	2-11 Chair of the highest governance body	Page 20
	2-12 Role of the highest governance body in overseeing the management of impacts	Page 20
	2-13 Delegation of responsibility for managing impacts	Page 21
	2-14 Role of the highest governance body in sustainability reporting	Page 21
	2-15 Conflicts of interest	Page 23
	2-16 Communication of critical concerns	Page 6
	2-17 Collective knowledge of the highest governance body	Page 20
	2-18 Evaluation of the performance of the highest governance body	Page 20
	2-19 Remuneration policies	Page 21
	2-20 Process to determine remuneration	Page 21
	2-21 Annual total compensation ratio	Page 21
	2-22 Statement on sustainable development strategy	Page 29
	2-23 Policy commitments	Page 23
	2-24 Embedding policy commitments	Page 24
	2-25 Processes to remediate negative impacts	Page 34

	2-26 Mechanisms for seeking advice and raising concerns	Page 6
	2-27 Compliance with laws and regulations	Page 37
	2-28 Membership associations	Page 15
	2-29 Approach to stakeholder engagement	Page 37
	2-30 Collective bargaining agreements	Page 37
<b>Material topics</b>		
GRI 3: Material Topics 2021	3-1 Process to determine material topics	Page 40
	3-2 List of material topics	Page 40
<b>Economic performance</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 45
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	Page 45
	201-2 Financial implications and other risks and opportunities due to climate change	Page 49
	201-3 Defined benefit plan obligations and other retirement plans	Page 50
<b>Procurement practices</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 51
GRI 204: Procurement Practices 2016	204-1 Proportion of spending on local suppliers	Page 51
<b>Anti-corruption</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 28
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	Page 28
	205-2 Communication and training about anti-corruption policies and procedures	Page 28
<b>Materials</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 59
GRI 301: Materials 2016	301-1 Materials used by weight or volume	Page 59
	301-2 Recycled input materials used	Page 60
<b>Energy</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 60
GRI 302: Energy 2016	302-1 Energy consumption within the organization	Page 60
	302-3 Energy intensity	Page 61
	302-4 Reduction of energy consumption	Page 61
<b>Water and effluents</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 64
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	Page 64
	303-2 Management of water discharge-related impacts	Page 65
	303-3 Water withdrawal	Page 64
	303-4 Water discharge	Page 64
	303-5 Water consumption	Page 65
<b>Biodiversity</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 69



	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	Page 69
<b>Emissions</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 70
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Page 70
	305-2 Energy indirect (Scope 2) GHG emissions	Page 70
	305-6 Emissions of ozone-depleting substances (ODS)	Page 71
<b>Waste</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 71
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	Page 73
	306-2 Management of significant waste-related impacts	Page 71
	306-3 Waste generated	Page 73
	306-4 Waste diverted from disposal	Page 73
	306-5 Waste directed to disposal	Page 74
<b>Employment</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 80
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	Page 80
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Page 78
	401-3 Parental leave	Page 81
<b>Occupational health and safety</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 83
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	Page 83
	403-2 Hazard identification, risk assessment, and incident investigation	Page 83
	403-3 Occupational health services	Page 83
	403-4 Worker participation, consultation, and communication on occupational health and safety	Page 85
	403-5 Worker training on occupational health and safety	Page 85
	403-6 Promotion of worker health	Page 85
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Page 85
	403-8 Workers covered by an occupational health and safety management system	Page 85
	403-9 Work-related injuries	Page 85
<b>Training and education</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 87
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	Page 87
<b>Diversity and equal opportunity</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 80
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	Page 80

	405-2 Ratio of basic salary and remuneration of women to men	Page 80
<b>Non-discrimination</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 82
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	Page 82
<b>Child labor</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 81
GRI 408: Child Labor 2016	408-1 Operations and suppliers at significant risk for incidents of child labor	Page 81
<b>Forced or compulsory labor</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 81
GRI 409: Forced or Compulsory Labor 2016	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	Page 81
<b>Local communities</b>		
GRI 3: Material Topics 2021	3-3 Management of material topics	Page 92
GRI 413: Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programs	Page 92

# LIST OF ABBREVIATIONS

APIO	Assistant Public Information Officers
BEE	Bureau of Energy Efficiency
BRR	Business Responsibility Report
BSE	Bombay Stock Exchange
CAG	Comptroller and Auditor General
CAMPA	Compensatory Aforestation Fund Management and Planning Authority
CDA	Conduct Discipline and Appeal
CEMC	Centre for Envotech and Management Consultancy Private Limited
CII	Confederation of Indian Industry
CMD	Chairman cum Managing Director
CPCB	Central Pollution Control Board
CPP	Captive Power Plant
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
DSIR	Department of Scientific & Industrial Research
EBIDTA	Earnings Before Interest, Tax, Depreciation and Amortisation
EHS	Environment, Health and Safety
ERM	Enterprise Risk Management
ERP	Enterprise Resource Planning
ESI	Employee State Insurance
ESP	Electrostatic Precipitator
ETP	Effluent Treatment Plant
FIMI	Federation of Indian Mineral Industries
FTP	Fume Treatment Plant

FSAs	Fuel Supply Agreements
GACL	Gujarat Alkalies and Chemicals Ltd.
GeM	Government e-Marketplace
GDP	Gross Domestic Product
GHG	Green House Gas
GRI	Global Reporting Initiative
HDPE	High Density Polyethylene
HFO	Heavy fuel oil
HR	Human Resource
IBM	Indian Bureau of Mines
IDCO	Industrial Infrastructure Development Corporation
(IEMs)	Independent External Monitors
IGP	Income Generating Program
IIM	Indian Institute of Management
IIT	Indian Institute of Technology
ILO	International Labour Organisation
IOT	Internet of things
IP	Integrity Pact
IPCC	The Inter-governmental 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 Liters
KPIs	Key Performance Indicators
LDO	Light Diesel Oil
LPG	Liquified Petroleum Gas
LME	London Metal Exchange
MoA	Memorandum of Agreement
MCA	Ministry of Corporate Affairs
MECL	Mineral Exploration Corporation Limited
ML	Mega liters



MT	Million Tonnes
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoM	Ministry of Mines
MoU	Memorandum of Understanding
MSEs	Medium and Small enterprises
MSME	Micro, Small & Medium Enterprises
MSSW	Madras School of Social Work
Mt	Metric Tonnes
MU	Million Unit
MW	Mega Watt
MIDHANI	Mishra Dhatu Nigam Ltd.
NALCO	National Aluminium Company Limited
NAPCC	National Climate Change Action Plan
NBFS	NALCO benevolent fund scheme
NEFFARS	NALCO employee's family financial assistance rehabilitation scheme
NGRBC	National Guidelines on Responsible Business Conduct
(NSSHO)	National SC/ST Hub Office
NMEEE	National Mission on Enhanced Energy Efficiency
NEMCS	NALCO Employees Multi-purpose Co-operative Society
NIC	National Informatics Centre
Nox	Nitrogen Oxides
NRTC	NALCO Research & Training Centre
OBC	Other Backward Classes
OHSAS	Occupational Health and Safety Assessment System
ORMAS	Odisha Rural Development and Marketing Society
PAT	Perform, Achieve & Trade scheme
PAT	Profit After-tax
PFCs	Perfluoro carbons
PSEB	Public Sector Enterprises Board
PSUs	Public Sector Units

PWD	Persons with Disabilities
R&D	Research & Development
RoDTEP	The Remission of Duties and Taxes on Export Products
RMP	Red Mud Pond
RPDAC	Rehabilitation and Periphery Development Advisory Committees
RTAIL	Rio Tinto Alcan International Limited
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
tCO <sub>2</sub> e	Tonnes of carbon dioxide equivalent
TII	Transparency International India
TPA	Tonnes per Annum
TOE	Tonne of Oil Equivalent
UAE	United Arab Emirates
UK	United Kingdom
UN	United Nations
UNGC	United Nations Global Compact

## Notes

[illegible]



12th Sustainable Development Report 2022-23

**CIN: L272030OR1981GOI000920**

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)