



नालको  NALCO

11th Sustainable
Development Report
2021-22

**Clean
Committed
Caring**



भारत 2023 INDIA

वसुधैव कुटुम्बकम्

ONE EARTH • ONE FAMILY • ONE FUTURE



आज़ादी का
अमृत महोत्सव



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 multi-fold 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 INR Crore)

4814.58



Green Initiatives

1,32,087 saplings
planted

320 MU Wind Power
generated

7,35,585 Units
Solar Energy
generated



Others

Consistent IBM
5-Star Rating of Panchpatmali
Bauxite Mines

Around 76,000 patients in
the periphery of plant areas
extended medical treatment
by Mobile Health Units

* Wood Mackenzie Report for 2021



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The present Report is the 11th Sustainability Report for the financial year 2021-22, i.e., April 1, 2021, to March 31, 2022, based on GRI Sustainability Reporting Standards. The report is published annually. The 10th Sustainability Report was published for the year 2020-21. The report showcases our performance in the areas of Social, Environmental and Economic dimensions.

Reporting Framework- The report presents our sustainability performance addressing all relevant topics of the GRI Sustainability Reporting Standards. The report conforms to GRI Standards reporting principles addressing Accountability principles such as materiality, stakeholder inclusiveness, sustainability context, and completeness. We have endeavoured to present a balanced, clear, reliable, accurate, and reasonable presentation of our contributions to sustainable development. The report includes a detailed description of material issues and their prioritization. The GRI Reporting Principles, Technical Protocols, and Disclosure Protocols guided the development of this report. The GRI index, which provides an index of GRI disclosures and their locations within this report, is available on page 100. This report was written in accordance with the GRI Standards.

Scope & Boundary- The report covers our production units in Odisha, such as the Bauxite Mine, Alumina Refinery, Aluminium Smelter, and Captive Power Plant, as well as the port facility at Vishakhapatnam. Other business operations, such as joint ventures, are kept outside the scope of reporting. Considering the impact, some non-material topics are also covered to the required extent. The material topics boundary is mentioned appropriately in the report.

Reporting Standards- The organization's financial performance is reported in accordance with accounting standards of the country. Quality, environment, health & safety, energy and social

accountability audits are conducted on a scheduled manner verifying conformance with international standards, ensuring data integrity. Furthermore, the effectiveness of various management system performances is verified and reviewed by the relevant accredited agencies. Monitoring, measurement, and calibration of measuring equipment are carried out as per applicable Indian Standards.

Audience- The report's intended audience encompasses all of our stakeholders, and it aims to inform them clearly about the relevant materiality issues, sustainability strategies, performance indices, major organizational achievements, difficulties and challenges, and steps taken to address stakeholder concerns.

Data- At various levels of our organization, data is checked for completeness and accuracy. Data is primarily based on documents reviewed by the Board, such as the Annual Report and Financial Statements. As a result, no third-party assurance is deemed necessary. Where actual measurement is not possible, data calculated based on standard assumptions is used. Data estimation and quantification are carried out with clear elucidation of assumptions, empirical formulas, and standardization.

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:

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NALCO Bhawan,
P/1, Nayapalli Bhubaneswar - 751013, Odisha.
Email -sustainability@nalcoindia.co.in,
Website - www.nalcoindia.com



Message from CMD



Dear Stakeholders,

It gives me great pleasure to present our 11th Annual Sustainability Report for the FY 2021-22 based on GRI Standards. The report comprehensively chronicles our sure footsteps in the Sustainable Development journey encompassing the triple bottom-line, i.e., excellence in the areas of Economic, Environmental and Social impacts.

Building back from the Pandemic

With the economy bouncing back from the ravages of the COVID-19 pandemic, we pursued our growth trajectory with renewed effort from all quarters. As a result, we achieved highest ever Aluminium Metal sales and highest ever domestic sales of Alumina since inception during 2021-22. After experiencing COVID-induced slump in demand for Aluminium metal during the previous year, we witnessed a 40% jump in domestic metal sales and 8% increase in overall metal sales in 2021-22, which was in sync with the highest ever metal production achieved during the year.

The path of recovery, meticulously charted by us upon the foundation of the deeply seeded principles of sustainable value creation, resulted in a stellar performance countering the lingering effects of the adversity. We retained our world leadership position as the lowest Cost Producer of Alumina and Bauxite. We were 2nd highest net Foreign Exchange earning CPSE in the country. Our export turnover stood at INR 6,364.15 crores during FY 2021-22, which was 23% higher than that achieved during the previous year. During the same period, our sales turnover increased to INR 14058.98 crores from INR 8869.29 crore in the previous year, and operating profit margin improved by 59.85% and return on net worth rose by 93.18%. The profit after tax stood at INR 2,951.97 crore as compared to INR 1299.53 crores of previous year. Our power and



The spectacular results is a testimony to the extraordinary attitude demonstrated by NALCO collective in the face of pandemic induced adversity. Despite inflation in various input costs, coal crisis, and uncertainty in LME prices, the Company has been able to maintain the status of being the lowest cost producer of Bauxite and Alumina in the World



fuel cost for FY 2021-22 was pegged at 23.89% of gross turnover, compared to 29.45% in the previous year.

Our Company's assessed score falls under "Excellent" rating for the year 2021-22, against the Memorandum of Understanding (MoU) signed with the Government of India.

Enhancing performance, innovation and resilience

Our stellar performance over the years despite formidable odds is an outcome of our significant efforts towards enhancing performance, innovation, and resilience of our operation.

Our Panchpatmali Bauxite Mines has achieved 75,11,075 tonnes of bauxite production, which is the highest ever production since inception, surpassing the previous "Highest ever Annual Production" of 73,65,001 tonnes achieved in FY 2020-21. We have operationalized all of the 960 nos. of pots at our Smelter Plant during the year, a milestone of achieving 100% capacity utilisation for the first time in the history of the Company. In addition, the smelter plant has achieved full capacity 4,60,000 tonnes of Aluminium cast metal production, which is highest ever since inception surpassing the previous "Highest ever Annual Production" of 4,43,597 tonnes achieved in FY 2010-11.

Our R&D expenditure as the fraction of turnover stood at 0.45% against the 0.14% of the previous year. During the year, we have given a strong push to R&D, with several accomplishments which include new generation grain refiner in Billet Casting Facility, AP2XNO pot technology trials in smelter plant, recovery of Aluminium metal from dross using nano technology. A total of 03 patent applications were filed and 02 patents were granted during FY 2021-22.

We have taken bold steps towards raw material & fuel security and resilience. Apart from having secure mining leases of Panchpatmali Bauxite Mines (Central & North Blocks) and South Block up to 2032 & 2029 respectively, we have made significant progress on developing Pottangi bauxite mines with 75 Million Tonnes reserve. Consistent availability of Coal is a major operating concern for the company and to ensure resilience, we have made big strides towards early

operationalisation of the allotted Utkal D and Utkal E coal mines which together account for extractable reserve of 175 million tonne of coal.

Environmental stewardship

Our strong environmental commitment & guiding principles has enabled us to scale our operations without harming natural ecosphere. Our Company's Panchpatmali Bauxite Mines was awarded 5 Star Rating by Ministry of Mines for sustainable Mining.

Continuing the rich legacy, we won a host of awards and



The 5-star rating award is a testimony of our deep commitment towards sustainable and eco-friendly mining, which is at the core of our mining operations"



accolades during the year on Environment Excellence, Pollution Control Excellence, Energy Conservation, and Sustainability and Business Excellence.

We are deeply concerned with the global impacts of climate change and are in tune with India's commitment to deliver on the nationally determined targets of reducing emission intensity, increasing the share of non-fossil energy and creating additional carbon sinks. We have generated 320 MU wind power and 0.73 MU solar energy during FY 2021-22. The 130 kWp rooftop SPV Plant installed at Bauxite Mines was commissioned during the year, and further addition of roof-top solar energy capacity has been taken up. We are also expanding wind power generation capacity by a 25.5 MW wind project under installation at Kayathar, Tamilnadu.

During the year, we have planted 1,32,087 nos. of saplings as part of our green-belt initiatives and 21,584 nos. of seedlings were distributed to local villagers to improve awareness about plantation among the communities.

Social Stewardship

Re-affirming our commitment to be a steady partner in social development in the peripheral areas including the vulnerable and marginalized sections, we have spent INR 36.91 crore in the FY 2021-22 on various CSR projects against the mandated CSR obligation of INR 28.60 crore. We have undertaken theme based CSR activities on Health & Nutrition with special focus on COVID related measures. The thrust areas of implementation were Healthcare, Education, Drinking Water, Rural Development, Environmental Sustainability and Development of iconic city, Puri. The Company has taken exemplary initiatives to fight the COVID-19 pandemic in the state of Odisha and by strengthening the health care facility to meet the increased demand in this critical juncture and also spreading awareness about the preventive measures among the vulnerable

communities to combat the spread of the disease.

People are the most important resource for our business and we weigh in utmost importance to Safety, Occupational Health, and Employee Development. We retain a skilled and motivated workforce through appropriate HR policies & practices and paying due attention to their welfare and wellbeing.

On the Health & safety front, we have continued to plug the vulnerabilities as assessed with best practices, while enhancing the safety culture through numerous awareness drives and other interventions.

In spite of the COVID pandemic lockdown scenario existing during first & second quarter of FY 2021-22, we didn't refrain from the Training & Education activities for our employees, taking recourse to the virtual mode.

Sustainability as the way forward

With the ongoing rapid transition to renewable energy sources and electric powered transportation, the global demand for Aluminium is projected to almost double by 2050 from the 2020 levels, and NALCO is well positioned to ride the transition. There are also a myriad of environmental, social, and governance risks that our operations are exposed to, including changes to the policies & regulations. We at NALCO are constantly adapting our ways to take up emerging challenges, opportunities & threats and intend to be a proactive leader rather than a reactive responder. We are constantly embracing new technologies & methods – from implementing Smart Mining which harnesses the power of next generation of AI, robotics, and AR/VR to ramping up our inhouse & collaborative R&D efforts to enhance our resource utilisation and process reliability. Being a responsible corporate citizen, NALCO, is enabling the local communities & its stakeholders in building up resilience and adaptation measures towards the climate change related risks.

We are constantly endeavoring to manage and mitigate the sustainability related risks and build up systemic resilience. As an integrated Alumina, Aluminium producer, we cast a large environmental and social footprint, and we are striving to generate shared value and positive impact in line with the United Nation's 16 Sustainable Development Goals.

I take this opportunity to thank all the stakeholders who are our partnering in our journey of sustainable development and assure them that we will continue to exceed expectations. We invite feedback and suggestions from our stakeholders to create a truly sustainable company.

Shri Sridhar Patra

Chairman cum Managing Director, NALCO

Key Performance Indicators

Economic (in INR crore)

Revenue from Operations

FY 2020-21 8,956

FY 2021-22 14,181

% Change 58.3%

Profit After Tax

FY 2020-21 1,300

FY 2021-22 2,952

% Change 127%

Earnings Per Share(per INR 5 each)

FY 2020-21 6.97

FY 2021-22 16.07

% Change 130.5 %

Environment

Total Water withdrawal

FY 2020-21 4,95,00,820 m³

FY 2021-22 4,67,43,200 m³

% Change 5.57%

Plantation

FY 2020-21 1,39,159

FY 2021-22 1,32,087

% Change 5.08 %

Total Energy Consumption

FY 2020-21 108,255,106 GJ

FY 2021-22 105,218,842 GJ

% Change 2.8%

Overburden reused in backfilling of mined out area, Mt

FY 2020-21 9,22,705 Mt

FY 2021-22 9,63,225 Mt

% Change 4.39 %

Social (in INR crore)

Total CSR Spent

FY 2020-21 35

FY 2021-22 36.91

% Change 5.5%

Spending on Local MSE Suppliers

FY 2020-21 374

FY 2021-22 430.7

% Change 5.2%

As per the assessment of achievements w.r.t targets for various financial, operational, and developmental parameters established in the Memorandum of Understanding (MoU) signed with the Ministry of Mines of Government of India, NALCO's score for the year 2021-22 falls under "Excellent" rating.

Organisational Profile

Location of the company- National Aluminium Company Limited (NALCO) is one of the country's largest integrated Bauxite-Alumina-Aluminium-Power Complexes, with headquarters and Registered office at Nalco Bhawan, Nayapalli, Bhubaneswar -751013, Odisha, India, and a website at <http://www.nalcoindia.com>.

The Company operates a 68.25 lakh tonne Bauxite Mine and a 21.00 lakh tonne Alumina Refinery (normative capacities) at Damanjodi, Koraput district, Odisha, as well as a 4.60 lakh tonne Aluminium

Smelter and 1200 MW Captive Power Plant at Angul, Odisha. NALCO has bulk shipment facilities at Vizag port for alumina/aluminium export and import of caustic soda, and it also utilizes facilities at Kolkata and Paradeep Ports. The Company has 8 operating stockyards at various locations in the Country to facilitate domestic distribution and has registered sales offices in Delhi, Kolkata, Mumbai, Chennai and Bengaluru.

Since May 1989, NALCO has been the country's first Public Sector Company to enter the international market in a big way, with London Metal Exchange (LME) registration.

Since 1999, the company has been listed on 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



Wind Power
Gandikota, Sangli, Devikot, Ludarva



Stock Yard
**New Delhi, Jaipur, Vadodara, Baddi
Chennai, Vishakhapatnam, Kolkata, Raipur**



Project Office
Ahmedabad

Activities, Brands, Products, and Services

National Aluminium Company Limited (NALCO), a Navratna CPSE under the Ministry of Mines, was founded on January 7, 1981 in the public sector. The company is a group 'A' CPSE in the 'NAVARATNA' category with integrated mining, metal, and power operations. In FY 21-22, NALCO achieved an impressive sales turnover and net profit of INR 14,058.98 crore and INR 2951.97 crore, respectively.

Aluminium Products

Products-

Standard Ingots, Alloy Ingots, T-Ingots, Sow Ingots, Billets, Wire rods, Cold Rolled coils and sheet, chequered sheet.

Application and Use-

- Ingots are re-melted, cast or processed into various end products.
- Billets are the primary input for producing high-quality extrusions. High speed alloy billets produced by us offer faster extrusion speed
- Wire rod coils are the primary input for conductor and cable industries.
- Rolled products and chequered sheets are used in manufacturing and automobile industries. Foil stock is used by the packaging industry.

Alumina products

Products-

Calcined Alumina, Alumina Hydrate, speciality alumina & hydrate

Application and Use-

- Aluminium smelting, refractory, ceramics & high alumina cement industries use Calcined Alumina
- Alum, Poly Aluminium Chloride & other speciality chemicals industries use Alumina Hydrate
- Speciality alumina is used in refractory, ceramic and abrasive industries
- Speciality hydrates has its application as filler material in plastic, rubber, paper, fire retardant chemicals and manufacturing alumina chemicals

Power

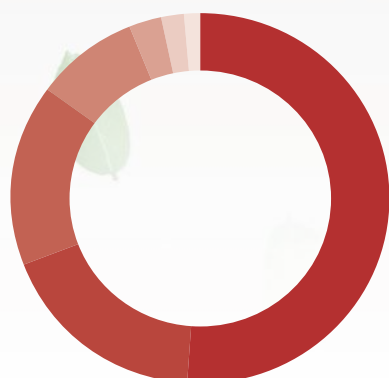
Products-

Thermal, Cogeneration, 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 31.03.2022
Promoters (Government of India)	51.28
Foreign Portfolio Investors	18.04
Indian Public	15.95
Mutual Funds	8.7
Banks and Financial Institutions	2.9
Corporate Bodies	1.76
Others	1.37
Insurance Companies	0

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. Calcined Alumina and Primary Aluminium make up the majority of our exports. We served the China, Indonesia,

Thailand, Malaysia and Singapore Aluminium markets in 2021–2022. The calcined alumina export markets served by NALCO in 2021–2022 included China, Egypt, Indonesia, Malaysia, Oman, Qatar, the United Kingdom, and the United Arab Emirates.

Scale of the organization

Bauxite

FY 2019-20	73,02,245	Unit- Mt
FY 2020-21	73,65,001	
FY 2021-22	75,11,075	

Alumina Hydrate

FY 2019-20	21,60,500	Unit- Mt
FY 2020-21	20,85,500	
FY 2021-22	21,22,000	

Aluminium

FY 2019-20	4,18,373	Unit- Mt
FY 2020-21	4,18,522	
FY 2021-22	4,60,000	

Power (net)

FY 2019-20	6,067	Unit- MU
FY 2020-21	6,440	
FY 2021-22	5,711	

Wind Power

FY 2019-20	312	Unit- MU
FY 2020-21	285	
FY 2021-22	320	

Export Sales

Alumina

FY 2019-20	12,40,704	Unit- Mt
FY 2020-21	11,84,680	
FY 2021-22	11,54,691	

Aluminium

FY 2019-20	56,898	Unit- Mt
FY 2020-21	1,92,174	
FY 2021-22	1,33,085	

Domestic Sales

Alumina, Hydrate and Other Chemicals

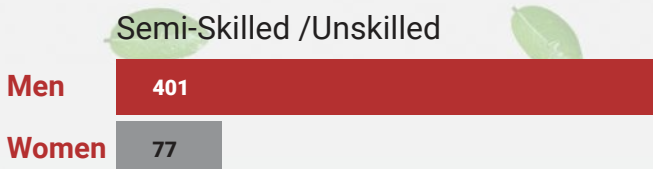
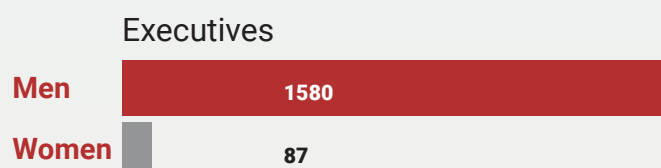
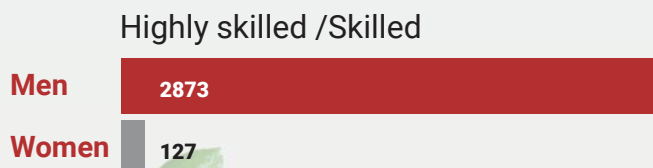
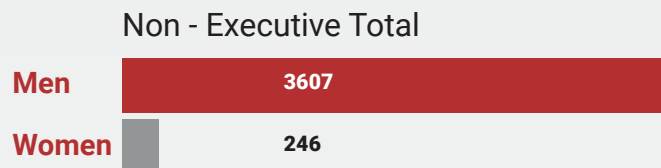
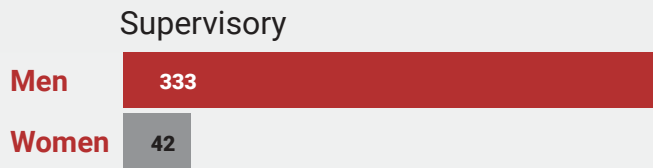
FY 2019-20	63,000	Unit- Mt
FY 2020-21	42,992	
FY 2021-22	77,995	

Aluminium

FY 2019-20	3,38,864	Unit- Mt
FY 2020-21	2,30,643	
FY 2021-22	3,23,809	

Employees and Other Workers

As on 31.03.2022



Supply Chain

Apart from major suppliers of raw materials, fuel and machinery, local suppliers including Micro and Small Enterprises (MSEs), who are located in and around manufacturing units are integral to our supply chain. The company extends a multitude of support to MSEs. They are significant stakeholders for the company and are also essential components of our effort towards sustainable development. We are committed towards reducing resource utilization (energy, water, and raw materials) during sourcing/production/distribution along the entire supply chain, through due engagement with the suppliers. Our supply chain gains credibility with assiduous selection of the best mode of transportation and verification of the social responsibility 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 are unfailingly guided by the tenet of precautionary principle, particularly when it comes to matters of environmental risk and human safety. The 'precautionary principles' are supplemented by our current risk management guidelines, which also take into account risk mitigation strategies for environmental, social, and

economic hazards. We continuously update ourselves with the findings and recommendations of the National Environmental Engineering Research Institute (NEERI), The Energy and Resources Institute (TERI), Intergovernmental Panel on Climate Change (IPCC), UN Environment Programme (UNEP), etc. in addition to the guidance provided by ISO 9001, ISO 14001, ISO 45001, ISO 50001, and SA 8000 by international certification body Bureau Veritas.

The precautionary approach is strengthened and upheld by a well-crafted set of policies, manuals and guidelines in our Company. Prior to execution, any proposed project or procedure is assessed for its anticipated financial, environmental, and social impacts.

Any anticipated impact is properly remedied in a consultative & inclusive approach with stakeholders.

External Initiatives

Company policies, manuals, and procedures are aligned with the UN Global Compact, GRI Standards, UN Sustainable Development Goals, Universal Declaration of Human Rights, International Labor Organization (ILO), Declaration on Fundamental Principles and Rights at Work, UN Guiding Principles for Business and Human Rights, National Guidelines for Responsible Business Conduct of the Ministry of Corporate Affairs of Government of India etc.

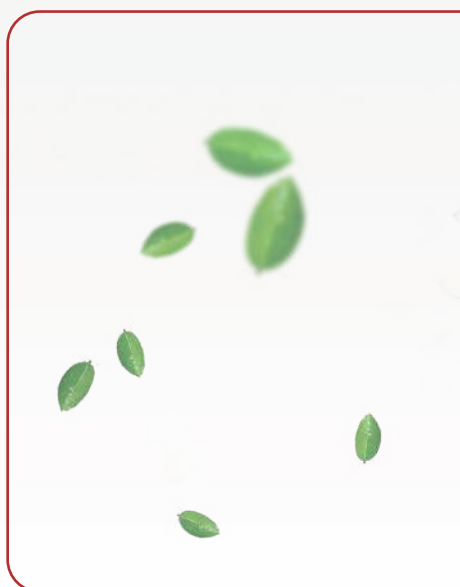
NALCO's Business Responsibility Report (BRR) describes the actions taken from an Environmental, Social, and Governance (ESG) perspective and is prepared in line with SEBI's Listing Obligation and Disclosure Requirements (LODR) guidelines. Every year, the Annual Report includes a Business Responsibility Report.

















The Indian Bureau of Mines (IBM) is a multidisciplinary government organization that was established by the Ministry of Mines (MoM) of Government of India (GoI), to promote the methodical and sustainable development of the nation's mineral resources. This is accomplished by regulatory inspections of the mines, approval of mining plans, and environment management plans to guarantee that there is a minimal negative influence on the environment. The sustainability practices of our Bauxite Mines are governed by IBM's sustainability framework in conjunction with routine audits and inspections.









We vigorously take part in various National developmental initiatives such as the Swachh Bharat Abhiyan, Make in India, Digital India etc.

Alignment with Sustainable Development Goals of United Nations

The Sustainable Development Goals (SDGs), commonly referred to as the Global Goals, were endorsed by all UN members in 2015 as a global call to action to eradicate poverty, safeguard the environment, and guarantee that everyone lives in peace and prosperity by 2030. The Sustainable Development Goals (SDGs) provide a roadmap for achieving a number of objectives, including reducing inequality, combating climate change, and ending poverty.



SDG Goal	Elements of SDGs Mapped to GRI Standards	NALCO Contribution
 1 NO POVERTY	 <ul style="list-style-type: none"> Earnings, wages and benefits (GRI 202-1) Economic development in areas of high poverty (GRI 203-2) Community Development (GRI 413-2) 	<ul style="list-style-type: none"> NALCO compensates employees in a generous manner The company's programme for sustainable livelihood and infrastructure development has radically uplifted the local economy in the area where it operates Based on evaluation of needs of local communities, we implement local community development projects
 2 ZERO HUNGER	 <ul style="list-style-type: none"> Significant indirect economic impacts (GRI 203-2) Infrastructure investments (GRI 201-1 & 203-1) 	<ul style="list-style-type: none"> 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
 3 GOOD HEALTH AND WELL-BEING	 <ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> 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
 4 QUALITY EDUCATION	 <ul style="list-style-type: none"> Education for sustainable development (GRI 102-27) Employee training and education (GRI 404-1) 	<ul style="list-style-type: none"> Generous support to Schools and meritorious girl students in peripheral areas through CSR Full-fledged fully-aided Schools in plant townships for children of employees and other meritorious students Full-fledged Training Institutes for regular training and skill-enhancement of employees and workers
 5 GENDER EQUALITY	 <ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> Policy for equal pay for both men and women The recruitment and selection procedures provide for representation from all genders, geographical regions, ethnic groups, religious groups, and social classes Discrimination of any kind is not tolerated
 6 CLEAN WATER AND SANITATION	 <ul style="list-style-type: none"> Water (GRI 303-1, 303-3) Waste (GRI 306-2) Wastewater quality (GRI 306-1) 	<ul style="list-style-type: none"> Rainwater harvesting, STP, and water conservation in plants and Mines Following zero-discharge to outside minimizing negative impact on water bodies Support for Swachh Vidyalaya Abhiyan and ODF (Open Defecation Free) village in peripheral areas
 7 AFFORDABLE AND CLEAN ENERGY	 <ul style="list-style-type: none"> Energy efficiency (GRI 302-1, 302-2, 302-3, 302-4) 	<ul style="list-style-type: none"> 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
 8 DECENT WORK AND ECONOMIC GROWTH	 <ul style="list-style-type: none"> Infrastructure investments (GRI 203-1) Earnings, wages and benefits (GRI 202-1) Employment (GRI 401-2) 	<ul style="list-style-type: none"> 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. Significant economic value created and distributed in a consistent manner

SDG Goal	Elements of SDGs Mapped to GRI Standards	NALCO Contribution
	<ul style="list-style-type: none"> Infrastructure investments (GRI 201-1, 203-1) 	<ul style="list-style-type: none"> Support to Infrastructure development programmes for communities and Society Investment in R&D; establishment of well-equipped R&D centre Consistent promotion of innovation among employees through various reward schemes
	<ul style="list-style-type: none"> Equal remuneration for women and men (GRI 405-2) 	<ul style="list-style-type: none"> Same Rank same pay without discrimination Sponsoring skill-development technical training for unemployed youth from peripheral affected families Assistance to underprivileged, needy, and differently abled individuals through CSR schemes
	<ul style="list-style-type: none"> Infrastructure investments (GRI 203-1) 	<ul style="list-style-type: none"> Energy-saving technology and equipments, LED lights, wind and solar power Controlled emissions and no discharge to the environment Water conservation
	<ul style="list-style-type: none"> Energy efficiency (GRI 302-1, 302-2, 302-3, 302-4) Materials efficiency/recycling (GRI 301-1, 301-2) Procurement practices (GRI 204-1) Spills (GRI 306-3) Transport (GRI 302-1 & 302-2) Water efficiency (GRI 303-3) Water quality (GRI 306-1) 	<ul style="list-style-type: none"> 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. Monitoring of raw material and energy consumption with norms. Hundred percent reuse of overburden; Reclamation of mined-out areas Optimisation of transport modes & routes of products and raw materials
	<ul style="list-style-type: none"> Energy efficiency (GRI 302) Environmental investments (GRI 305, 306) GHG emissions (GRI 305-1, 305-2, 305-3, 305-4, 305-5, 305-6) Risks and opportunities due to climate change (GRI 201-2) 	<ul style="list-style-type: none"> Investments have been made for the control of emissions and effluents Renewable energy generation and energy conservation measures Monitoring and management of GHG emissions Achievement of PAT Sp. Energy Consumption Targets
	<ul style="list-style-type: none"> Marine Biodiversity (GRI 304-1, 304-2, 304-3, 304-4) 	<ul style="list-style-type: none"> Since we maintain zero water discharge, the operations have no effect on marine life
	<ul style="list-style-type: none"> Environmental investments (GRI 305, 306) Forest degradation (GRI 305-1, 305-2, 305-4, 305-5) Mountain ecosystems and Natural habitat degradation (GRI 304-1, 304-2, 304-3, 304-4) 	<ul style="list-style-type: none"> Adequate Resources have been allocated to the management of emissions and effluents and waste. Rehabilitation of mined-out areas and large-scale plantation for afforestation 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
	<ul style="list-style-type: none"> Anti-corruption (GRI 205-1) Compliance with laws and regulations (GRI 307-1, 419-1, 416-2) Grievance mechanisms (GRI 103-2) Non-discrimination (GRI 406-1) Human Rights 	<ul style="list-style-type: none"> Uniform adherence to fairness, non-discrimination and human rights principles Committed to ethics and transparency Robust Governance frame-work with contract manual, purchase manual, fraud prevention policy, whistleblower policy, CDA rules standing order, and integrity pact

Membership of Associations

1. Aluminium Association of India
2. **Standing Conference of Public Enterprise (SCOPE)**
3. Federation of Indian Mineral Industries (FIMI)
4. **National Safety Council**
5. Confederation of Indian Industry (CII)
6. **Utkal Chamber of Commerce & Industries**
7. Engineering Export Promotion Council
8. **Federation of Indian Export Organisation**
9. International Chamber of Commerce
10. **Chemical and Allied Products Export Promotion Council**
11. National Institute of Personnel Management
12. **Indian Ceramic Society**
13. Indian Chamber of Commerce
14. **Quality Circle Forum of India**
15. Federation of Indian Chambers of Commerce and Industry (FICCI)

Awards & Accolades



- 1 **5 Star Rating for Panchpatmali Bauxite Mines by the Ministry of Mines for sustainable Mining.**
- 2 Award for Panchpatmali Bauxite Mines in the 17th CII Odisha State ESH Awards 2021 competition, for sustainable mining practices.
- 3 **Pollution Control Excellence Award 2021 for Panchpatmali Bauxite Mines by the State Pollution Control Board, Odisha**
- 4 Kalinga Environment Excellence Award for Alumina Refinery Plant
- 5 **Best CSR Award by Public Relation Council of India (PRCI) Vizag, Andhra Pradesh Chapter**
- 6 21st Annual Greentech Environment & Sustainability Awards, 2021 for Panchpatmali Bauxite Mines.
- 7 **CII EXIM Bank Business Excellence Platinum award for Alumina Refinery & Gold plus award for Panchpatmali Bauxite Mines.**
- 8 Kalinga Safety Excellence Platinum Award for Panchpatmali Bauxite Mines and Gold Award for Alumina Refinery at the Odisha State Safety Conclave.
- 9 **Energy Conservation Award, 2021 for Smelter & Power Plant, Angul with highest rating in Large Scale Category, conferred by CII.**
- 10 Kalinga HR Excellence Award organized by Institute of Quality & Environment Management Services (IQEMS) in collaboration with Institute of Public Enterprises, Hyderabad and Odisha State Productivity Council, Bhubaneswar.
- 11 **Non-Ferrous Best Performance Award, 2020-21 instituted by the Indian Institute of Metals (IIM), under the large scale manufacturing unit category.**
- 12 Golden Peacock Award, 2021 for Sustainability in the Mining & Metal sector.

Corporate Governance

Governance is key to Sustainability

The foundation of good governance is transparency, accountability, and integrity. It fosters responsibility, and an ethical business environment. Transparency, accountability, diligence, and financial discipline are the hallmarks of our corporate governance systems, which draw strength from our core Value of Trust & Integrity.

Our company's stated mission is to generate value for all stakeholders. 'Sustainability' is a core value imbibed in our ethos and systems, to pursue sustainable practices and to create a positive impact on communities we engage with. Over time, our governance framework has been reinforced by a strong internal control system, a timely and continuous flow of important information to stakeholders, and adherence to the law of the land.

Our organization operates with robust governance by deploying a well-crafted set of policies, guidelines, procedures, and standards and a well defined governance structure.

Governance Structure

The Board of Directors, which occupies the apex layer of the hierarchy in the organization provides strategic direction, and steers operational performance of the business. The erudite and competent Board sets forth the Company's vision, mission and goals, and assesses their effectiveness cum relevance vis-a-vis stakeholder expectations. The Board upholds the shareholders' unalienable rights as the genuine owners of the business as well as its responsibility to serve as a trustee for all stakeholders.

Board is answerable to all shareholders and each Board member has a primary responsibility to advance and safeguard the Company's interests. Corporate governance complies with the rules outlined in the Securities and Exchange Board of India Regulations on Listing Obligations and Disclosure Requirements 2015.

Being a public sector organization, Directors are chosen by the Government of India based on their qualifications, experience, and subject-matter knowledge. The Board conducts its business in accordance with the Companies Act of 2013, the Securities and Exchange Board of India's (SEBI) Listing Obligations and Disclosure Requirement (LODR) Regulations of 2015, the Department of Public Enterprises' (DPE) guidelines on the operation of Navaratna Companies, and other rules as may be from time to time issued by the Government.

The sanctioned strength of the Board comprises 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 Public Sector Enterprises Board (PSEB) selects the full-time executive functional Directors and the part-time independent directors.

Details of Board of Directors

As on march 31, 2022

Name of Director	Date of Appointment
Functional Directors	
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 Bijay Kumar Das, Director (Production)	01.12.2020
Shri Ramesh Chandra Joshi, Director (Finance)	04.02.2022
Shri Sadashiv Samantaray, Director (Commercial)	22.03.2022
Part time official Directors	
Shri Sanjay Lohiya, IAS	09.11.2020
Dr. Veena Kumar 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

Specific responsibilities are entrusted to a set of Board-level Committees, created to keep watch on activities occurring under their particular purviews. Committees at the board level are composed of a careful balance of functional and independent directors. The broad mix of board members in the various Board level committees consistently adds value to the decision-making that occurs within the scope of their responsibilities. Both statutory and non-statutory committees have

been established by NALCO for easy and hassle-free governance. Committees that are not required by law are created voluntarily to concentrate on particular issues and streamline the decision-making process. Committee meetings are subject to the same secretarial standards as Board meetings. The Board has given its approval to each Committee's Terms of Reference. The following is a list of the Board-Level Committees established.

STATUTORY COMMITTEES

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



NON STATUTORY COMMITTEES

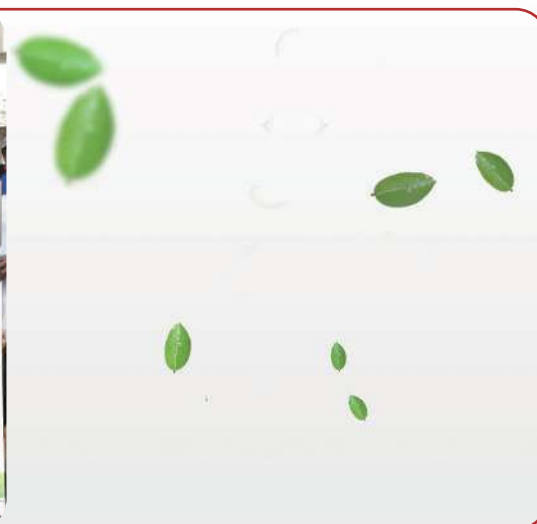
- Human Resource Committee
- Ethics and Corporate Governance Committee
- Committee of Directors for Projects and New Ventures

Performance & remuneration of the governance body

The manner of formal evaluation of the Board, Committees and individual directors which requires reporting in the Board Report is exempted for Government Companies, since directors are evaluated by the Administrative Ministry.

Being a Government Company, the remuneration, benefits and Performance Related Payments (PRP) of Functional Directors are governed as per extant DPE guidelines. MCA has exempted Government Companies from formulating policy relating to remuneration of Directors, required under Section 178 of the Act.

For more details regarding the performance evaluation and remuneration policies applicable to us, please refer to the 41st annual report : <https://nalcoindia.com/wp-content/uploads/2022/08/41st-Annual-Report-2021-22.pdf>



Ethics and Integrity

Moral and ethical principles govern the attitudes, actions, and judgements of our business organization and the people working for the same.

Values and Principle driven Company

NALCO has promoted corporate excellence for four decades, supported by values, beliefs, and standards that have been cultivated over time. Transparency, accountability, dedication to ideals, financial restraint, and responsibility to stakeholders are all part of it. The framework of NALCO's Good Governance Practices is built upon these values and concepts as well as regulations released by the Indian government and other regulatory bodies. Our well-made policies and manuals are so designed as to guarantee alignment with the appropriate course for sustainable development in the maze of organizational activities.

Our contract and purchase manuals guarantee fair dealing in all contract and procurement-related matters, while our marketing manual offers procedures and guidelines for honest and reliable transactions in

domestic and international settings. The Company's dedication to integrity, ethical behavior, transparency, and above all, to value creation for stakeholders achieved through responsible operations, is reflected in the Sustainable Development Policy and Core Values. Through the Fraud Prevention Policy, Whistleblower Policy, Code of Business Conduct & Ethics for board members and senior management, Code of Conduct and procedures for fair disclosure of unpublished price sensitive information, CDA rules, and Certified Standing Order, the system of Integrity, Transparency, and Ethical working is further strengthened. According to the Company's vigilance handbook, CVC Norms, SEBI Guidelines, Code of Conduct, and other applicable guidelines, any blatant deviation in the form of fraud, bribery, appeasement, etc. in any commercial transaction invites punitive measures. In order to support the transparency initiative even further, the Integrity Pact is also put into effect for all contracts worth 50 lakh and above. Under the Public Information Disclosure and Protection of Informer (PIDPI) Scheme of the Government of India, protection is offered to anyone filing a complaint



Current Policies and Manuals		Link
1	Code of Business Conduct and Ethics for Board Members and Senior Management	https://nalcoindia.com/wp-content/uploads/2020/02/Code-of-Conduct.pdf
2	Fraud Prevention Policy	https://nalcoindia.com/wp-content/uploads/2018/12/Nalcofraudpreventionpolicy.pdf
3	Whistle Blower Policy	https://nalcoindia.com/wp-content/uploads/2018/12/Whistleblowerpolicy_nalco.pdf
4	Delegation of Power	(Internal circulation only)
5	Vigilance Manual	https://nalcoindia.com/vigilance/manuals-policies/
6	Marketing Guidelines	(Internal circulation only)
7	Purchase Manual	(Internal circulation only)
8	Contracts Manual	https://nalcoindia.com/wp-content/uploads/2020/03/CONTRACT-MANUAL-2013-updatedtill-31-10-2021.pdf
9	Stores Manual	(Internal circulation only)
10	Independent External Monitor for Integrity Pact	https://nalcoindia.com/wp-content/uploads/2023/01/List-of-IEMs.pdf
11	Code of Practices and Procedures for fair disclosure of unpublished price sensitive information	https://nalcoindia.com/wp-content/uploads/2020/02/Code-of-Practices-and-Procedures-for-FairDisclosure-of-Unpublished-Price-Sensitive-Information.pdf
12	Risk Management Policy	https://nalcoindia.com/wp-content/uploads/2019/01/Final-Nalco-Risk-Policy_Nalco-for-websiteupload-1.pdf
13	NALCO Recruitment & Promotion Rules for Executives	https://nalcoindia.com/wp-content/uploads/2019/01/Recruitment-Promotion-Rules-for-Executives-as-on-18.11.2021.pdf
14	Dividend distribution Policy	https://nalcoindia.com/wp-content/uploads/2019/01/Dividend-Policy-1.pdf
15	Social Accountability Policy	https://nalcoindia.com/wp-content/uploads/2019/01/Social_Accountability-Policy-English.pdf
16	Policy on related party transaction	https://nalcoindia.com/wp-content/uploads/2022/12/Policy-on-Related-Party_Transactions.pdf
17	Sustainable Development Policy	https://nalcoindia.com/wp-content/uploads/2021/08/Sustainable-Development-Policy-28.06.21.pdf

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 in the link:

<https://nalcoindia.com/wp-content/uploads/2020/02/Code-of-Conduct.pdf>

Our code of conduct includes provisions for ethical behavior, disclosure of any conflicts of interest, accountability, compliance audits, and the protection of private information. We have procedures in place for the Board to take disciplinary action when the code of conduct is broken. During the period of the report, there were no complaints about its violations.

Mechanisms for Advice and Concerns about Ethics

There are numerous systems in place to handle suggestions and alleviate ethical worries. Defects with relation to ethical matters are revealed by the Controller and Auditor General (CAG) audit, corporate governance audit, and secretarial audit. The external audits give us timely and insightful input, which helps us improve our ethical processes. Our Vigilance department carries out routine inspections and undertakes preventive research to identify ethical risks. Any deviations from the terms of the contract would be handled by Independent External Monitors in accordance with the Integrity Pact made in line with SOP developed by Central Vigilance Commission.

Depending on the gravity of the issue, necessary steps are taken in accordance with the Vigilance Manual, the CVC Guideline, the Code of Conduct, and any other relevant circulars or guidelines, etc. On the basis of the established procedures, thorough investigations are conducted, functional advice is requested from the CVC in the circumstances in question, and the necessary DAR actions and corrective steps are implemented. Regularly required actions are taken to ensure equity, fairness, and transparency in all areas of activity, including upholding moral values. If necessary, first stage and second stage CVC guidance is requested in accordance with the provision, and then proper DAR actions and corrective measures are taken.

Integrity Pact

As of the most recent CVC SOP, NALCO has adopted the Integrity Pact. This agreement is applicable to all transactions and agreements that total at least INR 50 lakh.

The Pact requires an agreement between NALCO and the bidder to mutually avoid all sorts of corruption by adhering to a system that is fair, transparent, and devoid of any influence or biased deals throughout the entirety of the specific transaction. To guarantee that complaints and concerns relating to procurement are resolved in a timely manner, meetings with Independent External Monitors (IEMs) are held.

Whistle Blower Policy

Whistleblowing aids an organization's investigation of significant irregularities. Our policy offers enough protection for whistleblowers, which encourages more

workers to come forward and disclose any wrongdoing, corruption-related activities, business irregularities, misuse of authority, and contract breaches. The Policy addresses errors and occurrences that have occurred or are alleged to have occurred involving:

- Abuse of authority
- Breach of contract
- Negligence causing substantial and specific danger to public health and safety
- Manipulation of company data/records
- Financial irregularities, including fraud, or suspected fraud
- Criminal offense pilferage of confidential/proprietary information
- Deliberate violation of law/regulation Wastage / misappropriation of company funds/assets
- Breach of employee
- Code of Conduct or Rules
- Any other unethical, biased, favored, imprudent event

There were no whistle-blower complaints in the reporting year FY 2021-22.












Fraud Prevention Policy

This policy is applicable to any fraud, or suspected fraud, involving employees of NALCO (all full-time, part-time, including the management of NALCO, or employees appointed on an as-needed/temporary/contract basis) as well as representatives of vendors, suppliers, contractors, consultants, service providers, or any outside agency (ies) doing any type of business with NALCO directly or indirectly involved in unlawful/illegal or beyond the approved principles and procedures. Additionally, we make sure that this policy is rigorously applied and meticulously observed in all aspects of our corporate operations.

No fraud against the company by its officers or employees during the reporting year has been reported or filed by the auditors in their report pursuant to section 143(12) of the Companies Act, 2013.

Vigilance

Highlights of Vigilance Function

- 1  Study of contract/purchase/ sales files and Internal Audit Reports
- 2  Investigating complaints
- 3  Implementation of Integrity Pact
- 4  Surprise checks in sensitive areas
- 5  Advising on rotation of officials in sensitive posts
- 6  IT initiatives like Learning Portal, Online Vigilance Clearance, Online Exit Process and Online Vigilance Portal
- 7  Suggesting system improvements
- 8  Advising CMD on vigilance matters and matters relating to disciplinary procedures
- 9  Liaison with CBI
- 10  Scrutiny of Property Returns
- 11  Conducting training programs for awareness among employees and general public as a part of preventive vigilance mechanism

The vigilance function enhances internal controls against unethical behavior. A Chief Vigilance Officer (CVO) who is appointed on deputation from the Government of India heads the well-established vigilance department at NALCO. Other vigilance officers that support the CVO are chosen on a deputation basis with the CVO's approval. Three locations—the corporate office in Bhubaneswar, the S&P Complex in Angul, and the M&R Complex in Damanjodi—are where our company's vigilance is set up. Charter of vigilance duties also include measures for preventive, punitive, monitoring, and detection.

The Online Vigilance Portal was created to address the various requirements of the Company's vigilance function. The Portal offers details on the Vigilance Department's activities, procedures, and initiatives, as well as other aspects of the vigilance role. Additionally, it offers the ability to file a complaint and track its progress online, which makes it easier to file a complaint and strengthens the vigilance function overall.



Foundation Day Lecture by Hon'ble Governor of Odisha

12 stakeholder complaints regarding vigilance were received in FY 2021-22, while 1 complaint from the previous year was still pending at various stages of investigation. Out of these 13, 10 complaints were looked into and resolved throughout the year, while 3 complaints were at various stages of investigation at year's end.

e-Governance

Technology is a significant enabler in improving openness, integrity, and ethical standards. In our context, e-governance refers to the use of IT to deliver services, exchange data, conduct communications, integrate numerous standalone systems between organizations and stakeholders, as well as back-office operations and interactions across the entire organizational structure.

To ensure uniform processes and to enhance information accessibility, NALCO has adopted the SAP Enterprise Resource Planning (ERP) application, which integrates business functions like Sales & Distribution, Finance & Controlling, Materials, Human Resource, and Production Planning. GeM, the Central Public Procurement Portal, and SAP SRM are used for electronic procurement of goods and services. GeM Portal-based vendor purchase orders, invoices, and payments have been connected with the ERP. The digital application ecosystem includes both centralized employee applications and employee self-service applications. The Company hospitals in Angul and Damanjodi now use a computerized hospital management system.

In an effort to increase openness, accountability, and speed in the handling of proposals, NALCO introduced e-Office, a NIC product. Using a secured VPN connection, this solution also enables authorized users to access outside of the office. The e-office Knowledge Management System has been installed to provide quick and secure access to digitally preserved information. For the purpose of routine tracking and monitoring, online web-based programmes such as Capital Expenditure Monitoring, Fund Monitoring,

Compliance Management System, Vendor Bill Tracking System, and Contract Labour Management System are in use. Online Vigilance Portal and Complaint Management System have been implemented as a step towards more openness. To ensure continuity of business operations in the covid pandemic, we implemented a variety of digital strategies, including e-Office and Cloud Based Desktop Video conferencing, more secure work-from-home connectivity, online email access, and increased internet bandwidth to ensure workplace productivity and individual wellbeing.

Our company has introduced a new and improved Online Recruitment Portal to facilitate the recruitment process.

As a precursor to Smart Factory and in an integrated approach, a centralized MIS system has been introduced to adhere to "single source of truth" and connect "shop floor to boardroom".

Our Company has undertaken an ambitious project of "Smart Bauxite Mine". The project shall leverage the power of next generation technologies viz. Artificial Intelligence, Robotics, Automation, Cloud, Data Analytics, AR/VR across the value chain of bauxite mining for improved productivity, Cost, Asset Utilization, Safety, Health and Environmental impact

To capitalize on technology, NALCO is increasingly using a variety of e-applications. The "Namasya" for MSE vendors, "Nisarg" for CSR, "Hamesha Nalconian" for retired employees, and "Suraksha" for on-site safety inspection are examples of the apps available.

Right to Information

One appellate authority, one public information officer (PIO), and nine assistant public information officers (APIO) make up our Right to Information (RTI) response mechanism. The officials are in charge of giving the information to our stakeholders and the public upon request. We provide both physical and online responses to RTI inquiries and appeals. Since January 2017, we have partnered with the RTI portal of the Department of Personnel and Training, Government of India (www.rtionline.gov.in).

The following are the details of the RTI applications and appeals during 2021-22:

Heads	Requests	First Appeals
Under Process as on 01.04.2021	26	0
Received during the year (including cases transferred from other Public Authority)	508	46
No. of cases transferred to other Public Authorities	1	0
Decisions where requests/ appeals rejected	97	4
Decisions where requests/ appeals accepted and settled	429	42
Under Process as on 31.03.2022	7	0



walkathon at Bhubaneswar

Compliance of the guidelines on Corporate Governance

The Company is furnishing self-evaluation reports on a quarterly basis about compliance on corporate governance mandated by the Department of Public Enterprises (DPE). According to the self-appraisal report for the fiscal year, 2021-22 the Company is rated "Very Good". The self-appraisal report can be accessed at

<https://nalcoindia.com/wp-content/uploads/2022/04/Self-appraisal-Report.pdf>

Operations Assessed for Risks related to Corruption

We keep corruption at bay by conducting critical evaluations of our activities. Every significant transaction is subjected to checks to see if it complies with our policies and procedures. Additionally, all significant transactions are audited during the CAG audit. Our vigilance department conducts regular inspections.

Sample checks and thorough examinations of the CTE type are regularly employed. In order to ensure the highest level of compliance with the anti-corruption rules and processes, we conduct internal audits.

Communication and Training about Anti-Corruption Policies and Procedures

Our staff undergo regular training on vigilance and anti-corruption. We keep our personnel informed and infuse familiarity with new policies and procedures through regular training. The following types of training are offered:

- Knowledge of company rules and regulations.
- CVC guidelines
- Disciplinary Procedures
- Tendering and procurement procedures
- Commonly observed irregularities

In addition to the above, we also organize training where CBI Institute provides specialized 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. In FY 2021-22, 227 employees received training on anti corruption and vigilance.



NALCO Bhawan Corporate Office

Risk Management and Sustainability Strategy

Enterprise Risk Management

A strong risk management system that provides prompt detection and mitigation of inherent business risks is one of the main enablers to an organization's sustainable success in a complex, dynamic, and interrelated global business environment.

In order to address many facets of risk management, such as anticipation, identification, mitigation, remediation, and elimination, NALCO has established a risk management framework.

Risk statement of NALCO

We have a defined Risk Management Policy that seeks to ensure sustainable business growth with business stability.

The risk statement of NALCO summarizes 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."

The practice of risk management is integrated into overarching corporate plans. There is a Board-level risk management committee. The Committee periodically recommends corrective actions after reviewing the exception Risk Reports. To make sure that risks are handled through a well defined framework and established systems and procedures, risk mitigation measures are periodically reviewed. A regular review is conducted to find new risk areas and develop mitigation strategies. The designated risk officers keep risk registers in the required format for the identified risks, which are also reviewed by the company's internal auditors and senior management. Deviations are disclosed to the Risk Management Committee, if any.

Risk

Risk	NALCO's Response
Risk from Pandemic, Natural Calamities, Global Warming	
One of the largest risks is the impact of global warming on corporate organizations in the form of extreme weather and natural disasters. Additionally, as witnessed during COVID 19, there is a real possibility of pandemic.	We responded resolutely to the Covid Pandemic, and were successfully able to continue operations in the face of challenges the pandemic brought in, while building capability & resilience for such future scenarios. As for extreme-weather events the Company's geographical locations make it less vulnerable to such threats. Nevertheless, the Company has appropriate emergency-response plans and disaster management plans which are continually reviewed and improved. As for the business & financial risks & opportunities emanating from the global convergence on climate-action, the Company is evaluating options and taking up strategic action to deal with the same.
Raw Material Security	
A key concern when capacity is greatly increased is the inability to obtain raw materials today and in the future.	The company has secured extension of leases for Panchpatmali Mines' center, north, and south blocks. Additionally, allotment of Pottangi Bauxite Mine with estd. 75 million tonnes of bauxite reserves is already in place. Also, a JV company GNAL with GACL is set up at Dahej, Gujrat to produce 2.7 lakh TPA of Caustic Soda to meet requirement of Alumina Refinery.
Fuel Security	
Supply of Coal is realized through linkages, participating in e-auctions and also by imports from time-to-time. Coal is the major component of our energy basket. Additionally, coal prices vary widely depending on the method of purchase, posing a significant risk to the supply chain.	Apart from renewal of linkages, expected 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.
Water Availability	
Given the heavy strain on the existing water bodies, the availability of water is becoming increasingly important and poses a serious risk to sustainable development. 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.
Emission Control	
The increasingly tight emissions regulations are proving to be a serious issue because more stringent regulations would require 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 the same well below the current norms.

Opportunities

Business Growth and Diversification

Based on inevitable expansion in the domestic market's high-consumption sectors for aluminium, such as transportation, building, and energy transmission, the demand for aluminium is predicted to increase. The recent announcement of massive expenditures in infrastructure projects by the Indian government and the government's recent emphasis on infrastructure projects will result in a sharp increase in demand for the metal.

We have adopted an ambitious expansion strategy for significant rise in output. There is plan to produce premium aluminium alloys in a joint venture to meet the exacting demands of the automotive, aerospace, and defense industries. We have diversified into new markets, such as the manufacturing of caustic soda and the sourcing of key minerals abroad.

Sustainability Policy and Strategy

The business strategy of NALCO comprehensively includes sustainability strategy. We diligently evaluate business opportunities to identify & mitigate risks and address the environmental and social impacts. Our sustainability strategy is based on the belief that inclusive growth and harmonious socio economic development of the community gives sustainable value to the business and stakeholders.

Our sustainability strategy, which is a list of priorities, is shaped by our vision, mission, and value statement. It leads on a path of focusing investment, enhancing performance, and involving both internal and external stakeholders.

Our enduring aim is to generate value and enhance lives via sustainable and responsible corporate citizenship, and this purpose is supported by our well-articulated Sustainability Policy, which contains deeply rooted values that drive our actions. Our policy is aligned with the National Guidelines on Responsible Business Conduct (NGRBC). The departmental and functional goals and targets that make up the organizational goals are tracked using KPIs. Every year, we evaluate our sustainability procedures and make the necessary improvements.

Raw Material & Fuel Security

The company now is in a position of assured availability of key raw material and fuel on a sustained basis. The Panchpatmali Bauxite Mines' Central, North, and South blocks' leases have been extended. Pottangi Bauxite Mines with 75 Million tonnes of additional bauxite reserves is allotted to NALCO. A JV company GNAL with GACL is set up at Dahej, Gujrat to produce 2.7 lakh TPA of Caustic Soda for Alumina Refinery as part of raw material security. For supplementing linkages, NALCO has been granted the mining lease for the Utkal D and Utkal E coal mines, the former in advanced stage of operationalisation.

Environmental Strategy

We put in due effort into reducing and resolving any negative environmental effects as we plan and carry out various activities. Reduced environmental degradation, increased production of renewable energy, the use of cleaner fuels, technological advancement and installation of energy-efficient technologies, greening activities like tree planting, responsible resource consumption, and sound waste management practises are some of our environmental strategic priorities. All of our operational units are certified to ISO 14001: 2015 Environment Management System Standards. We aim to go above and beyond strict adherence to all environmental legal and regulatory requirements.

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.



Panchpatmali Bhavan

Responsible Mining

At NALCO, sustainable mining entails the choice of the best mining technique, the use of appropriate mining equipment, adherence to scientific mine-closure plan rehabilitation of the mined-out area, and afforestation.

Minimum blasting is used in NALCO's mining operations, and there are controls in place for noise, vibration, and air pollution. Secondary blasting of hard stratum is entirely avoided in order to avoid excessive noise and vibration, as well as the deterioration of topsoil fertility. Well-maintained mining machinery and equipment properly can greatly reduce excessive noise and vibration.

Being committed to responsible mining, NALCO recognizes that risks of adverse impacts may be associated with extracting & handling minerals and recognizes the responsibility to respect human rights and not contribute to conflict. We do not tolerate nor profit from, contribute to, assist with or facilitate any form of human rights violation, forced labour, compulsory labour or child labour. We do not directly or indirectly support nor contribute to any non-state armed group or its affiliates nor any private security force. There is no effort to conceal or disguise the origin of minerals or to mis-represent taxes, fees and royalties paid to the Government. We continually engage with central, state & local government authorities, civil society and affected third parties, as appropriate. A detailed description of NALCO's policy for responsible sourcing of bauxite is provided as supplement to this report.

Social Strategy

Our commitment to inclusive growth and equitable development is reaffirmed by our CSR Policy. In accordance with the rules of the Companies Act of 2013, NALCO's CSR Policy outlines the creation, implementation, monitoring, evaluation, recording, and reporting of its CSR actions aimed at creating a sustainable neighborhood where it conducts business. By positively affecting the lives of the weak and marginalized members of society in the areas of education, healthcare, women's empowerment, livelihood enhancement, rural infrastructure, promoting and restoring cultural heritage, encouraging sports, etc NALCO endeavours to achieve harmonious co-existence.

The NALCO Foundation was established to implement our social goals in a coordinated and organized way. Our social development work focuses on the socio economic growth of the nearby villages that are situated on the outskirts of NALCO's operational zones. By guaranteeing the involvement of the key stakeholders at the grassroots level in the project management process, NALCO Foundation has adopted a project-based accountability through need-based approach. The Foundation also supports the development of youth, women, PRI members, and other stakeholders' capacities.

Stakeholder Engagement

At NALCO, we understand that cultivating enduring relationships with stakeholders is essential to achieving inclusive and responsible growth. In order to create value for the company and its stakeholders, we delve into the needs, interests, and expectations of our stakeholders.









Strong stakeholder relationships have resulted from our honest and open communication with stakeholders. Identification of stakeholders is based on their impact on our activities as well as their influence over the accomplishment of our corporate goals.

Stakeholder Identification

List of all individuals, groups, and entities affected by the actions of the organization or having influence over it evaluating against the attributes shown below:

- Dependency Groups or individuals who depend on the operations, activities, products, or services of the organization or on whom the organization depends in order to function, either directly or indirectly.
- Responsibility Groups or individuals towards whom the organization currently has or may in the future have legal, commercial, operational, or moral/ethical obligations for.
- Influence Groups or individuals who may influence the strategic or operational decisions made by an organization or a stakeholder

Prioritized Stakeholders

Sr. No.	Stakeholder
1	 Suppliers & Vendors
2	 Customers & Consumers
3	 Employees
4	 Government / Regulatory Bodies
5	 Investors and Shareholders
6	 Industry Associations
7	 Civil Society/ NGO and Local Communities
8	 Contractors/Other service providers



Approach to Stakeholder Engagement

All of NALCO's stakeholders are diligently engaged with, and the level of involvement is in keeping with the stakeholder's influence or interest in the organization. For stakeholder engagements, NALCO has mapped its internal and external stakeholders.

During stakeholder engagement, evaluation of the organization's interest in light of its internal and

external context with regard to the three sustainability pillars of economic, environmental, and social issues is taken into consideration. We conduct introspection, identify deviations from responsible business strategy, and determine how to rectify them according to the information collated. Through formal or informal lines of communication, this knowledge is continuously updated

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

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

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.



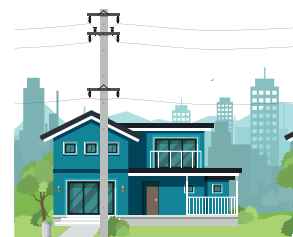
Economic

Economic Performance
Procurement Practices
Anti-Corruption
Anti-competitive Behavior
Indirect economic impact



Social

Forced Labour
Child Labour
Employment
Occupational Health and Safety
Training and Education
Diversity and Equal Opportunity
Non-Discrimination
Local Communities
Supplier social assessment
Freedom of Association and Collective Bargaining



Environment

Water and Effluents
Emissions
Wastes
Biodiversity
Supplier Environmental assessment



To identify, prioritize, and define the features that are most significant to stakeholders and a company's management is the core of conducting materiality assessment. The sustainability strategy is led by material concerns, those that reflect the company's greatest 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.

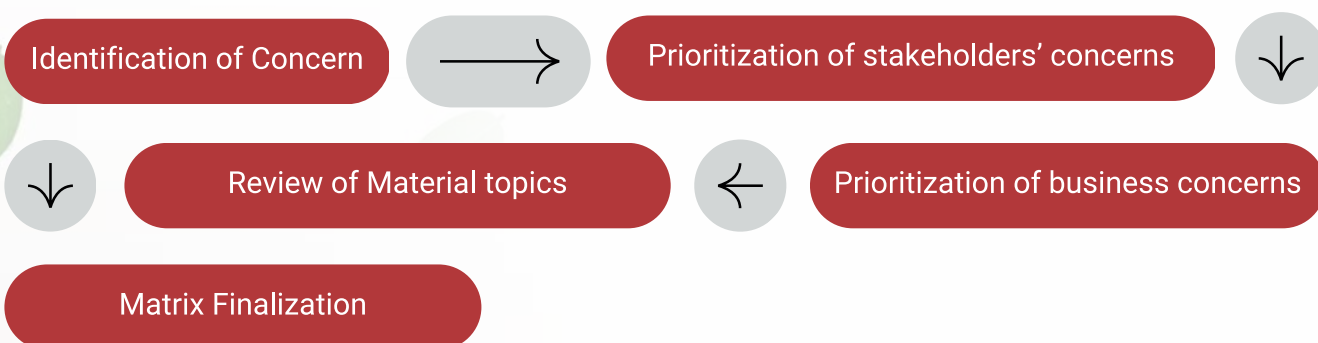
The Report Content Principles and Materiality Test are applied while formulating and directing the materiality analysis process in line with GRI Standards. For the purpose of capturing the viewpoints of various stakeholders, a systematic materiality assessment exercise has been conducted. In addition 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. By distributing the aforementioned questionnaire to a select group of stakeholders, responses from stakeholders in various areas were gathered.

Based on numerous areas of business operations and knowledge gathered from the stakeholder engagement process, the exercise's result has been evaluated.

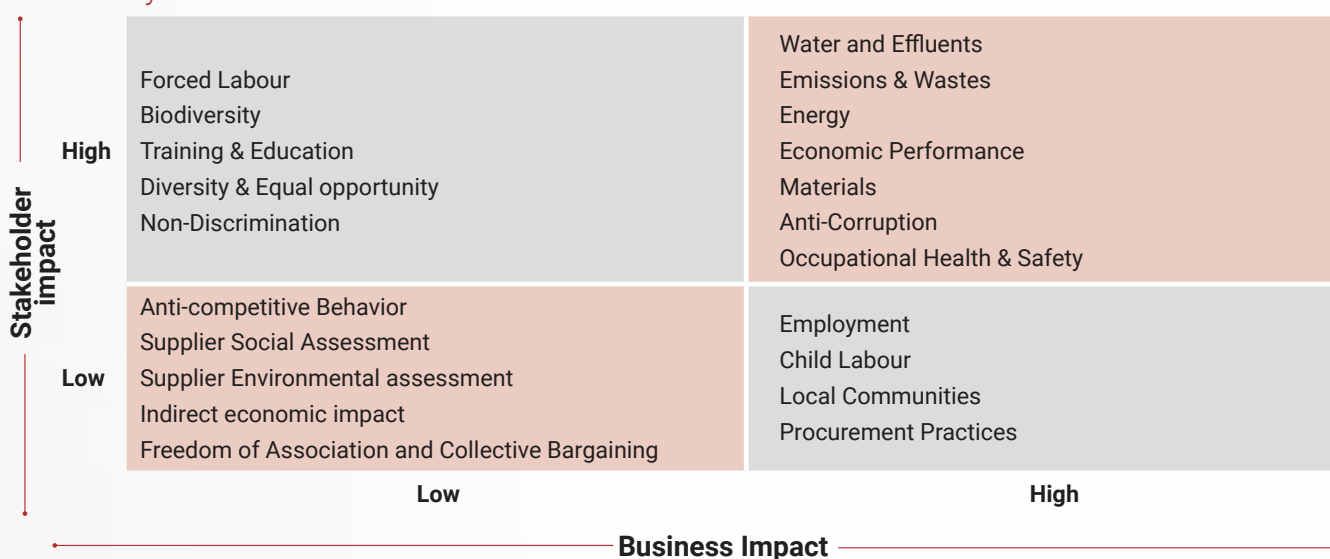
Our understanding of the material aspects is based on the multiple inputs and conversations we had with various stakeholders. The MOU agreed between Management and Ministry for the fiscal serves as the foundation for determining the weight that the government gives to various issues. The primary concerns were plotted on a 2X2 matrix according to their importance to management on one axis and their sizable influence on stakeholders on the other.

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 Standards.

Materiality Process



Materiality Matrix



Materiality Boundaries

Sr. No.	Materiality Topic	Topic Boundary (Inside or outside the boundary)
1	Economic Performance	Inside
2	Procurement practices	Inside
3	Anti-Corruption	Inside
4	Materials	Inside
5	Energy	Inside
6	Water and Effluents	Inside
7	Emissions	Inside
8	Wastes	Inside
9	Occupational Health and Safety	Inside
10	Training and Education	Inside
11	Local Community	Outside
12	Biodiversity	Outside

All the operations of NALCO have been included in the consolidated financial statement. Please refer Annual Report.

Economic performance



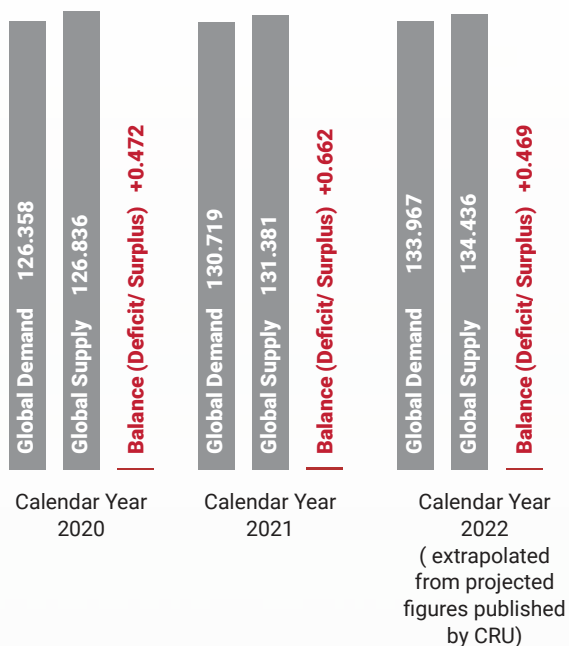


Economic Scenario

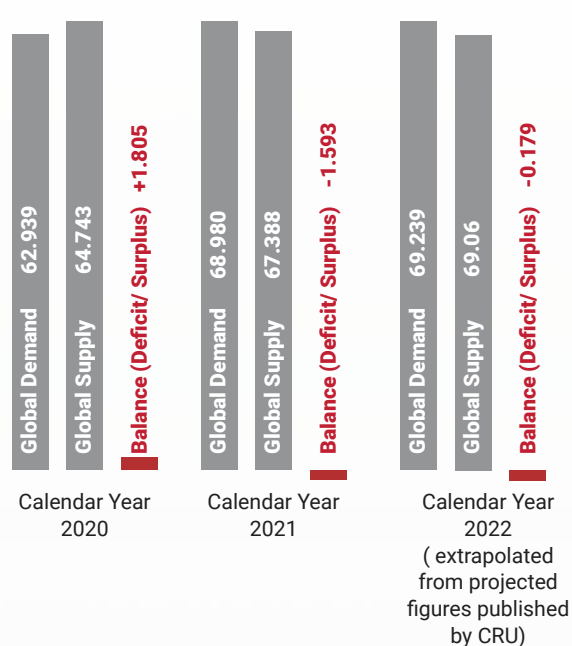
An organization's performance and sustainability is best indicated by consistent economic health. The financial performance commensurate with the aspirations of shareholders, investors, the government, and society has always been the prime goal for NALCO, an institution that has generated profits since it began doing business and is a debt-free corporation. Every investment and expenditure plan is critically examined by NALCO management, supported by a competent finance department that is present at the corporate, unit, and regional levels. They also keep track of all the company's financial resources.

The financial function's boundaries go beyond the actual confines of the business to take into account the needs of shareholders, value chain partners, financial institutions, and the domestic and global environment.

Alumina (Demand and Supply) Unit- Mt



Aluminium Metal (Demand and Supply) Unit- Mt



Economic Scenario

NALCO is duly cognizant of the issues and advantages the aluminum industry faces on the global and national stages. The increase in high-consumption categories, pricing changes, geopolitical concerns, the Indian government's budget, and its priority regions are all factored in the organization's business plans and strategies. Following are the organization's opportunities and risks, as determined by research and investigation



Opportunities

- Global Aluminium demand (primary and secondary) is forecast to grow 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.
- The highest growth in terms of absolute demand will come from the transportation sector which, driven by decarbonization policies and the shift from vehicles powered by traditional fossil fuels to electric vehicles (EVs), will go from consuming 19.9 MT of aluminium in 2020 to consuming 31.7 MT in 2030. More than half of the aluminium consumption growth coming from the transportation sector in Asia Ex.-China is expected to come from India (27%), Japan (17%) and the Middle East (12%).
- In the electrical sector, the transition towards green energy sources will strengthen the sector's demand for aluminium, which will reach 15.6 MT in 2030 starting from 10.4 MT in 2020. Supporting solar power projects through alliances with designers and manufacturers can be key to increase aluminium demand coming from this sector, as solar power requires over four times more aluminium per installed megawatt than wind power and around 25 times more than coal. In addition to this increase in consumption from renewables, 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 and can be beneficial from a cost perspective, especially when physical space is not a constraint.
- Construction is expected to show relatively low growth in the next decade as consumption increases from 21.2 MT in 2020 to 25.8 MT in 2030. Following a slightly different path than other sectors, growth will come mainly from Asia Ex.-China as demand remains linked to infrastructure spending and urbanization rather than green trends.
- Aluminium consumption from the packaging sector will increase from 7.2 MT in 2020 to 10.5 MT in 2030, driven mainly by the rise in popularity of canned drinks in North America, Europe, and China. 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.

Threats

- 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, which carries the risk of causing a glut in the market in the coming months. Abnormally high price of aluminium metal also adversely impacts demand for the metal, as consumers start looking for substitute materials.
- Another threat from the ensuing war to the domestic Aluminium industry is the exponential rise in price of imported coal, 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.

Other threats include risk of adverse government policies, downturn in the economy, fluctuations in global prices/exchange rate and cheaper aluminium imports



We have chalked out a corporate plan to deal with the threats and opportunities. The plan includes a 3-year action plan, a 7-year strategy, and a 15-year vision to help the company's bottom line and top line.

In order to offset the long-term effects of the commodities cycle, the company has developed functional and business initiatives that will provide it a competitive edge.

Growth will be achieved by the expansion of the main business, forward integration through downstream facilities, selective diversification, and backward integration for the security of raw materials. The implementation of the identified functional and business initiatives is in various stages.

New Projects

Brownfield 5th Stream expansion project in its existing Alumina Refinery which shall add 1.0 MTPY to its existing installed capacity of 2.1 MTPY (total capacity 3.1 MTPY), based on improved Medium Pressure Digestion technology of M/s. RTAL (Rio Tinto Aluminium Ltd.)

Setting up of a crushing & conveying system to source bauxite from existing Panchpatmali Mines South Block

Development of Pottangi Bauxite Mines (75 Million Tonnes)

Development of Utkal-D and Utkal-E Coal Blocks (175 Million Tonnes)

Wind power project of capacity 25.5MW at Kayathar, Tamil nadu

Business Development:

JV company named M/s. GACL-NALCO Alkalies & Chemicals Pvt. Ltd. (GNAL) with GACL 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 apart of raw material securitisation

JV with M/s. Odisha Industrial Infrastructure Development Corporation (IDCO) for developing Angul Aluminium Park for promotion of Aluminium downstream industries in Odisha with equity holding of 49% and 51% respectively

JV with M/s. Mishra Dhatu Nigam Ltd. (MIDHANI) named M/s. Utkarsha Aluminium Dhatu Nigam Limited (UADNL) 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.

JV Company named M/s. Khanij Bidesh India Limited (KABIL) with HCL and MECL for acquisition of some strategic minerals in overseas locations to promote the "Make in India" initiative of the Government of India.



R&D and Innovation Initiatives

Expenditure on R&D: INR crore

Nature	FY 2019-20	FY 2020-21	FY 2021-22
Capital	2.76	0.79	37.58
Revenue	10.82	11.83	27.64
Total	13.55	12.62	65.21
R&D Expenditure as % of Turnover	0.16	0.14	0.45

Highlights of 2021-22

AP2XNO pot technology trials in smelter

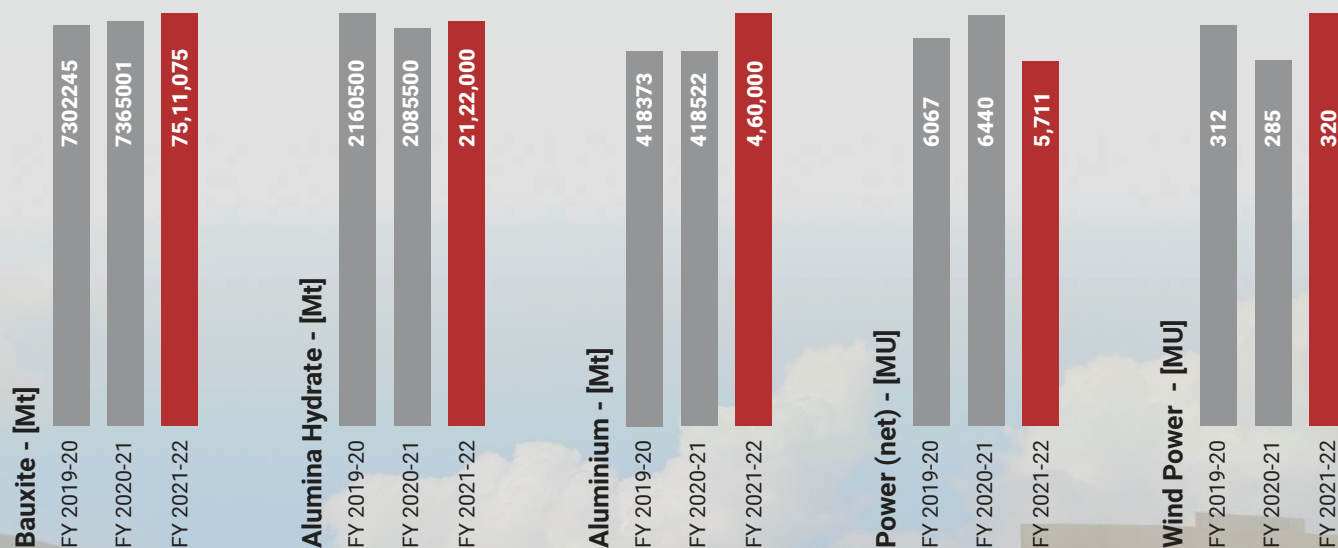
New process developed for making Zeolite 13 X at Refinery Plant.

Certified Reference Material (CRM) of Bauxite, 1st of its kind developed indigenously.

A new process for recovery of Al metal from Al dross developed in bench scale

As on 31st March, 2022, 06 in-house projects and 20 collaborative projects were in progress.

Production performance during the year



Financial & Sales Performance

Item	Unit	2019-20	2020-21	2021-22
Sales Performance				
Total Alumina Sale	in '000 Mt	1304	1228	1,233
Total Aluminium Sale	in '000 Mt	396	423	457
Financial Performance				
Gross Sales	in INR Crores	8,425.75	8,869.29	14,058.98
Domestic Sales	in INR Crores	4914.83	3,706.35	7694.83
Export Turnover	in INR Crores	3,510.92	5,162.94	6,364.15
Profit Before Tax	in INR Crores	226.24	1316.52	3,955
Profit After Tax	in INR Crores	138.23	1299.53	2,952
Net Worth	in INR Crores	9988.07	10,680.70	12,554.64
Return on Net Worth	%	1.38	12.17	23.51
Book value per share (face value INR 5/-)	INR	53.54	58.15	68.36
Earnings Per Share	INR	0.74	6.97	16.07

Direct Economic Value Generated and Distributed

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Direct Economic Value Generated (Values in INR Crores)			
Revenue from operations	8,471.84	8,955.79	14,180.81
Revenue from other sources	272.58	146.6	297.42
Total	8,744.42	9,102.39	14,478.23
Economic Value Distributed (Values in INR Crores)			
Operating expenses (Excluding employees' wages and benefits)	6,524.11	5,855.63	8,167.56
Employee wages and benefits	1,994.07	1,930.24	2,355.80
Payments to providers of capital	513.04	460.61	1,101.98
Payments to government (Tax on PBT)			
Corporate Tax	151.4	177.7	1,051.75
Dividend distribution Tax	105.46		--
Total economic value distributed	9,288.08	8,424.18	12,677.09
Economic Value Retained	-543.66	678.21	1,801.14
Additional information on Expenditures included in operating expenses (Values in INR Crores)			
Community investment			
CSR expenses	39.71	35	36.91
Total community expenses	39.71	35	36.91
Horticulture (Green belts within and vicinity of the plants)	11.64	11.92	12.05



Sabari lake garden, Damanjodi

Financial Implications And Other Risks And Opportunities Due To Climate Change

At NALCO, we are fully aware of the problems emanating from climate change, the risk it poses, and the opportunities ushered in as a result of governments and corporate addressing the threat. So, on one hand, we strive to curtail contribution to causes of climate change, and on the other, we try to make best of the opportunities that arise as humanity combat climate change. As a result, we expect increased use of aluminium as the light-weight and conductive metal of choice in the automobile, power transmission, railway traction, packaging, and construction sectors as a direct consequence of initiatives to reduce carbon emissions. Utilizing aluminium will lighten cars and railroad traction, improving both weight and fuel economy. It can take the place of plastic and polythene in the packaging business. It will almost entirely replace wood in the construction sector. On the other end, we expect far greater scrutiny and stringent regulations on

emissions, biodiversity and ecosystems, energy usage, etc that will demand investment in those areas.

Given the aforementioned realities and the urgent measures needed to reduce the risks they represent, the mining and manufacturing industries place a high emphasis on environmental responsibility in order to ensure long-term sustainability. As part of our efforts to transition to a low-carbon future, we have put renewable energy sources like wind and solar energy into place.

Our contributions towards mitigation efforts include resource conservation, reduced energy use, and a rise in the proportion of renewable energy. India has established the National Action Plan on Climate Change (NAPCC) and is wholly committed to halting climate change. The Perform, Achieve, and Trade plan (PAT), a market-driven programme, has been executed by the National Mission on Enhanced Energy Efficiency (NMEEE), which was defined by the Bureau of Energy Efficiency (BEE) under the auspices of NAPCC. Our S&P complex and the Alumina Refinery have exceeded set targets.

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, 2022	-162.31	-17.51	-2.63	-11.78	-6.53	22.16

Defined Benefit Plans

Gratuity: Gratuity payable to employees as per The Payment of Gratuity Act subject to a maximum of INR 20,00,000/-. The gratuity scheme is funded by the Company and is managed by a separate trust. The liability for gratuity under the scheme is recognised on the basis of actuarial valuation.

Post retirement medical benefit: The benefit is available to retired employees and their spouses who have opted for the benefit. Medical treatment as an in-patient can be availed from the Company's hospital/Govt. Hospital/hospitals as per company's rule. They can also avail treatment as out patient subject to maximum ceiling of expenses fixed by the Company. The liability under the scheme is recognised on the basis of actuarial valuation.

Settling-in-benefit: On superannuation/retirement/termination of service, if opted for the scheme, the transfer TA is admissible to the employees and / or family from the last headquarters to the hometown or any other place of settlement limited to distance of home town. Transport of personal conveyance shall also be admissible. The liability for the same is recognised on the basis of actuarial valuation.

NALCO Benevolent Fund Scheme : The objective of the scheme is to provide financial assistance to families of the members of the scheme who die while in employment of 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. The liability for the same is recognised on the basis of actuarial valuation.

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 an equivalent sum as a matching contribution. The liability for the same is recognised on the basis of actuarial valuation.

Superannuation gift scheme: The objective of the scheme is to recognise the employees superannuating or retiring on medical ground from the services of the Company. The scheme includes a gift item worth of INR 25000/- per retiring employees to be presented on superannuation/ retirement. The liability for the same is recognised on the basis of actuarial valuation.

Defined contribution plans

Provident fund: The Company pays fixed contributions to Provident Fund at predetermined rates, to a separate trust, which invests the funds in permitted securities. On contributions, the trust is required to pay a minimum rate of interest to the members, as specified by Govt. of India. b) Pension fund: The Company pays fixed contributions to the trustee bank of PFRDA, which in turn invests the money with the insurers as specified by the employee concerned. The company's liability is limited only to the extent of fixed contribution.

Other long term employee benefits

Compensated absences : The accumulated earned leave, half pay leave & sick leave is payable on separation, subject to maximum permissible limit as prescribed in the leave rules of the Company. During the service period encashment of accumulated leave is also allowed as per the Company's rule. The liability for the same is recognised on the basis of actuarial valuation.

Long Service Reward : The employee who completes 25 years of service is entitled for a long service reward which is equal to one month basic pay and DA. The liability for the same is recognised on the basis of actuarial valuation.



Fit India Movement at NALCO

NEFFARS : In the event of disablement/death, on deposit of prescribed amount as stipulated under the scheme, the Company pays monthly benefit to the employee/ nominee at their option upto the date of notional superannuation.

Procurement Practices

We recognise the crucial role of vendors and suppliers and that their cooperation with NALCO is indispensable to our performance. By active participation, resolving of disputes, and communication of concerns, the mutually beneficial relationship has been cemented. At NALCO, we strive to establish an enduring partnership based on mutual respect and confidence with our supply chain.

Our vast network of vendors and suppliers include transporters, service providers, plant and machinery suppliers, and raw material suppliers.

We are dedicated to forging enduring business ties with suppliers who not only satisfy the necessary specifications but also support our corporate values and procedures. Supplier value management is made easier by our reliable supplier management system. To ensure that the highest ethical standards and

best practices are followed in accordance with the directives of the Government of India, NALCO engages pro-actively with the suppliers. Regular reviews are conducted to reduce supply chain risks and speed up the procurement process.

NALCO supports local suppliers and Micro & Small Enterprises (MSEs) in and around its operating units.

MSEs (including local suppliers) are invited to frequent vendor meetings and supplier development programmes, which operate as a forum for outlining needs and creating action plans that will benefit both parties.

We get bauxite from our captive mine. Coal supply is ensured by long-term linkage agreements and shortfalls are made-up through imports, bridge linkage coal, and participation in online e-auctions. To effectively deal with supply volatility of other key raw-materials, a string of capable procurement sources have been established. The half-yearly procurement strategy, which is devised at the start of the year, guides the purchases of raw materials.

Nurturing local suppliers

We take active interest in development of local suppliers. The Company has created MSE facilitation Cells at both its Units to improve their competitiveness by providing guidance in Technical, Commercial areas to these vendors. All the goods and service which can be offered by MSE/ Ancillaries units in addition to 358 items reserved by Govt. of India are listed and displayed prominently and we posted in our website and incorporated in MSE App NAMASYA (NALCO Micro and Small enterprise Yogayog Application – Bi-lingual App for MSE) for wider circulation and awareness. Namasya is a mobile App for MSE Vendors which empowers MSEs with required information about vendor registration process, items which can be supplied by the technical specification, vendor development programmes and

training programmes of NALCO etc. The Company has provided display halls both at M&R and S&P complex for displaying the products which can be supplied by MSEs. The product details along with technical know-how for developing the product & information regarding annual requirement and last procurement price etc. are provided to Micro & Small Entrepreneurs. Relaxation in tendering processes. Waival of EMD is extended to such units to encourage them to participate in bidding. Our purchase manual is suitably amended to extend purchase preference to SME units quoting in the band of 15% of lowest quoted price for the products and service year marked for them.

Highlights of NALCO's support to Ancillary Units & MSEs

Sr. No.	Highlight
1	The procurement of products produced and services rendered by MSEs (Micro and Small Enterprises) of Odisha including Ancillary Units for FY 2021-22 stands at INR 430.72 crore (as against INR 373.82 crore of last FY). The total procurement of products produced and services rendered by MSE units (including those from outside Odisha) stands at INR 713.80 crore during FY 2021-22 (as against INR 536.73 crore during FY 2020-21) and it is 31.22% of the total procurement of Goods and Services made by your Company against Govt. target of minimum 25%.
2	The PLAC (Plant Level Advisory Committee) meeting for the year 2021-22 was conducted at Corporate Office, Bhubaneswar on 13.12.2021 in virtual mode in association with DIC & MSME Department, Govt. of Odisha.
3	Special efforts have been made for registration of women owned MSEs and SC/ST owned MSEs in association with National SC/ST Hub Office (NSSHO) & NSSHO have been requested to identify probable SC/ST owned MSEs for items required by our Company. Our Company participated in 'Entrepreneurship Awareness Program for Women', organized by MSME Dept., Govt. of Odisha on 11.03.2022 at Bhubaneswar which was attended by around 100 women owned MSEs.
4	All MSE vendors (including Ancillaries) are being requested to onboard in GeM Platform. Also, as NALCO is registered with RXIL (TReDS Portal) all MSE vendors (including Ancillaries) are being requested to register in TReDS Portal (RXIL) to avail the benefits extended to MSEs.
5	Due to restrictions imposed on account of COVID-19, the Company could organize only 07 vendor meets (including MSEs and Ancillaries) in 2021-22. All the above meets were on virtual mode only.
6	procurement data from MSEs (Micro and Small Enterprises) are being uploaded on a monthly basis in "MSME SAMBANDH" App of MSME Department, GoI.
7	NAMASYA (NALCO Micro & Small Enterprise Yogayog Application) APP is in operation to facilitate the existing MSEs registered with the Company as well as MSEs not registered. The APP empowers MSEs with information about vendor registration process, items which can be supplied by them with technical specification, vendor development programmes and training programmes of your Company etc.

Highlights of NALCO's support to Ancillary Units & MSEs-

Nature	FY 2019-20	FY 2020-21	FY 2021-22
Total value of goods & services procured from MSEs (Including MSEs owned by SC/ST entrepreneurs) (In INR crore)	484.51	536.73	713.8
Total value of goods & services procured from only MSEs owned by SC/ST entrepreneurs (In INR crore)	13.77	8.22	5.94
Total value of goods & services procured from only MSEs owned by women entrepreneurs (In INR crore)	3.5	16.498	33.21
Percentage of procurement from MSEs (Including MSEs owned by SC/ST & women entrepreneurs) out of total procurement*	31.08	30.42	31.22
Percentage of procurement from only MSEs owned by SC/ST entrepreneurs out of total procurement*	0.88	0.466	0.26
Percentage of procurement from only MSEs owned by women entrepreneurs out of total procurement*	0.22	0.935	1.45
Total number of Vendor Development programmes for MSEs	10	8	7

*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.

FY 2019-20 **484.51**

FY 2020-21 **536.73**

FY 2021-22 **713.8**

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

FY 2019-20 **3.5**

FY 2020-21 **16.498**

FY 2021-22 **33.21**

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

Environmental Performance

NALCO
नाल्को

Environmental excellence is our cherished objective as we share the global concern on environment degradation and climate change. The installation of appropriate pollution control technologies are emphasized in NALCO's environmental policy, which places a high value in promoting and maintaining a clean environment across all of our operations as a responsible Navratna CPSE. We meticulously evaluate the environmental aspects and impacts of all operations and activities done by us. The charter for the Board level CSR & SD Committee includes environmental preservation and pollution control. All of our production facilities adhere to the Environment Management Systems based on ISO 14001:2015 Standard. The major among NALCO's main environmental management activities are the use of fly ash and red mud, afforestation of mined-out regions, and cutting-edge pollution control facilities.

Through numerous well-chosen initiatives over the years, NALCO has manifested its dedication to environmental stewardship, which include sustainable bauxite mining and rehabilitation, efficient resource use, effective emission control,

water pollution control, water conservation, waste reduction, and land use optimization. Our energy-intensive facilities, including the CPP, Smelter, and Alumina Refinery, have put in place Energy Management Systems that have been duly certified to ISO 50001 standards. Our sustainability agenda places emphasis on energy efficiency.

In order to measure, monitor, assess, and regulate various environmental parameters and to implement environmental protection measures, a full-fledged Safety, Health, and Environment Department has been established in our corporate office and production facilities.

Adequate resources are available to adopt new technology and deploy pollution-control methods as mandated by ever escalating norms and requirements. Some of the initiatives in this direction include adopting high concentration ash slurry disposal and redesigning ESPs. The adoption of better combustion technology, effective fuel handling, automated burner management,

and fume/gas treatment have all contributed to the reduction of emissions and enhancement of efficiency. We have continually pushed the drive for profitable alternate uses for wastes and rejects through internal and collaborative R&D efforts. By implementing recycling techniques for waste and sewage water, we continue to deploy innovative technology to reduce water pollution and achieve zero discharge to aquatic bodies. All hazardous materials are handled, stored, and used in line with established procedures. Caustic and fluoride pollution in the refinery unit and smelter plant, respectively, are given particular attention. We regularly examine and revise our goals and policies. Our mines and other units actively support biodiversity protection to reduce negative effects on biological resources and natural ecosystems.

We take environmental factors into account when making strategic or routine decisions because we recognise the relevance of developing concerns about climate vulnerabilities and resource scarcity. For us, economics and ecology are closely linked.

Excellence in Environmental Protection



- Adherence to consents, authorizations, and licenses



- Adoption of environment-friendly and non-polluting technologies.



- All production units are ISO 14001:2015 certified.



- well-equipped laboratories for monitoring the effluent and emissions quality.



- R&D projects that address alternate uses, recycling, and reuse of wastes and rejects.



- In places vulnerable to air pollution and dust pollution, the provision of ESP, FTP, bag filters, dust suppression systems, and dust extraction systems.



- Use of improved combustion technology, proper fuel handling, and automated burner management for higher efficiency and emission control.



- disposal of hazardous trash, e-waste, and non-biodegradable solid waste conforming to latest regulations and best-practices.



- Extensive drive for water conservation, recycling of wastewater and zero-discharge system

Environmental Risk and Concern Management

Each operating unit is subject to environmental audits twice every year under the ISO 14001 Environmental Management System. Environmental risks that emerge from Environmental Aspects & Impact investigations

are normally managed and controlled in accordance with our policy of creating the least amount of damage to the environment. Identified risks are addressed in a priority-based manner utilizing the proper mitigation techniques. Our R&D efforts in the areas of waste management and hazardous waste disposal have yielded impressive results. The matrix below depicts the environmental risk to our plants.

Mines

Concern	Mitigation
Air Pollution: <ul style="list-style-type: none"> Emission from heavy vehicles Fugitive Dust emission during Bauxite mining, handling including crushing in crusher and conveying conveyor. 	<ul style="list-style-type: none"> Proper selection and maintenance of vehicles to minimize emissions from vehicles. Water spraying on haul roads and stockpile area with 6 nos. of 28 kL mobile sprinkler and PLC based fixed sprinklers along haul road. Suitable blast design and delayed blasting using NONEL detonators to minimize dust generation. Implementation of dry fog system at Crusher and Conveyor to suppress dust & fully covered conveyor to prevent dust generation. Adoption of vacuum suction/wet drilling in all drill machines. Fog cannon to suppress dust in stockpiles
Water Pollution: <ul style="list-style-type: none"> Wastewater from Mining, Canteen, Vehicle Washing and sewage from toilets. 	<ul style="list-style-type: none"> In-situ peripheral barrier all around the active mining area to prevent silt laden rain water from going out. Check dams at strategic points to filter muddy water if any from mining areas. Collection of Rainwater In mining areas in sumps and percolation of collected water into ground. Water from toilets treated with insecticides and disposed in soak pits, 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.
Noise pollution: <ul style="list-style-type: none"> Noise during blasting and operation of heavy vehicles. 	<ul style="list-style-type: none"> Blasting has been replaced with ripping and dozing. Peripheral plantation to prevent propagation of noise. Selection Of Suitable Equipment Generating less noise, provision sound proof cabins HE and provision of PPEs to workers.
Solid Waste Pollution: <ul style="list-style-type: none"> Overburden material from excavation of minerals. Organic waste from the canteen. 	<ul style="list-style-type: none"> 100% reuse topsoil and overburden fully reused for backfilling of mined out areas. Biogas plant to treat the organic waste.
Land Degradation: <ul style="list-style-type: none"> Excavation of overburden and ore material by blasting and use of machinery. 	<ul style="list-style-type: none"> Concurrent mining and backfilling of mined out areas. Rehabilitation of mined out areas with extensive plantation convert barren land into a forest.

Alumina Refinery

Concern	Mitigation
Air Pollution: <ul style="list-style-type: none"> Stack Emission Dust in Calcined Alumina, Bauxite, Coal and Ash handling areas 	<ul style="list-style-type: none"> ElectroStatic 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 calcinations process. Bag filters and dedusting systems are provided in alumina loading and unloading areas to prevent dust emission. Sprinkler and dedusting system are provided in Lime handling area, Red mud pond area, Ash, Coal and Bauxite handling areas to control fugitive emission
Water Pollution: <ul style="list-style-type: none"> Waste effluent Sewage & Waste water iii) Surface Runoff water 	<ul style="list-style-type: none"> Effluent water is collected in a holding pond, and recycled back in the process at Alumina Refinery. Recycling and reuse is being done for the waste water at the RMP / Ash Pond for process use at Alumina Refinery. Sewage Wastewater is treated in Sewage Treatment Plant and the same is reused for Horticulture purposes. Surface runoff & storm water is stored in the Sabari Lake and disposed of outside after necessary treatment if required.
Land Contamination: <ul style="list-style-type: none"> Lime grit Red mud Ash 	<ul style="list-style-type: none"> Lime Grit is disposed to recyclers for brick or other similar product manufacturing. Red mud utilization for extraction of Iron concentrate and Gallium from Red mud is being explored. Higher utilization of fly ash by motivating entrepreneurs for utilization of fly ash in areas such as: Manufacturing of fly ash bricks, cement, road construction, dyke making, filling up low lying areas etc.

Captive Power plant

Concern	Mitigation
Air Pollution: <ul style="list-style-type: none"> Flue Gas from Boiler. Fugitive Dust from Coal and Ash Handling Area. Heat emission in flue gas to the atmosphere. 	<ul style="list-style-type: none"> Ash and other particulate matters are extracted by ESPs provided in flue gas paths. Dust Extraction and Sprinklers systems are provided in Coal and Ash Handling areas to control fugitive dust. Air Heater and Economisers are provided to recover heat from flue gas.
Water Pollution: <ul style="list-style-type: none"> Effluent Waste water Sewage Waste water Surface runoff water 	<ul style="list-style-type: none"> 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. Sewage Treatment Plant is provided for treatment of Sewage Waste water. The sewage wastewater after treatment is reused for Horticulture & plantation purposes. Rain water harvesting system & Surface runoff water is used in fire hydrant systems for fire fighting.
Land Contamination: <ul style="list-style-type: none"> Mill Rejects Ash Scraps (Metallic and Non-metallic scraps) 	<ul style="list-style-type: none"> Mill Rejects are stored in demarcated low lying areas for disposal to authorized parties for reuse. Both bottom ash and fly ash from ESPs are disposed of in the Ash pond in slurry form. Also after completion of the project for lean slurry disposal to Mines Void in July 2021 for reclamation of mined out area the ash is disposed in lean slurry mode to South Bharatpur (OCP). Dry Ash is also used for low lying area filling, Stone quarries void filling, disposed to value added product manufacturer for ash brick making and use in asbestos, cement etc. under a subsidy scheme. Construction of Ash mound over Ash Pond –II has been completed. The Scraps are sold to recyclers

Smelter

Concern	Mitigation
Air Pollution: <ul style="list-style-type: none"> Fluoride & particulate emission from the FTP/FTC stacks due to pot operation. Generation of PFC during anode effect. 	<ul style="list-style-type: none"> Fluoride emission is controlled by adsorption of fluoride gas in alumina in FTPs & FTCs. Total fluoride emission is being maintained below the norm of 0.8 kg per ton of Aluminum produced. Continuous laser based fugitive monitoring system is already installed in Pot Line-4 to monitor rooftop emission of fluoride and a process is underway to install the same in Potlines-1 to 3. Also a pneumatic transfer system of coke dust is under operation to minimize dust generation. The Smelter plant is equipped with ALPSYS pot regulation system, which minimizes anode effect by timely dosing Alumina.
Water Pollution: <ul style="list-style-type: none"> Generation of fluoride contaminated surface runoffs. 	<ul style="list-style-type: none"> Surface runoffs are collected in three HDPE lined holding pools through dedicated drains. The fluorinated surface runoff is treated in Defluoridation plants. (Operated on Ion Exchange technology and latest Emrion Nano Technology). The treated water is then recycled for cooling, horticulture & other plant use. Garland drains around hazardous waste storage & handling areas collect the contaminated surface runoff and transfers to holding pools for treatment.
Land Contamination: Generation of Hazardous waste like <ul style="list-style-type: none"> SPL, Dross, Shot blasting waste etc. 	<ul style="list-style-type: none"> SPL is stored in impervious lined engineered landfill & in concreted sheds to prevent land contamination. Carbon portion of SPL is segregated & is stored separately in concreted floor sheds for future utilization in energy recovery. Around 5,896 Mt of carbon portion of SPL disposed during FY 2021-22 to authorized recycler M/s. Green Energy as part of energy recovery from waste. Aluminium Dross is recycled into the pots. Around 30,399 Mt of Aluminium dross was sold to authorized recyclers during FY 2021-22. 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

Environment Management Highlights in 2021-22



Mines

- 1,10,263 nos. of trees were planted in and around Mines against the target of 1,10,000. Further, 5,000 nos. of fruit bearing seedlings were distributed to local villagers to improve awareness about plantation among the villagers. 7,000 square meters of grass turfing was carried out inside the Mines as per the target.
- Two more biogas plants were established to treat the organic waste from the canteen taking the total no. of biogas plants to three.
- One 130 kWp roof-top solar power plant was commissioned at Mines.



Smelter

- 5,896 Mt of carbon portion of SPL disposed during FY 2021-22 to authorized recycler M/s. Green Energy as part of energy recovery from waste.
- 30,399 Mt of Aluminium Dross was sold to authorized recyclers.
- Supply, installation & commissioning of 3 nos. surveillance cameras to view emission from all the stacks and fugitive emissions of the plants completed.
- Installation of an online fugitive Fluoride monitoring system in Pot line I, II & III is in progress. Material received at site.
- Installation and commissioning of online incinerator stack monitoring system completed. Data is being uploaded to OSPCB server.
- Installation of an online SO₂ monitoring system in stacks of Bake Oven is in progress.

Refinery



- Alumina Refinery has achieved 100.37% fly ash utilization.
- 15,424 nos. saplings plantation done during the year against the target of 15,000 nos.
- Renovation of STP-IV has been completed in conformity with STP discharge water quality as per the statutory guideline.

CPP



- To achieve 100% ash utilization target commissioning activities of Lean Slurry Project (LSP) of ash disposal to abandoned allotted mine void has been completed in July, 2021. More than 100% ash utilization since November, 2021. The cumulative ash utilization in the year 2021-22 was 85.63%.
- 2 nos. of HDIP surveillance camera for monitoring of Stack emission has been installed in March, 2022 and device ID & IP address has been communicated to SPCB for real time monitoring.
- DPR from M/s. NTPC consultancy wing has been received for FGD (Flue Gas Desulphurization) at CPP.
- 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.
- 1,44,77,860 m³ of ash pond overflow water was recycled and reused and 24,36,554 m³ of water from the rainwater harvesting system was recycled and reused.
- Reclamation & stabilization of Ash pond-IV was completed.
- Ash mound construction from 107 MRL to 115 MRL in both part-A & Part-B of Pond-II has been completed in 4 phases. About 65.0 Lakhs m³ of pond ash was used for construction.
- Seepage water recycle system of 2 x 300 m³/hr recycle capacity has been constructed at Ash pond store - use the seepage water in ash handling system.



World Environment Day event by the Top Management

Environment Excellence Case Study

Lean Slurry project of ash disposal to abandoned Mine Void: Captive Power Plant (CPP), NALCO, Angul has been making continuous efforts to increase fly ash Utilization in an environment friendly manner. As part of its long term planning a project for filling of abandoned coal mines of Bharatpur(South) of MCL, Talcher has been successfully commissioned & is in operation since Oct '2021.

- The project objective is to dispose of lean slurry to mines void at Bharatpur South & decanted water from mines after treatment to be brought back to plant area for reuse. At present CPP is achieving more than 100 % ash utilization.



EXISTING ASH
SLURRY
DISPOSAL SYSTEM

INTERMEDIATE
BOOSTERSLURRY
PUMP HOUSE

ASH
WATER PUMP
HOUSE
INSIDE IPH

The organic solid waste generated at canteens of Panchpatmali Bauxite Mine are now being treated at three nos of Biogas plants. Around 150 kg of organic solid waste is generated per day. The three biogas plants have a capacity of generating 5 m³ of biogas per day each. By establishing the biogas plants not only the disposal problem of the organic waste of canteens have been solved but also it helps in generating clean energy which is used for cooking purposes.



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 2019-20	FY 2020-21	FY 2021-22
Raw Material	Alumina	Mt	Internal Production	8,09,046	8,09,241	8,91,723
	CP Coke	Mt	External Suppliers	1,66,472	1,62,197	1,73,727
	CT Pitch	Mt	External Suppliers	38,182	38,742	43,030
	Bauxite	Mt	Internal Production	75,44,704	73,46,377	73,77,009
	Caustic Soda	Mt	External Suppliers	2,46,478	2,40,266	2,64,677
Associated Process Material	Aluminium Fluoride	Mt	External Suppliers	7,057	7,440	8,075
	Lime	Mt	External Suppliers	64,714	59,857	62,077
	Explosives	Mt	External Suppliers	435	574	427
Packaging Material	VSI HDPE fabric	m ²	External Suppliers	5,77,750	6,82,231	497,362
	Wood in wooden pallets	CFT	External Suppliers	45,113	74,836	45,247
	Steel Straps	Mt	External Suppliers	263	154	199
	Polyester Strap	Mt	External Suppliers	75	91	88



Recycled Input materials

During the alumina refining process the indigestible parts of the ore are disposed of as red mud. The red mud is cleaned and thickened as much as possible to reduce the amount of caustic liquor that comes along with it. Red mud that has been cleaned is pumped into a red mud pond with a special lining and stored there. The pond's solids sink to the bottom, and the water becomes clearer as it rises to the surface. This surface water is pumped back to the factory where it is used for mud washing and other uses. It contains about 2-3 grams of caustic soda per litre. A fraction of the caustic soda lost with the mud is returned to the circuit as a result of the reclamation of the red-mud pond's water.

Caustic Soda recycling from red mud in (%)

FY 2019-20	9.38
FY 2020-21	12.81
FY 2021-22	11.22

Aluminium is inherently a recyclable metal. We have identified and developed various opportunities to utilize this property of Aluminium and have utilized approximately 8665 Mt of Aluminium Scrap, nearly all of internally generated aluminium scrap as recycled input material in our Smelter.

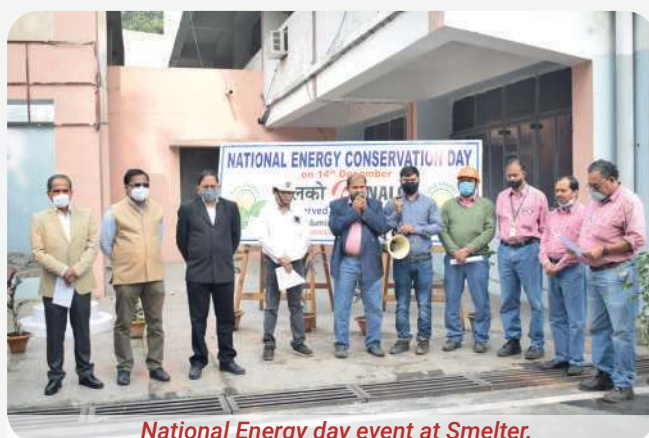
Energy

Right from conceptualization, design and commencement of operations, NALCO has been concerned about energy efficient technologies and energy saving opportunities to gain cost savings and a competitive edge driven by the energy-intensive nature of aluminium production. The National Mission on Enhanced Energy Efficiency, which was implemented by the Bureau of Energy Efficiency, Ministry of Power, has given our efforts in this area a new boost by imposing a significant obligation on companies to increase overall energy efficiency. The utilization of green energy, energy efficiency improvements, and energy conservation are all crucial steps in reducing the dangers posed by climate change.

The company is committed to enhancing its Energy Performance, and NALCO's energy policy prioritizes maximizing energy efficiency and conservation. Our Aluminium Smelter, Captive Power Plant and Alumina Refinery are certified to ISO50001 with effective implementation of Energy Management System. All production Units are subjected to rigorous on-site energy audits by qualified and accredited energy auditors. Energy Saving Opportunities identified by the Energy Auditors are duly evaluated and taken up progressively for implementation. Our Smelter-Power Complex and also, Alumina Refinery have achieved the SEC (Sp. Energy Consumption) targets set by BEE (Bureau of Energy Efficiency) under PAT cycles I & II.

Energy consumption within the organization

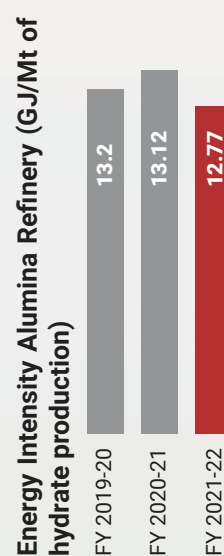
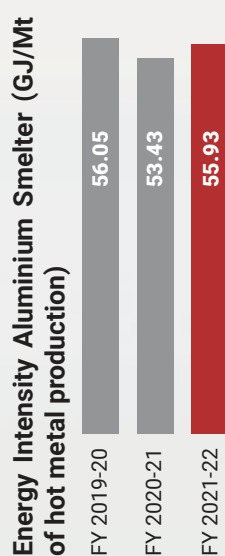
105,219 TJ of energy was used in our operations overall in 2021-22. The calorific values particular to each site were utilized to calculate energy usage. When site-specific values were unavailable, IPCC calorific values were applied.



National Energy day event at Smelter.

Energy (GJ)	FY 2019-20	FY 2020-21	FY 2021-22
HFO	80,08,708	79,28,602	81,55,057
LPG	925	603	727
LDO	1,65,913	1,83,883	1,60,225
Diesel	2,75,682	3,11,098	2,92,457
Coal	97,040,734	100,022,337	91,657,353
Indirect Energy consumption (Net Electricity Imported)	1,039,068	142,255	4,953,024
Total Energy Consumption	106,531,030	108,255,106	105,218,842

Energy Intensity



Reduction of energy consumption

Energy conservation is an imperative for our long-term survival. Our Energy Policy contains "To espouse Energy Efficient Technology encompassing procurement of Energy Efficient Product & Services and design for energy performance improvement". The same remains a primary criteria on how we choose technology and procure equipment.

Apart from relying on identification of energy saving opportunities through project consultants, equipment suppliers and energy auditors, we also encourage our employees to come up with energy-saving ideas.

Wastage, mis-use or excess consumption of energy in any form is strongly discouraged and there is a continual process to inculcate a energy-saving culture in the Company.

Energy conservation initiatives

The ever-present emphasis on energy conservation in NALCO is exhibited through key initiatives listed below in the reporting year 2021-22

Bauxite mines



- The application of a fuel additive to reduce diesel consumption in dumpers has saved 49.95 kL of HSD.
- By parking cars at the mining face, fuel consumption was reduced, saving 128.48 kL of HSD.
- Using more backhoe shovels instead of ripper dozers and wheel loaders to move dirt has reduced the amount of diesel used by 57 kL.
- By directly loading bauxite into tippers from mining pits, diesel consumption was reduced, saving 43.75 kL of HSD.

Alumina Refinery



- By recirculating the service rinse water of MB I, II, and III to the degasser Tank, the DM Plant's filter water and energy consumption are reduced.
- Less steam is wasted safety valve venting.
- The replacement of 20 older, frequently rewound motors with energy-efficient IE2/IE3 class LT motors.
- The replacement of 18 old, inefficient air conditioners with energy-efficient air conditioners rated at or above 3 stars.
- Utilization of an additive to cut back on HFO usage in the calcination plant.
- Energy savings of 8,96,724 kWh were made possible by installing a total of 7,100 LED light fixtures in place of traditional light fixtures.

Smelter Plant



- additional 74 pots have been graphitised in 2021-22, resulting in reduction of specific electrical energy consumption in pot line at 55 kWh/Mt.
- One trial pilot project-“Development of low energy cell technology for smelter plant (AP2XN)” with an objective to reduce specific energy consumption under the development co-operation agreement between Rio Tinto/Alcan, Canada and our Company has been carried out with reduction of specific DC energy consumption in the range of 150 kWh/Mt in the pot line.
- Replacement of old motors with energy efficient IE3 Motors: A total of 111 nos. of motors (ranging from 0.55 kW to 55 kW) were replaced in 2021-22 leading to energy saving of 8,36,556 kWh/annum (0.83 MU).
- In old Compressor House Drier-1 & 2: Two nos. of desiccant dryers were replaced by energy efficient refrigerant type driers, resulting in an annual electrical energy saving of 25,92,960 kWh.
- In Cooling Tower-3, existing 3 nos. cold well pumps were replaced by 3 nos. new energy efficient pumps by optimizing the required head and flow. Annual electrical energy saving of 2,86,452 kWh was achieved.
- In the old Compressor House, the existing screw compressor was replaced with a similar capacity centrifugal compressor. It resulted in improvement in specific energy consumption, availability and improved compressed air quantity. Specific power consumption is expected to decrease by 0.04 kWh/m³ of compressed air. Annual energy saving is 13,82,480 kWh.

Captive Power plant



- Air-Preheater in Unit 3 underwent renovation and modernization, with upgraded profile heating element and double sealing arrangement. Because of reduced air leakage and improved heat transfer, this has increased boiler efficiency.
- De-staging of the existing Condensate Extraction Pump (CEP) from 7 stages to 6 stages was finished in Units 3 and 9, resulting in a power decrease usage per unit by 40 kW.
- Unit-8's replacement of the HP-IP rotor and inner casing was finished. Unit 8's heat rate dropped by 170 kcal/kWh after replacement.
- Energy savings of 15,29,732 kWh were made by installing a total of 8,343 LED light fixtures in place of traditional light fixtures.

Renewable Energy

NALCO generated 320 MU wind energy and 0.73 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.

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 2019-20	312
FY 2020-21	285
FY 2021-22	320

Wind Power Generation in MU



Wind power plant at Devikot, Rajasthan

Three Roof-top Solar PV plants of capacity 160 kWp, 100 kWp & 370 kWp are operating respectively at Corporate Office, NALCO Township, and NALCO Research and Technology Centre (NRTC) at Bhubaneswar. Two Roof-top Solar PV plants of capacity 40 kW and 130 kW are operating at Refinery Plant and Bauxite Mines respectively. Setting up of new rooftop solar plants at Damanjodi & Vishakhapatnam has been taken up.

FY 2019-20 2.78

FY 2020-21 5.2

FY 2021-22 7.3

Solar Power Generation in Lakh Units



Rooftop Solar Power Plant installation at Mines



Rooftop Solar Power Plant installation Corporate office

Water Stewardship

NALCO shares the widespread concerns about the supply of water. According to the World Economic Forum, water is a unique resource that serves as the foundation for all growth factors. India's industrial sector needs to conserve and manage water because of the country's unpredictable rainfall patterns and diminishing groundwater supplies. The year 2017 saw the release of a new water stewardship position statement by the International Council on Mining and Metals (ICMM), which placed an emphasis on strong and open corporate water governance, efficient water management at operations, and cooperation to achieve responsible and sustainable water usage. Following their lead, we demonstrate leadership in water management by reducing water use, preserving water quality, and working with local communities to manage water resources and maximize water use.

Prudent use of water resources is an inalienable component of our management strategy throughout. Water management is

a crucial component of our project planning, and it is made effective by using the most recent technology developments. We have put in place high-volume water recycling systems for Ash Pond and Red Mud Pond in order to further conserve water.

“Water stewardship is the use of water in ways that are socially equitable, environmentally sustainable, and economically beneficial”

All of our plants and mines have systems in place to treat wastewater and sewage water for use in production and horticulture. We now pursue opportunities for rainwater collection and groundwater recharge after successful implementation of a wastewater zero discharge policy.

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, 317,129 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 and 2.0 MLD to 3.0 MLD in 2nd phase has been taken up.

Water Withdrawal by source

All of the freshwater withdrawal comes from rivers, ruling out any groundwater depletion or lowering of the groundwater table.

Water Withdrawal by Source					
Surface Water	Unit	Source	FY 2019-20	FY 2020-21	FY 2021-22
Smelter & CPP incl. township	ML	Brahmani River	40,064.15	40,116.40	37,428.52
Alumina Refinery Incl. township	ML	Kerandi River	9,031.89	8,759.98	8,614.89
Bauxite Mines	ML	Jholaguda stream	702.27	624.44	699.79
Total Withdrawal	ML		49,798.31	49,500.82	46,743.2

Water discharge by quality and destination

We operate Zero Liquid Discharge (ZLD) production facilities. We have set up the appropriate treatment facilities for sewage water, ash pond overflow water, and industrial effluent, and water is reused in various plant operations and horticulture.



Water Conservation measures in 2021-22

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 approximately 65880 m³. 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. In addition, three more roof-top rain-water harvesting projects were in progress at Transit House, Delhi Public School and SVM high school.

Smelter

All the surface run-off was collected in three Numbers of HDPE lined holding pools having capacity 100000 m³, 51000 m³ & 38000 m³ respectively from where it was treated in two water treatment plants having capacity 1000 kLD & 900kLD. Recycling of treated effluent water of Emrion Nano Defluoridation plant was used for cooling water makeup. Recycling of treated effluent water of Ion-exchange Defluoridation plant was used for anode cooling. Recycling of Zero discharge sump water (Twin sump) was used for horticulture use, vehicle washing and civil construction work. The sub soil seepage water from Pot Line III area was collected in a sump and pumped to a reservoir of Rolling Plant for use in firefighting and horticulture purpose. The sub soil seepage water from Pot line IV area was used as make up water in new pump house for fire fighting in Smelter and cooling water for compressor. Effluent water of Hazardous Waste incinerator recycled into the scrubbing system after filtration. Garlanding drain & one reservoir is constructed at dross & SPL storage yards and another reservoir near HW Landfill to contain surface runoff and subsequently reused after treatment in ETP.

In the Township, a roof-top rain water harvesting system was provided at the Sr. SVM school.

CPP

Recycling of waste water through the STP and ETP was duly operational. Wastewater from Ash-pond was recycled back into the process. The Rain water Harvesting and Recycling system was operational, having a harvest pond of 60000 m³ equipped with 2 x 250 m³ of pumping capacity. The recycled water is used as a make up to Fire hydrant Fore bay of RCPH-1.

Water Recycled and reused

We have effectively managed zero-discharge of effluent and sewage water from our facilities. All of our units come with rainwater harvesting, surface runoff containment, treatment & recycling, sewage and effluent treatment & recycling and ground water recharging systems. Another notable accomplishment is the recycling of the water from the red mud and ash ponds.

Conservation and Recycling of Water				
Source	Unit	FY 2019-20	FY 2020-21	FY 2021-22
Mines				
ETP and STP	ML	76.65	76.65	76.65
Water Recycled/Reused as proportion of water intake	%	10.92	12.27	10.95
Refinery				
STP	ML	549.50	551.00	551.00
Ash Pond	ML	7290.03	7427.77	8034.64
RMP	ML	3245.77	3443.25	4403.63
Water Recycled/Reused as proportion of water intake	%	122.70	130.00	150.78
Smelter				
STP	ML	Included in ETP	Included in ETP	Included in ETP
ETP, Subsoil Water and Others	ML	637.75	851.182	806.39
Water Recycled/Reused as proportion of water intake	%	36.30	48.00	44.6
CPP				
STP	ML	50.0	50.5	50.50
ETP	ML	4403.69	4772.807	5138.65
Ash Pond	ML	18172.66	18570.28	14477.86
Water Recycled/Reused as proportion of water intake	%	74.88	80.15	88.7



Biodiversity

Global sustainability is inexorably concerned with preserving and enhancing biodiversity, or the variety and quantity of living things and ecosystems in nature. There is convergence on halting and restoring degradation of the world's ecosystems and the loss of biodiversity. The United Nations has paved the way for governments and corporations to address biodiversity on a global basis. The SDG 15 aims to manage forests sustainably while also reducing desertification, correcting land degradation, and protecting biodiversity.

Mining operations may have a negative impact on biodiversity and may significantly and visibly affect ecosystems. Land disturbance, discharges to water bodies, and air emissions are all examples of direct consequences. When social or environmental changes occur, they have an indirect impact.

Diligent Efforts have been made to manage our operations in harmony with the surrounding forest cover and creation of green belts. None of our facilities is

Biodiversity—the diversity of life on Earth—is defined as the variability among living organisms from all sources, including diversity within species, between species, and of ecosystems (Input to the 2018 High-level Political Forum on Sustainable Development (HLPF) Secretariat of the Convention on Biological Diversity (CBD) 27 April 2018)

close to any biodiversity hotspot or any World Heritage Site. The bauxite mine is more than 10 kilometers away from places that are protected by the International Union for Conservation of Nature (IUCN) or that have high biodiversity values and are at risk of having a direct influence on ecosystems that could endanger IUCN Red List Species.

Preservation of Natural Resources, Ecosystems & Biodiversity



Extensive Plantation in and around the production units.



Wildlife Conservation Plan and Biodiversity Management Plan are in place.



Prevention of groundwater & surface water contamination, air pollution and proper utilization of waste.



Opening of mining faces is carried out as per approved Mining Plan.



After exploitation of minerals, the site is restored as per Mines closure plan with indigenous species.



Adoption of Rainwater Harvesting Ponds.



Implementation of Renewable Energy projects.



Minimization of use of Ozone Depleting substances.









Zero Discharge with respect to industrial and sewerage wastewater by recycling and reuse.

Through the Botany Department of Utkal University, NALCO conducted a study on biodiversity around the Panchpatmali Bauxite Mine. For both of their leases, they have created a wildlife management plan that has been authorized by the State Forest Department. The steps recommended for biodiversity conservation have been taken up by NALCO. Although our bauxite mines are located in high terrain, the likelihood of damage from mining is minimal because the summits of hills

that contain bauxite are bare, with only a few sparse bushes. The hilltop vegetation has improved as a result of extensive plantation initiatives. In the Mines and surrounding areas, over one lakh native fruit-bearing, forest-bearing, and economically valuable trees are planted each year. In the area around our alumina refinery, we have already started a vegetation study for crops and vegetables.

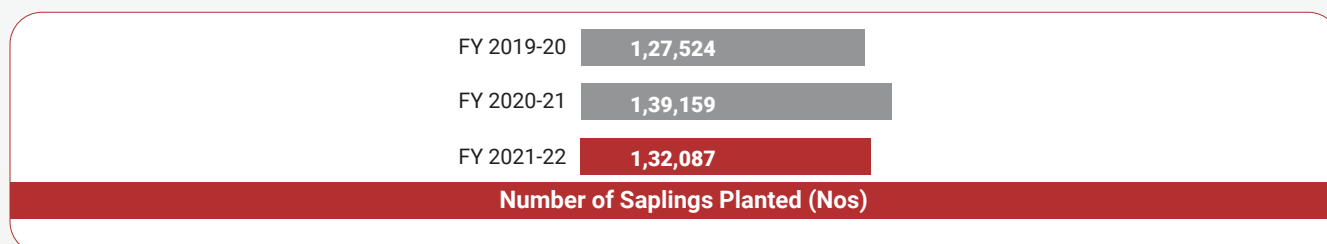
Afforestation activities & wildlife conservation

	Restore the ecology of the area and prevent soil erosion
	Prevent noise propagation
	Reclaim the mined-out areas by planting indigenous trees
	Provide a green belt around the periphery of the mining area to contain the dispersal of dust in the adjoining areas
	Meet the requirement of fodder, fuel and timber of the local community
	Restore aesthetic beauty of the locality and increase ground water recharging

Dry Deciduous Forest : Forests that are characterized 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 samplings and afforestation activities are carried out every year in the available space in our Refinery plat & township, Smelter & power complex at Angul through the Horticulture departmentsd operating full-scale nurseries

Plantation and green development





Plantation event at Damanjodi on Van Mahotsav

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

Even though there are no species on the IUCN Red List in the Mines region, we have still created a wildlife management plan. The following effects caused by mine activity are anticipated by the wildlife management plan created by M/s CEMC, Bhubaneswar.

- Habitat fragmentation brought on by HT power lines, service roads, and conveyor belts
- Wild animals and birds may be scared away from neighboring woods due to dust in the air brought on by mining and related activities, noise and vibrations from blasting, and machine operation.
- Wild creatures are disturbed at night by the lights from the mining area.

According to their survey, the mine lease area (core area) is barren of tree growth, and the vegetation is primarily made up of only scrub, which is home to a small number of animals.

Regarding the implementation of the wildlife management plan that has been established, the M/s CEMC report made the following key recommendations.

- Implement suitable alternative methods when working in mines to prevent, reduce, or alleviate the negative effects on animals near the mine.
- While balancing decimating influences, maintain or improve food and cover values in buffer habitats.
- Launch studies on the wildlife's patterns of habitat use in order to protect and strengthen the vital habitat.
- Prevent wild animal damage to increase public support for conservation management and create synergy with ongoing protection measures.

At the mines, a butterfly park has been created that covers an area of around 1500 square meters and serves both recreational and educational purposes. It not only provides a venue for workers and visitors, but it also enhances the local wildlife. To raise awareness about tree planting, around 5000 fruit-bearing saplings were delivered to nearby people throughout the year

Emissions

In order to limit emissions to the lower end of the IPCC emission scenarios in accordance with current international agreements, NALCO is committed to reducing GHG and other harmful emissions by adopting effective technology & equipment, , improving combustion controls, and adopting best practices. Real-time monitoring stations are set up to closely monitor ambient air quality as well as stack emissions of CO₂, CO, NO_x, SO_x, and particulate matter. Data from monitoring stations is transferred to the OSPCB system for recording and monitoring. Emissions were within allowable levels during the reporting period. The Environmental Statement that regulatory authorities receive each year includes information on emissions.

At Mines, mobile sprinklers, fixed sprinklers, dry fog system, fog cannons, etc. have been employed to suppress dust generation. Also peripheral plantation has been taken up to prevent propagation of dust beyond the Mining Area.

Blasting has been eliminated and extensive use of ripper dozers is being done to reduce generation of dust. Three nos of continuous ambient air quality monitoring stations have been set up to do realtime monitoring of ambient air quality. Fog cannons were set up near stock piles during 2021-22 to suppression of generation of dust.

During the reporting year, at Smelter, installation of surveillance cameras to view and monitor emission from stacks of fume treatment plants and fume treatment centers was completed. To monitor fugitive emission, online laser based fluoride gas monitoring systems project was in advanced stage. This monitoring system detects continuously fugitive fluoride levels inside the pot room, so that instantaneous corrective action is taken. At CPP, to further improve stack emission, revamping of first 4 fields of ESPs of Unit-5 & Unit-6 was carried out and two surveillance camera for monitoring of Stack emission were installed.

Sites	Source	Pollutant	Unit	Norm	FY 2021-22
CPP	Emission from ESP	PM	Mg/Nm ³	100 (Unit 1-7) 50 (Unit 8-10)	84.59 (Unit 1-7) 38.20 (Unit 8-10)
Smelter	Emission from Pot line FTP Stack	PM	Mg/Nm ³	100	24.64
Smelter	Emission from Pot line FTP Stack	Fluoride	Kg/Mt	0.3	0.172
Smelter	Emission from Bake Oven	PM	Mg/Nm ³	100	30.27
Smelter	Emission from Bake Oven	Fluoride	Kg/Mt	0.1	0.0099
Alumina Refinery	Emission from Boiler Stack	PM	Mg/Nm ³	100	83.58
Alumina Refinery	Emission from Calciner stack	PM	Mg/Nm ³	50	27.84

* all figures are yearly average

GreenHouse Gas Emissions

Fuel	Unit	GHG Emissions 2019-20	GHG Emissions 2020-21	GHG Emissions 2021-22
HFO (Scope 1)	tCO ₂ e	6,19,874	6,13,674	6,31,201
LDO (Scope 1)	tCO ₂ e	12,294	13,626	11,873
Coal (Scope 1)	tCO ₂ e	93,25,614	96,12,147	88,08,272
Diesel (Scope 1)	tCO ₂ e	20,428	23,052	21,671
LPG (Scope 1)	tCO ₂ e	58	38	46
Electricity from Grid (Scope 2)	tCO ₂ e	2,52,418	31,217	11,32,426
Emission from PFC (Scope 1)	tCO ₂ e	87,902	94,166	98,484
Process carbon Emission from electrolysis in pots (Scope 1)	tCO ₂ e	6,38,005	6,39,641	7,14,760
Process carbon Emission from anode baking (Scope 1)	tCO ₂ e	60,707	59,315	55,725
Total Scope 1+ Scope 2 GHG Emissions	tCO ₂ e	1,10,17,300	1,10,86,876	1,14,74,458

*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 on perfluorocarbons

The principal aluminium reduction process at the smelter produces per-fluorinated compounds (PFCs) such as tetrafluoromethane (CF₄) and hexafluoroethane (C₂F₆), which are continually released during anode effects. They are monitored on a regular basis. By precisely feeding alumina 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 ₄	kg/t of Al	0.0278
C ₂ F ₆	kg/t of Al	0.0034

Ozone Depleting Substances (ODS)					
Particular	Unit	CPP	Refinery	Smelter	Mines
R-22	kgs	915	Not in use	549	Not in use
R-124	kgs	Not in use	Not in use	593	Not in use
R-134a	kgs	Not in use	Not in use	62	Not in use
R227	kgs	Not in use	Not in use	480	Not in use

Waste

The waste management strategy is a crucial component of project planning at NALCO. Appropriate Methodology and Technology is chosen based on the types, nature and characteristics of waste generated, available options & best practices and the regulatory regime. We regularly review the waste management plan and keep stay abreast of new technical developments and shifting regulatory demands. Planning for waste management is also made possible through environmental impact assessments and environmental management plans. Internal audits and surveillance audits by external auditors are also used to evaluate our waste management system, and any flaws discovered are fixed. The State Pollution Control Board, IBM, and the Ministry of Environment, Forests, and Climate Change (MoEF&CC) are regulatory bodies that monitor the entire industry. Aspect Impact Studies, Hazard Identification & Risk Assessments, and Disaster Management Plans all place due weightage on proper waste management.

Our waste management procedures follow the 4R principle, which stands for Reduce, Reuse, Recycle, and Recover. Finding alternative uses for the wastes generated throughout the process is a key component of NALCO's waste management strategy.

Fly ash is a waste product produced by NALCO's captive thermal power plant that is utilized for a variety of purposes, including: brickmaking, road and embankment construction, concrete production in the cement sector, mine void filling, etc. The beneficiation of bauxite gives rise to a large amount of residue. We continue to look into alternate use for this iron- and mineral-rich waste through R&D initiatives.

To lessen pollution and the risk to biodiversity, NALCO practices safe disposal and segregation of hazardous wastes when safe reuse is not an option. All such disposal conforms to the Hazardous and other waste (Management, handling and transboundary Movement) Rules, 2016 and E-waste (Management) Rules, 2022. Bio-medical waste generated in our Medical facilities and First Aid Centres are disposed of conforming to Bio-medical waste management rules, 2016.

During the reporting year, at Smelter, as a part of good Hazardous waste management 5342 Mt of Carbon Area hazardous waste, 25503 Mt of dross and 8457 Mt of carbon portion of spent pot lining were disposed to parties authorized by OSPCB (Odisha State Pollution Control Board). Construction of an additional shed for storage of coke dust and hazardous waste in the Carbon Area was completed.

Waste by type and method of disposal

Hazardous and Non-hazardous Wastes are separated immediately at the point of generation. Hazardous wastes are safely disposed of in accordance with the established procedure created for their treatment while adhering to all relevant statutory criteria, which are stated in the table below.

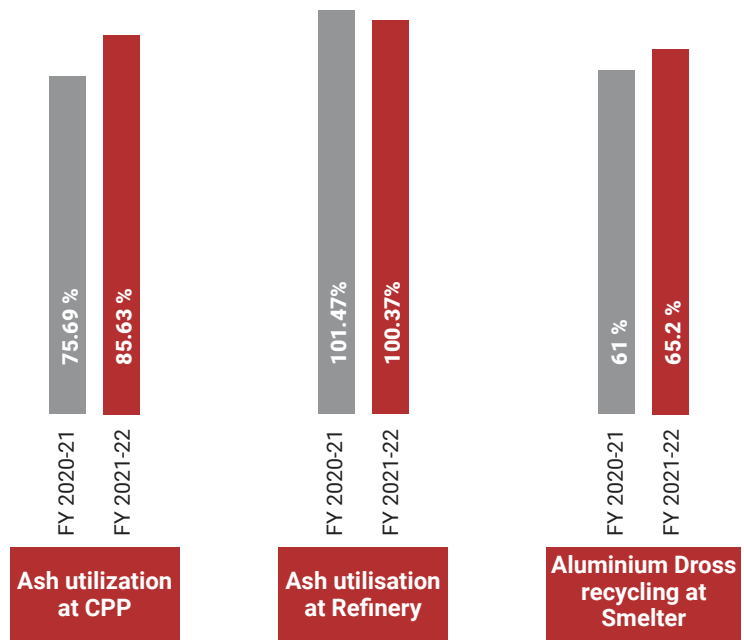
Non – Hazardous Waste Details						
Sites	Non – Hazardous Waste	Unit	FY 2019-20	FY 2020-21	FY 2021-22	Waste Management Method
Alumina Refinery	Lime Grit	Mt	28,829.69	25,376.90	25137.93	Disposal to red mud pond and utilization for Fly Ash brick Plants
	Fly Ash	Mt	5,90,245	5,87,573	616224	brick plants, cement plants and low land filing
	Red Mud	Mt	33,51,021	32,34,786	3241445	To Red Mud Pond
Smelter	Ferrous Scrap	Mt	3459.98	2962.29	1650.535	Ferrous Scrap are recycled/ reused/ sold to outside agencies
	Non-Ferrous Scrap	Mt	623.08	160.96	715.38	Non - Ferrous scrap having economic value are Recycled/ reused/ sold to outside agencies and not having economic value are disposed at loe lying area inside the plant.
	Refractory Bricks	Mt	4,692	1737	5188.74	Refractory Bricks are used for hard surfacing and making roads inside plants.
CPP	Fly Ash	Mt	24,86,199	28,91,987	26,93,582	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	8,04,640	9,22,705	9,63,225	These are completely reused in backfilling of mined out area

Hazardous Waste Details

Sites	Hazardous Waste	Unit	FY 2019-20	FY 2020-21	FY 2021-22	Waste Management Method
Alumina Refinery	Spent Resin	Mt	16.96	9.64	Nil	Through authorized co-processing cement plant
	Used Oil	kL	125.22	80.29	91.49	Disposed through authorized recyclers
	Discarded Asbestos	Mt	150.80	41.44	32.4	Disposed through authorized CHWTSDf
	Empty Container	Nos.	2555	1877	2277	Disposed through authorized recyclers
Smelter	Aluminium Dross	Mt	7059	7922	8515	Majority portion of Aluminium dross is recycled in the process. Legacy stock of dross is sold to authorized recyclers.
	Spent Anode	Mt	60772	58469	64609	100% recycled in anode making
	Cathode Residue including pot lining	Mt	5500	6160	4290	1. Refractory portion is segregated & stored inside covered concreted sheds. 2. Carbon portion of SPL is being disposed of to authorized recyclers for detoxification and subsequent utilization of energy value as fuel in cement plants.
	Rejected Filter Bags	Mt	10.55	28.20	20.444	Incinerated in Pots to recover fluorine
	Rejected AlF3 Bags	Nos.	32964 small and 6295 large bags	11629 small bags and 16330 large bags	147289 (146109 nos. Small bags & 1180 nos. large)	Small bags are incinerated in the pots to recover fluorine and large bags are disposed of in the HW incinerator.
	Used Oils	kL	51	31	263.355	Used oils E-auctioned/ sold to re-processors/ recyclers having authorization from OSPCB, Odisha
CPP	Spent Resin	kL	8	5.8	6.2	Stored in impervious lines pits for final disposal
	Used Oils	kL	53.59	12.45	(Transformer Oil) 104.69 (Lube oil) 33.06	Disposed to authorized recyclers
Mines	Used Oils	kL	86.82	93.50	94.28	These are disposed to authorized recyclers

Reusing and recycling of waste

Recycling and reuse of our process waste and rejects is a top priority for us. After being processed in autogenous mills, the aluminium dross generated in the smelter's melting furnaces is recycled. Metal that has been spilled can also be recycled by gathering it and remelting it. Ash from our CPP and SPP, Refinery is used to make bricks, mix concrete, build roads, and fill in low-lying areas. For the reclamation of the mined-out region, topsoil and overburden are employed.



Overburden Management

Overburden and topsoil are scraped off and placed in the backfilled/mined out area or properly stacked for reclamation as a result of the advancement of bauxite mining faces. After the lateritic overburden has been leveled, topsoil is applied and properly treated to make the reclaimed land suitable for reforestation, with enough benches and terraces provided. According to the approved Mining Plan/Progressive Scheme's Mine Closure Plan, the mined-out land is restored concurrently with reclamation. Backfilling, replanting,

and the construction of water basins at key locations to ensure proper drainage are all part of the strategy employed for the complete rehabilitation of the mined-out zones. The areas that were backfilled are reforested with local plant species that produce fruit. The preservation of the virgin area's natural topography and soil erosion is a crucial factor for which proper consideration is required. As may be seen from the lush flora that surrounds our bauxite mine presently, these areas were densely covered with vegetation after being planted.

Environment



For an industrial entity to survive and flourish, social performance is a crucial factor. In a sense, the contribution of human resources that is the prime mover of any industry is what makes it thrive. Maintaining socio-economic balance requires NALCO to give the social aspect top priority and to discharge its obligations to people in a model way, as demonstrated by the value it generates for stakeholders including employees, society, and the general public. Our organization's DNA is based on sustainability principles, which enable us to make a positive, significant impact through carefully crafted social development initiatives.

We are firmly devoted to the idea of inclusive growth, and we have a verifiable legacy of improving both the lives of the local community and society at large. We contribute to accelerating economic activity in the region where we operate, and we generate direct and indirect employment opportunities for people. The surrounding landscape has prospered as a result of the ongoing execution of community development projects over time. Healthcare, Education,

Drinking Water, Rural Development, Environmental Sustainability, and Development of Iconic City, Puri, are the main focus areas of Community Development.

By implementing policies in the areas of health and safety, employee benefits, work-life balance, human rights protection, and a healthy well-being environment, we are fully devoted to the wellbeing of our employees. Our workplace is welcoming, amicable, and supportive of employee growth, enabling the workforce to function at its highest level. Employees' whole-hearted dedication helps the company get through difficult commercial and economic situations and emerge stronger. The Company makes sure that no employee is subjected to workplace discrimination on whatever basis in accordance with existing laws and contemporary norms. Our dedication to caring for our employees is demonstrated through financial remuneration, perks, capability building, engagement, social security and career growth.



Employment

Numerous employee-focused policies have been implemented, including generous compensation, professional advancement opportunities, cordial working relationships, nondiscrimination, and preservation of human rights. We are dedicated to encouraging health, safety, and employee empowerment by creating a distinctive collaborative working culture. NALCO offers a friendly and supportive work environment that encourages people to reach their full potential and contribute to the expansion of the company. Since we are an equal opportunity employer, none of our employees are subject to discrimination

on the grounds of caste, creed, gender, religion, or place of residence, etc. The organization's HR practices are intended towards nurturing, and keeping the right talent in the right place.

A meaningful job with plenty of room for growth and development is made possible through a holistic approach to learning and development. Any disputes or grievances between management and employees are settled through established procedures. The HR department facilitates the connection between employees and managers by projecting employees' viewpoints, setting up negotiations, and resolving their legitimate complaints.

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

Resilient Industrial Relations

Throughout the reporting year, we managed to preserve a favorable and amicable industrial relations climate. The year was yet another one in which there were no lost man-days due to labour disputes. Despite the COVID-19 pandemic-related restrictions, participatory management was able to maintain a friendly workplace environment. In dealing with employee benefits and welfare issues, compliance with applicable labour laws, adherence to government guidelines, and consultative decision-making have remained steadfast.

Employee Benefits

An essential prerequisite for an organization's success is employee satisfaction. NALCO offers its employees a variety of material and intangible rewards to ensure their satisfaction. Among similar industries, NALCO offers one of the best compensation packages. In addition to salary, the company offers a wide range of other perks and benefits, such as medical services, leave travel concession subsidized housing, subsidized electricity and water, various allowances, parental leave, pension plans, incentives for pursuing higher education, various

loans and advances, scholarships for dependent children, social security benefits, etc.

The company has set aside funds specifically for various defined benefit plans, such as long-service awards, gratuities, charitable funds, moving expenses, provident funds, post-retirement medical benefits, etc. Over the years, full-fledged townships with contemporary infrastructure, including top-tier schools, hospitals, shopping centres, clubs, parks, gymnasiums, stadiums, etc., have been created at the plant locations. Employees of contractors are also given a range of perks, including weekly off, medical coverage, and provident funds.

Along with these explicit perks, the corporation also provides several implicit ones, such as subsidized canteens, guest houses, transit houses, 24-hour security in townships, and community transport services.

Government regulations and the concept of a living wage serve as a framework for the perks offered to contractual and temporary workers. Contract workers receive advantages such as PF, overtime, canteen allowance, bonus etc.

				
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

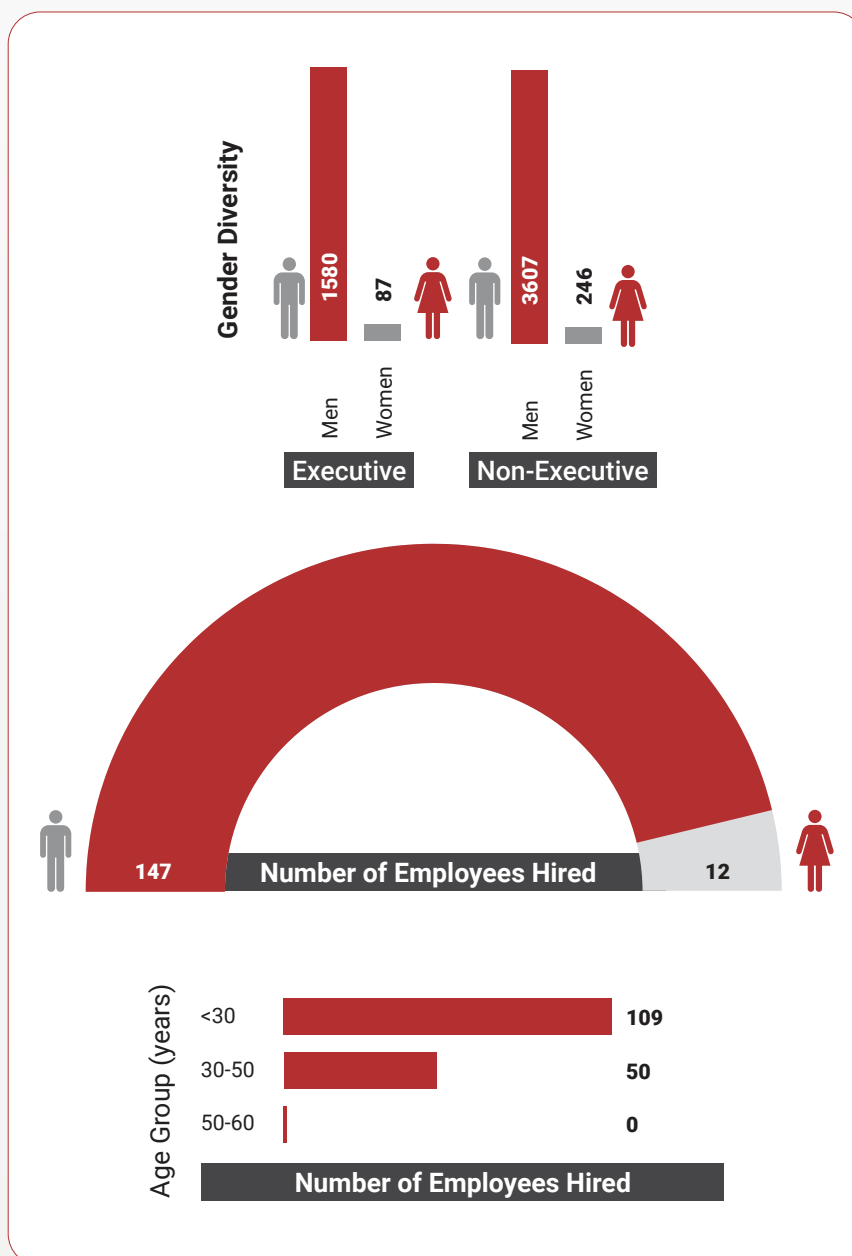
NALCO respects diversity and is aware that the abilities of varied groups come together to create an effective organization that works in harmony to produce benefits for all. This infuses the workplace with positivity and encourages employees to perform at their peak.

We support diversity and work to eliminate all forms of discrimination in hiring, advancement, training, and employee benefits, including those based on caste, religion, disability, gender, sexual orientation, race, color, ancestry, marital status, and membership in trade unions or majoritarian or minoritarian groups. The recruitment and selection procedures follow Government of India rules and are designed to provide representation from many areas, ethnic groups, faiths, and social classes.

Gender Diversity



In the reporting year, female representation in executive and non-executive categories was 5.21% and 6.4%, respectively. In order to empower women and increase the gender variety of the workforce, we support female employment.

At whatever position within the organization, the base pay for men and women is the same. Our company completely abides by the policy of "Equal Remuneration for Men and Women Workers for Work of Equal Value". The company gives male and female employees the same opportunities in all areas, including pay and benefits, professional advancement, social security benefits, etc.





Parental Leave

	Particulars	No. of Employees who availed Parental leave in 2021-22
	Maternity Leave	6
	Paternity Leave	115

Employee Engagement

Employees have access to many types of information via the intranet portal, emails, websites, web-based applications (Apps), press releases, circulars, announcements, official events, and functions. Likewise, union-management meetings, structured meetings with officer associations, salary negotiations, safety committee meetings, closing sessions of training and seminars, employee grievances, shop-floor council meetings, etc., all serve as channels for employee interactions. At the senior officer level, planned conversations with large groups of personnel are part of mass communication efforts.

Through these meetings, employees can better align their work with the company's goals and objectives, which boosts productivity and increases a sense of company belonging. IT tools are utilised to improve communication via emails and websites. We also gauge employee involvement through other avenues, such as employee proposals made through the Sarjana Scheme, kaizen, and feedback from the workforce. Our corporate communications department regularly updates our websites with new content to keep our staff informed about company developments.

Through its process steps of team formation, problem identification, problem brainstorming, solution discovery, and presentation at various forums, the Quality Circle activity has demonstrated to be a great tool for employee engagement.

Human Rights and Forced labour

We are dedicated to upholding the Universal Declaration of Human Rights and the UN Global Compact on Human Rights in all aspects of our business operations and supply chain. Our employee-related policies adhere to the fundamentals of human rights, the Indian Constitution, and numerous labour laws.

The Company rigorously complies with the Human Rights requirements outlined in the relevant statutes, including the Factories Act of 1948, the Industrial Disputes Act of 1947, the Mines Act of 1972, the Contract Labor (R&A) Act of 1970, and the Payment of Gratuity Act of 1972. Important human rights problems, such as forced labour, discrimination, wages, and work schedules, are also appropriately addressed in the job contract terms for suppliers and contractors. Implementation of SA8000 Social Accountability Management System lends further credence to our practices in this direction.

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

All the suppliers, contractors and vendors who are engaged for providing goods and services enter into a well-documented formal agreement which contain stipulations and conditions requiring them to abide by various applicable labour statutes. Various acts covered in the different agreements as per their applicability are payment of Wage Act - 1936, the Minimum Wages Act - 1948, Equal Remuneration Act - 1976, the Industrial Dispute Act - 1947, the Employees State Insurance Act - 1948, the Child Labour (Prohibition and Regulation) Act - 1986 and the Contract Labour (Regulation & Abolition) Act -1970. NALCO ensures that the contractor's labour is treated fairly as per the law. The Contract Labour Management System is further strengthened by a centralized e-portal for Contract Labour Management which brings transparency and enables quick decision making.

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.

ILO defines forced labour as "all work or service which is exacted from any person under the threat of a penalty and for which the person has not offered himself or herself voluntarily." We are committed not to resort to any form of forced or compulsory labour. The service condition is provided to all the employees along with the appointment letters where conditions of appointment are comprehensively stated.

All of the units have access to the service rules and regulations manuals for use and reference. A copy of the certified Standing Orders, which contain the general terms and conditions controlling service conditions, is delivered to the workers. For reference, the HR Manual is accessible on the intranet site.

NALCO's corporate headquarters and operating divisions have earned certification to the SA 8000:2014 Social Accountability Standard.

The details of complaints relating to child labour, forced labour, involuntary labour, sexual harassment in the year 2021-22 are given below:

Details of Complaints		
Category	No. of complaints filed during the F.Y. 2021-22	No. of complaints pending as on 31.03.2022
Child labour/ forced labour/ involuntary labour	Nil	Nil
Sexual harassment	1	0
Discriminatory employment	Nil	Nil



Training on woman empowerment at Angul

Equal Opportunity Employer

In terms of service conditions, growth opportunities, and other matters, NALCO provides equal opportunity to all of its employees, and our policies and manuals are in line with the same.

The HR manual contains a uniform set of standards that apply to all employees without distinction based on things like gender, caste, religion, race, etc. All hiring processes are open and fair, offering all qualified applicants the same chance to succeed. The recruitment, placement, promotion, transfer, compensation, training, and other benefits of employees are all carried out in the spirit of an equal opportunity and are based on the merit and competence of the individual as well as the business requirements of the organization.

We abide by all applicable government regulations regarding the hiring of individuals who are SC, ST, or OBC. Under the terms of the Persons with Disabilities Act of 1995, individuals with different abilities are also taken into consideration for employment. Liaison Officers for SC/ST/OBC have been appointed to handle reservation issues for SCs/ST/OBCs and Persons with Disabilities

in order to monitor the implementation of Presidential Directives and Government directives (PWD).

Grievance Redressal Mechanism

At NALCO, There is a systematic grievance redressal mechanism for important stakeholders, including employees, shareholders, vendors, and customers, where any problem can be registered and is handled in accordance with established protocols.

For the fair and unbiased resolution of grievances, there are different formal grievance procedures for executives and non-executives based on their terms of service. An aggrieved employee may also voice their complaints verbally, and if they are not happy with the outcome, they can submit a written request to the head of department. A grievance committee may be contacted if the complaint continues. Any application for a grievance submitted by an employee is carefully reviewed by the committee, and then steps are taken to address the problem within the parameters of corporate policy. Similarly, an executive can utilize the three-tier system of the HOD, Unit Head, and Head of Organization to get his complaints addressed.

Occupational Health and Safety

Health and safety of our employees comes foremost. In all of our activities, we strive to prevent harm to employees and have zero tolerance for unsafe work practices or disregard for safety regulations. Accident prevention and workplace health issues are given the utmost importance under our occupational health and safety policy. Operators and workers are trained on SOPs, work instructions, maintenance schedules, etc. All technological decisions, equipment purchases, shop floor layouts, etc., have safety considerations integrated into them. All of our industrial facilities, including the port facility in Vizag, are certified to the ISO 45001:2018 Occupational Health & Safety Management Standard.

Each production unit has a specialized Safety & Health department that oversees safety and health management, using a structured approach to reduce safety hazards during operations and maintenance tasks and guarantee adherence to legal requirements. The lives and wellbeing of employees, contract workers, security officers, visitors, and local residents are given a very high priority by the safety management system. All of the Units have Occupational Health Centers in place to handle occupational health issues. The shop floor staff is given the necessary PPEs, firefighting, and other resources.

Safety management strategies and procedures are developed based on assessments of safety risks and hazards. Regular internal safety audits and inspections are organized, and when the results are analyzed, the necessary steps are taken to enhance safety. Corrective actions are taken to address underlying problems that are discovered through systematic root-cause analysis of the incidents. To avert such incidents, controls are implemented. A lot of emphasis is being placed on behavior-based safety, which has emerged as one of the best strategies for enhancing safety performance and resulting in a sharp decline in incidents brought on by human error.

Proactive compliance is made with all applicable regulatory and statutory rules pertaining to safety and occupational health. The efficiency of safety management at NALCO is further improved by employee involvement in health and safety management. Each



unit has a safety committee made up of management and employee representatives, which aids in identifying unsafe conditions and behaviors and recommending solutions.

A variety of safety signages are put in the right places to encourage safe practices. The location of the fire extinguisher usage instructions ensure a quick response during fire mishaps. Various activities, such as handing out leaflets and safety badges, performing skits, and using audio-visual communications, are used to carry out safety campaigns.

PPE (personal protection equipment), such as helmets, safety goggles, gloves, and safety shoes, are used in accordance with the specified standards. Work at heights and in other dangerous situations require a safety permit and the usage of safety equipment. Every contract contains a clause requiring compliance with legal requirements for workplace safety, and depending on the seriousness of the infringement, essential steps including the imposition of fines, the issuance of warnings, and contract termination may be done in the event of a violation. Accident and near-miss cases are properly documented and examined in order to implement the necessary corrective measures as soon as possible.

Safety highlights

Health & Safety Highlights 2021-22

Mines	Alumina Refinery	Captive Power Plant	Smelter
<ul style="list-style-type: none"> • Training programmes organized on behavioral safety. • Safety talks in all areas of mine for general safety awareness • Workers with consistent track record on safety & discipline awarded during Annual Mine safety week. • To promote employees to report near-misses, a reward scheme is implemented. • Nalco सुरक्षा Mobile App implemented for reporting of online unsafe conditions, unsafe acts, near-miss, fire hazards etc. • Periodical Safety Inspections • Quarterly Mock drill • Internal & external Safety Audit. • PME of all eligible employees. 	<ul style="list-style-type: none"> • Safety awareness program along with Safety Gathering, Toolbox talk were held • Suraksha Chakra team consisting of executives from cross-functional Departments were assigned for identification of unsafe acts and unsafe conditions at their respective areas. • Both On-Site and Off-site mock drills were carried out for assessment of Emergency preparedness • Safety training kiosk implemented for generating gate passes for visitors. 	<ul style="list-style-type: none"> • Near-miss incident reporting award scheme implemented • Safety Awareness training programmes organized covering 1158 contractor workmen • Traffic Management System implemented in regards to control the speed of the vehicles, parking of vehicles, loading / unloading of ash & coal trucks and to obey the traffic rules • Vertigo test of contractor workmen who are engaged at height work • LOTO system for electrical isolation & normalization implemented in Coal Handling Plant • A Safety Park built wherein samples of scaffolding, confined space, excavation, chlorine cylinder, and an arrangement for vertigo test are displayed. • Survey for height work safety (Fixing of Lifelines) carried out • 05 Nos. of Mock Drills carried out as per On-Site Emergency Management Plan (EMP). • The recommended points of M/s MECON Comprehensive Fire Survey Report implemented. 	<ul style="list-style-type: none"> • A vertigo test platform was made ready and Vertigo test of 84 workers carried out in the first phase. • Action initiated based on the recommendations of external experts for fall protection measures. Some permanent structures at Rolling Plant fixed on trial basis such as Vertical lifeline, horizontal lifeline etc • A Truck mounted 11-meter aerial work platform was procured and is in extensive use for various height jobs. • Road Safety audit was conducted by external agency • Installation of CCTV camera taken up to identify over speeding vehicles, overriding, and persons not wearing helmets during two-wheeler use. • Installation of vehicle access control system completed. • Two road barriers were constructed to prevent entry of personal vehicles into the high magnetic zone. • One thousand safety visors were procured for the first time and issued for use in hot metal handling areas. • Extensive use of NALCO suraksha App by Safety Officer and all executives for raising safety inspection. • Anti-collision system, based on radar technology was commissioned in four PTMs • New audio video SOPs were made • Audio Visual Alarm fitted in all Metal Transport Prime Movers & Crushed Bath Tanker Prime Movers • A new procedure was developed for Scrap & Salvage vendors engaged through MSTC, to comply with usage of PPEs before they are allowed for work • One new DCP Fire Tender procured and taken into use. • Eye testing camp was organized at OHS, 144 Nos of heavy vehicle operators were tested.



National Safety week event at CPP, Angul



Fire safety mock drill

Various events such as National Safety Week, Road Safety Week, Fire Service Week were observed at the production facilities during the reporting year. Various activities organized during these observation days are – safety oath, leaflet distribution, badges distribution, safety march, street play, slogan shouting, traffic management system checking, firefighting training & demonstration, display of poster and hoardings, various competitions among school children & employees, safety play, display of safety message in electronic display board & local TV channel.

Employees and also Contractors' Workers are imparted formal training on Safety & fire fighting, first-aid. Other chosen topics for training include behavior-based safety, Factories Act, accident prevention, safe equipment use, workplace safety, safe crane operation, material handling, handling of hazardous materials, firefighting, and electrical safety.

These training specifics are provided:

Measures taken for safety and well-being of employees and workers during COVID : after pandemic

- Social distancing & Isolation where possible
- Splitting the work force into a shift pattern
- Massive vaccination drive was undertaken wherein we vaccinated all our employees and contract workers both in NALCO Hospital & at workplaces as well
- Hand Sanitizers installation
- Distribution of N-95 nose masks to all employees and contract workers. Use of masks made compulsory
- Body temp. was checked before entering the plant
- Sanitization of all rooms and workplaces, township colonies
- Biometric attendance systems were converted to face detection for employees
- Signages along with audio and videos displayed inside Plant and Township for making awareness of COVID-19
- Visitors were restricted for entry inside the plant
- Thermal scanning done for the employees, contractor workers before entry inside the Plant

Safety & Health Training for Year 2021-22

Employee Category	No. of People Trained	Training Man-Days
Executives	374	455
Non-Executives	184	234
Total Employees	558	689
Contractors' Workers	2349	2336

Worker Health and Safety Committee

Each unit has a unit-level safety committee made up of senior officials and representatives from the employees' union. The group has meetings where Safety Performance is examined, recommendations are given, and action plans for ongoing improvements are created. Every month, all accidents, near-miss incidents, and risky circumstances are examined. Unit heads serve as the committee's leaders, with CSO serving as the convenor. Members include other key executives and employees. The safety committee sends members to other industries on occasion to learn about new innovations in safety measures.

Injury Statistics

The frequency of injuries falling into predefined categories, the number of man days lost, the severity rate, and work-related fatalities are some of the important safety performance indicators that we track. As per the ISO 45001 management system the accidents are analyzed in order to take corrective measures to stop recurrence. 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 ⁶	(3)/(4)x10 ⁶
CPP	Employees	1	2,48,354	24	19,86,832	0.009	0.503	12.079
	Contractors' Labour	2	6,79,075	12000	54,32,600	1.767	0.368	2208.887
Mines (Both Blocks combined)	Employees	Nil	1,21,358	0	9,70,864	0	0	0
	Contractors' Labour	Nil	2,49,035	0	19,92,280	0	0	0
Port	Employees	Nil	12,422	0	99,376	0	0	0
	Contractors' Labour	Nil	27,334	0	2,18,672	0	0	0
Refinery	Employees	Nil	4,62,632	0	37,01,056	0	0	0
	Contractors' Labour	1	6,31,721	0	50,53,767	0	0.197	0.00
Smelter	Employees	Nil	6,58,056	0	52,64,448	0	0	0
	Contractors' Labour	1	13,38,172	4	1,07,05,376	0.0002	0.093	0.373

Fatalities Statistics		
Unit/Area	Employee	Contractors' Labour
Bauxite Mines, Panchpatmali	Nil	Nil
Alumina Refinery, Damanjodi	Nil	Nil
Port facility, Visakhapatnam	Nil	Nil
Captive Power Plant, Angul	Nil	2
Aluminium Smelter, Angul	Nil	Nil

Occupational Diseases

Our S&P Complex and the M&R Complex include Occupational Health Centres which are operational with the necessary infrastructure to control and prevent the occurrence of any occupational disease among the personnel. The medical professionals working in the centers are skilled technicians, paramedics, and doctors. They keep an eye out for the emergence of any occupational diseases and take corrective action to prevent those that are likely to occur. Our employees and their families can receive treatment for any illness, including occupational diseases, in the well-equipped hospital complexes at the S&P and M&R complexes.

Depending on the severity, employees and their families may need to be referred to various government and speciality hospitals.

Awareness building programmes are conducted to enhance the general health of workers and their families.

We routinely undertake PME for both contractual and permanent workers. Here is the PME data for the reporting year. According to the current type of work and working conditions, it has been shown that NALCO personnel do not possess a high risk of any specific occupational disease.

PME Statistics

Unit/Area	Employee	Contractors' Labour
Captive Power Plant, Angul	858	2555
Bauxite Mines, Panchpatmali	313	scheduled next year
Port facility, Visakhapatnam	39	93
Alumina Refinery, Damanjodi	1441	3386
Aluminium Smelter, Angul	2417	3164

Training and Development

Training and retraining is essential while treating knowledge as a capital. In order to make a difference, an organization's intangible worth, which consists of its knowledge, methods, and special technical processes, needs to be updated. Accordingly, we have created a culture where learning, competency, and talent are valued in order for the workforce to reach their full potential and in turn help the organization expand its capabilities to meet future problems. The enhancement of Executives' and Workers' Competencies and Skills through Classroom Learning, On-the-Job Training, Coaching, and Mentoring leads to improved performance. The training courses are created specifically to satisfy the requirements of both workers and employees.

The corporate office's centralized training center and also the Training institutes established in S&P complex and M&R complex, manage training. To determine the competency gap, the training needs of individual employees are mapped alongside the

performance evaluation. At the start of the year, training requirements are gathered. To plan training programmes, organizational needs, individual training demands, and government directive compliance are all taken into consideration. Based on the inputs, a training calendar is created, and individuals are trained at our training institutes by internal faculty or outside experts.

The Company has made a consistent effort to provide skill and behavioral training to its employees in order to improve their functional and behavioral competency, align individual needs with organizational business objectives toward increasing production and productivity, and enhance organizational business culture. Depending on the need, we also nominate staff to attend training virtually or physically at various professional organizations in India and overseas. For their wellbeing, personnel receive training, meditation, health care, stress relief, relaxation techniques, lifestyle management, etc. Our Organisation also provides skill development training to contract workers, apprentices, and students from managerial and technical institutes as part of its commitment to social accountability and good corporate governance.



Training Performance Highlights (2021-22)

Average Hours of Training Per Year Per Employee

Particulars	Men	Women	Total
No. of persons trained	2870	289	3159
Training Man-Days	5361.5	425.5	5787

Our Company has imparted training to 3,159 employees with 5,787 training man-days during the year 2021-22, thus about 8.4 average hours of training per employee, in spite of the COVID pandemic lockdown scenario existing during first & second quarter of FY 2021-22. Further, 230 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 2021-22.

Community Development

By significantly improving lives in the communities where we operate, NALCO's community development initiative has been a journey toward inclusive growth. Over the years, our community development activities have been characterized by responsibility and commitment. Since our inception, we have been aware of our responsibility to the community and have extended assistance to improve health care and education well in advance of mooted the concept of corporate social responsibility.

Driving Local Employment for Inclusive Growth

One of the most effective tools for transforming a disadvantaged and vulnerable community is the creation of jobs inside and around our operations. We are aware that jobs will improve their quality of life by removing the barriers to health and education that

come with poverty. It will have a cascading effect on how the community develops.

With this reality in mind, we encourage the creation of direct and indirect jobs in our outlying regions through capacity development, outsourcing, contractual engagement, etc. Based on their skill level and employability, candidates who have registered with local job agencies are considered.

Additionally, we have provided employment to the local residents who lost a significant amount of land during the land acquisition for the NALCO project. When various contractors, such as those in the fields of transportation, security, maintenance, and projects, hire people to carry out their contractual obligations, new employment opportunities for locals are created.

To fulfill their contractual commitments, contractors working in industries such as hospitality, maintenance, sanitation, conservancy, and project operations, among others, have hired 11,775 workers. The fact that the majority of these people are from Odisha, vindicates employment opportunities for a sizable portion of the local community.

Corporate Social Responsibility



Through carefully thought-out interventions, our well-drafted CSR Policy seeks to foster inclusive growth of the society's poorest segments. The CSR Policy outlines numerous CSR activities, including needs assessment, involvement with society, planning for the intervention, implementation, monitoring, impact assessment, and review in a comprehensive manner. Through community participation, we gain new perspectives and input that help us improve our people-centric strategies, paying particular attention to marginalized and vulnerable communities. Our neighborhood-based initiatives cover a range of subject matters, including sports, education, healthcare, sanitation, women's empowerment, skill development, and livelihood enhancement and rural infrastructure.

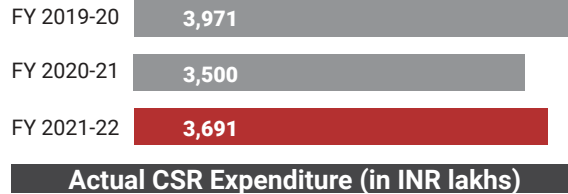
Our CSR policy and goals expanded over time. The Board level subcommittee on CSR & Sustainable Development meets regularly to examine the status of CSR operations in relation to the strategies. It is chaired by an Independent Director. To guarantee the timely completion of the proposed interventions, a separate Monitoring & Evaluation system has also been established.

The Rehabilitation and Periphery Development Advisory Committees (RPDACs), the NALCO Foundation, and NALCO directly carry out the CSR operations of the Company. NALCO Foundation, the company's CSR arm, undertakes CSR programmes on the company's behalf and is registered under the India Trust Act, 1882. Through a process of community participation, CSR projects are chosen and put into action, creating sustainable models at the grass root level.

Social interventions are developed, and specific activities are implemented based on the the need assessment done directly by the CSR coordination cell, or based on the recommendations of the Rehabilitation & Peripheral Development Advisory Committee's (RPDAC), or based on feedback from the CSR arm, i.e., NALCO Foundation, as well as, in accordance with the need projections made by the local people and their representatives regarding their developmental issues. These projects are closely followed and observed to make sure they are carried out as intended and correspond to the actual requirements of the community.

CSR Expenditure

In contrast to the required CSR obligation of INR 28.60 crore, a total of INR 36.91 crore has been spent on CSR activities for the fiscal year 2021–22.



CSR Expenditure

Year	Mandatory CSR Expenditure (in INR lakhs)	Actual CSR Expenditure (in INR lakhs)
2019-20	3,835	3,971
2020-21	3,342	3,500
2021-22	2,860	3,691

CSR Initiatives



Health Care Services

MHU Services and OPD services

In the reported year, around 76 thousand patients in the periphery of the plant areas both at S&P complex, Angul and M&R complex, Damanjodi are treated through 4 MHUs. The intervention has been able to enrich the 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, providing free health consultation complete with free medicine to periphery villagers of S&P complex. During the FY, 18,114 nos. of 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.

Covid Care & Management

To fight covid several awareness camps were organized in the periphery villages through MHU to

sensitize people regarding hygiene, hand washing, social distancing & other basic practices to prevent the disease. Considering its backwardness special emphasis was given to adjoining areas of Damanjodi. The Communities are mobilised to adopt the covid appropriate practices through Village Development Committees (VDCs) and Women Self Help Groups (SHGs).

Besides, to combat the pandemic, following activities were undertaken in our peripheral areas of operation:

i. Mass awareness and Mask distribution:-Mass awareness activities like street plays were organized at strategic locations where the foot fall is high like the entrance of Lingaraj Temple in Bhubaneswar and at Gandhi Park, Puri by NALCO Mahila Samiti to create awareness among the visitors and pilgrims about COVID-19. As a prevention measure towards the spreading of Covid-19, more than 1 lakh face masks have been distributed at the State level.

ii. Disinfecting the local peripheral areas are undertaken in peripheral villages like Kulad, Girang, Kandasar, Kanyabeda, Gotamara, Balaramprasad, Kukudang, Tentoi, Tentuloi, Kurudol, Ekagharia etc. of Angul district, and Bhejaput, Mathalput, Anabadi colony & SLN Nagar of Damanjodi.



Relief Services During the Pandemic

i. Supply of Ration kits at S&P Complex:- On request of District Administration, Angul, 1,000 nos. of Ration kits were handed over to District Administration for distribution to poor needy people in Covid-19 pandemic situation.

ii. Distribution of domestic essential products:- Students sponsored under KISS were provided with dry ration to ensure their proper nutrition. At Bhubaneswar, grocery items are distributed among the labours.

iii. Distribution of snacks to the police & traffic men in Bhubaneswar in collaboration with Commissionerate Police.

iv. Strengthening of Health Infrastructure in the State and Beyond: The magnitude of spread and severity of the covid put severe stress on resource and infrastructure of health care system. Rising to the occasion, NALCO complimented the government in every possible way to fight against the pandemic.



Some of our contributions are described below

a. Setting up Covid Hospital at Nabrangpur: A 200 bedded hospital equipped with 10 ICU beds, oximetry and 24 hour diagnostic facility has been set up at Nabrangpur, Odisha in collaboration with Govt. of Odisha with an estimated cost of INR 5 crore. More than one thousand Covid patients have availed the treatment facility.

b. The Company supported the management of District Covid Health Care Centre at ESI, Banrapal with trained manpower.

c. Dedicated Corona Corners and isolation wards for COVID-19 have been created at company owned hospitals.

d. The Company has set up two exclusive COVID Care Centers, one each at M&R Complex, Damanjodi and S&P Complex, Angul. Secondary plus Eye Care Centre, constructed by NALCO at Angul, is also used as COVID care center.

e. The Company supported DG set to the oxygen filling station of the State administration to strengthen the Covid Management system in the State.

f. The Company donated Oxygen Cylinders to hospitals at Vizag & Oxygen Generators to hospitals of Dharwad district of Karnataka.

g. Rapid Antigen Test (RAT) kits are donated to the District Administration, Angul.

h. The Company strengthened the infrastructural base of Saheed Laxman Nayak Medical College and Hospital, Koraput.

i. A Digital X-ray machine was installed at the Municipality Hospital, Bhubaneswar.

j. Utilisation of MHU services: The 4 MHUs are incessantly providing door step basic health care facilities with free medicines at 250 villages including 160 remote inaccessible villages around Damanjodi. In case of emergency referral services are also given.

k. NALCO employees and family members conducted doubt clearing classes for students, especially for NALCO sponsored students during lockdown.



Sanitation

Open Defecation Free

In line with the Swachha Bharat Mission, NALCO had constructed 1055 IHHL units (Individual Household Latrines) in the remote villages of Damanjodi and Angul under Open Defecation Free (ODF) program. In the reported year, 539 IHHL units were handed over to targeted beneficiaries.



SAFE DRINKING WATER

Piped 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 solution 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 –

- Pipe water Supply to Village Girang for the benefit of 4103 nos. of villagers.
- Renovation of pipe drinking water to 11 fluoride contaminated areas: 4386 nos. of HHs from the 11 villages will be benefitted. Pipe water supply to 5 villages where surface water is contaminated has been completed.
- Water supply network including repair and renovation of bore well at village Gopiballavpur has been completed successfully.



Education

Sponsoring 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 sponsored 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. Under the Indradhanush programme, this year, 92% students have successfully completed their matriculation.

Amongst sponsored students, felicitation of top performers in HSC was organized to motivate them. All the students were felicitated with a token gift and top 3 scorers among the students were awarded with Cash prize of INR 10,000, INR 7,000 & INR 5,000 respectively by Hon'ble Collector & DM Koraput & ED, NALCO M&R Complex.





NALCO Ki Ladli

Complementing the “Beti Bachao Beti Padhao” scheme of Government of India, NALCO has sponsored the education of girl students from the periphery villages of both S&P and M&R Complex under the programme “NALCO Ki Ladli”. Under the scheme, meritorious girls from BPL families have been provided with financial assistance to motivate them. The project also helps to check their dropout rate owing to poor financial conditions. Till date, a total of 816 girls are supported. Apart from supporting financially, the Company is also promoting and encouraging the girl students through events such as sports, extra-curricular and co-curricular activities.

Infrastructural Support to Educational Institutions

Infrastructure is the basic requirement for quality education. Towards this end, following projects are implemented under the Company’s CSR initiatives

- a) Construction of classroom and toilet facilities in Ambagaon Schools in Damanjodi.
- b) Supported District Administration, Ganjam to strengthen their educational infrastructure and community led transformation in the Schools.
- c) Supported construction of one English Medium School with hostel facilities at tribal dominated district of Kalahandi.
- d) Supported Language and Learning Foundation for promoting quality learning outcomes.

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 and improved agricultural practices among the SHG members and farmers, is the objective of the Company's CSR. Towards this end, the villagers are facilitated in the formation of CBOs like SHGs & VDCs. After formation of the CBOs, the members were trained & engaged with organizations like KVK, Sunabeda & ICAR, Sunabeda ORMAS, OLM, financial institutes for learning sustainable agricultural practices, and other income generating activities under their technical guidance.

Supported SEBAGHAR institution to undertake repair & maintenance of Creche-cum School & run Sewing Training Centre for slum dwelling children.

Through convergence with the horticulture & agriculture dept., farmers have been benefited 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 in the reported year. Vegetable seeds are being provided to women farmers. In the reported year along with Mushroom and Jack fruit chips, women earned handsome income from ginger, cabbage, green chilies cultivation. Also SHGs have earned a good income from selling fish which they have cultivated from the pond renovated by NALCO. Technical guidance and handholding support are also given in other similar areas with input support to bring sustainability in farmer's income.

We provided Incense Stick making machines to Charity Foundation Trust, an association of People With Disability (PWDs) for ensuring an alternative livelihood source for them.



Environmental Sustainability

Large scale plantation had been undertaken to restore the green coverage which was hugely damaged after the severe Cyclonic storm FANI. 60 thousand seedlings were planted and maintained for four years in the Chandaka Damapara Wild Life sanctuary.

Infrastructure Development Projects

It is significant to note that in the remote areas of Damanjodi, the tribal population face extreme difficulties while travelling. Road facilities with drainages are constructed in large numbers not only to facilitate smooth communication but also help them for economic empowerment by making them accessible to urban areas to explore different livelihood prospects.

Apart from that, following works were also carried out:

- Construction of Community Hall at Amabagaon.
- Construction road from Malkarbandh to Maliput which also involves culvert.
- Construction of BT road from NALCO Thana Chowk to IAPL Square.

- Construction of road from Karnapur Level Crossing to Bharatpur Common Point.
- Construction of RCC road inside Amabagaon village.

Disaster Management

To combat the challenges of the YASS cyclone, the State Administration has been supported with DG set, Plasma Cutter and Tree Cutting Machine.

Iconic City Projects

Discharging his obligation as a corporate partner of Gol in the Swacch Iconic Place development programme and continuing its pioneering work of conservation of national heritage, NALCO has contributed in the work of developing Puri, the old and historical city famous for Lord Jagannath Temple, sea and scenic beauty, as a Swacch Iconic Place.

In this direction, the following progress have been achieved in spite of the lockdowns and shut downs–

- a) Repair, Restoration, Beautification and maintenance work at Gandhi Park were carried out along with deployment of security for watch and ward during the shutdown period.
- 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 12 nos. of RO based clean water posts in various places of Puri which would benefit lakhs of devotees.



Social Celebrations

In commemoration of 75 years of Indian Independence, GoI celebrated Azadi Ka Amrit Mahotshav. Extending a supporting hand, NALCO undertook several programs to glorify the celebration initiated by GoI. Some of the programs undertaken are:

- (1) Establishment of 300 Smart Classes in Puri, Khordha, Angul, Koraput, Nabrangpur and Dhenkanal Districts of Odisha and Visakhapatnam district of Andhra Pradesh.
- (2) Free food distribution in old Age homes.
- (3) Dry ration and dress distribution at a Child Care Institute named- "Ama-ghara". An organization supporting orphan children.

Stakeholder & Community Engagement Mechanism

A multifaceted stakeholder engagement mechanism has significantly enriched the surrounding community. At the most fundamental level, community involvement begins at the grass-roots level and is then expanded to include local, district and state governments. A special focus is placed on underprivileged and marginalized stakeholders. While mapping the community expectation, their geographic location and degree of vulnerability are taken into account. Additionally, surveys to determine the needs of the targeted stakeholders are conducted, and initiatives are then tailored according to their needs. When a project is being conceptualized, the degree of influence is also taken into account. The strategies for community participation that encourage the sharing of opinions and issues have proven to be quite effective in identifying stakeholders, their requirements, and their expectations. The advice and feedback received aid in creating the focus and area of emphasis to attain desired results.

Through the NALCO Foundation as well as directly by NALCO, government agencies, registered trusts, and non-governmental organizations (NGO), the company engages in CSR activities. The District Collector, local people's representatives, and NALCO representatives are some of the committee's other members.

The NALCO Foundation is committed to the socioeconomic advancement of the nearby villages

that are situated on the outskirts of NALCO's operational areas as well as other aspirational regions of the state and nation. Through need-based selection and participation of the key stakeholders at the grassroots level in the project management process, NALCO Foundation has established a project-based accountability strategy. The Foundation also supports the development of youth, women, PRI members, and other stakeholders' capacities. Some of the projects are also being executed by NALCO directly.

Monitoring and Social Impact Assessment

We recognise that evaluating the efficacy and effectiveness of CSR projects is crucial to achieving good results, which is why social impact assessment is important.

The studies are conducted in a methodical way. In terms of the projects' impact and implementation process, this has led to successful project execution. According to the company's CSR strategy, impact assessment studies are carried out for the important projects that have been in operation for three or more years. Below are some of the studies that have been done so far:

- 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 premiere 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

NALCO will carry on the long legacy of significant CSR initiatives and broaden the reach and influence of its CSR projects. Expert bodies' systematic evaluation of the CSR initiatives' impacts guarantees that they are in line with the anticipated results. NALCO will periodically recalibrate its CSR programme in accordance with the thrust areas specified by the Government of India. As directed by the Department of Public Enterprises of the

Government of India, the Company is currently engaging in theme-based CSR activities related to nutrition and health. NALCO has demonstrated how a business may expand sustainably by helping the country's economy

thrive on the one hand, and enhancing the standard of living in local communities and society at large on the other.



GRI content index



CONTENT INDEX
ESSENTIALS SERVICE

2023

For the Content Index - Essentials Service, GRI Services reviewed that the GRI content index is clearly presented, in a manner consistent with the Standards, and that the references for disclosures 2-1 to 2-5, 3-1 and 3-2 are aligned with the appropriate sections in the body of the report.

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ANNEXURE

NALCO's POLICY FOR RESPONSIBLE SOURCING OF BAUXITE

NALCO sources its entire Bauxite requirement from its own Captive Mines, located at Panchpatmali in the Koraput district of Odisha. NALCO has been mining Bauxite from the leased area granted by Government of Odisha and has all necessary statutory clearances from IBM (Indian Bureau of Mines, Government of India), OSPCB (Odisha State Pollution Control Board), DGMS (Directorate General of Mines Safety), MoEF&CC (Ministry of Environment, Forest & Climate Change, Govt. of India), Directorate of Mines, Govt of Odisha etc. All mining activities are carried out in accordance with the provisions, rules, and guidelines of the statute applicable to Mining.

NALCO's mines are located, within the district of Koraput, where there is no widespread incidence of violence, armed conflict, political/ institutional instability, repression, war of liberation, insurgency or civil wars. In order to mitigate risks, arising on account of any of the above, NALCO has established the following key measures:

- a) Mines has adequate mechanisms to ensure security to its establishment and operations. Central Industrial Security Force (CISF) has been deployed at NALCO's Mines, to ensure security to establishment and operations. (The CISF is an independent Central Government Force, under the aegis of Ministry of Home Affairs, Government of India, which provides security cover to India's most critical infrastructure facilities, including Nuclear installations, Space establishments, Mining areas, Power Plants, Airports, Sea ports etc.) Monthly Security review meetings are held between authorities of NALCO and CISF to review security risks to take necessary corrective and preventive action (if any reqd.)
- b) NALCO neither makes payments to nor provides logistical assistance or

equipment to non-state armed groups who illegally control Mines sites or otherwise control transportation routes or any other point in the supply chain.

- 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 by Corporate SH&E 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 every year and take appropriate corrective

and preventive action 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 from them 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, relatively less prone to the more serious abuses, associated with extraction and transport of minerals.

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 Series"
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
tCO2e	"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



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