



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.

Values



Benefitting Stakeholders

We provide our customers, suppliers and other stakeholders with utmost level of value, service and satisfaction.



Excellence and quality

We ensure that our products, manufacturing & business processes adhere to the highest quality levels and standards.



Sustainability

We relentlessly pursue sustainable practices and create a positive impact on the communities we engage with.



Trust & Integrity

We conduct ourselves with dignity, integrity, equity, transparency and accountability to build trust.



Sustainable Development Highlights

Lowest



Cost Producer of Alumina in the World

(As per Wood Mackenji Report)

2nd Highest



Net Foreign Exchange Earning CPSE

Lowest



Cost Producer of Bauxite in the World

EBITD



1,929.42- (in Rs Crore)-

139159



Saplings Planted

285 MU



Wind Energy

5.20 Lakh Unit



Solar Energy



Supported the State Health Department by providing 2 Ventilator Ambulances for emergency care to critical COVID-19 patients.



Funded 150 bedded COVID Hospital at ESI Hospital, Banarpal, Angul District and a 200 bedded hospital has been set up at Nabarangpur, Odisha in collaboration with Govt. of Odisha



Around 70,000 patients in the periphery of the plant areas treated by mobile health units



A vertical image on the left side of the page showing industrial equipment, including a large white spherical tank and yellow structural elements, with steam or smoke rising in the background.

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The present Report is the 10th Sustainability Report for the financial year 2020-21, i.e., April 1, 2020, to March 31, 2021, based on Global Reporting Initiative (GRI) Sustainability Reporting Standards 'in accordance' Core option. The report is published annually. The 9th Sustainability Report was published for the year 2019-20. The report showcases our performance in the areas of Social, Environmental and Economic.

Reporting Framework

The report outlines the sustainability performance as per the GRI Standards for sustainability reporting. All the relevant aspects of the Standard have been referred to while defining and developing the report content. The report adheres to the reporting principles of GRI Standards addressing principles of Accountability i.e., materiality, stakeholder inclusiveness, sustainability context and completeness. Efforts have been made to present balanced, clear, reliable, accurate and reasonable presentation of our contributions

in the area of sustainable development. Description of material issues and their prioritization has been detailed in the report. The development of this report was guided by the GRI Reporting Principles, Technical Protocols and Disclosure Protocols. The GRI index is available on page number 92 which provides an index of GRI disclosures and their locations within this report. This report has been prepared in accordance with the GRI Standards: Core option.

Scope and Boundary

The report is pertaining to our production units i.e., Bauxite Mine, Alumina Refinery, Aluminium Smelter & Captive Power Plant in Odisha and the port facility at Vishakhapatnam. Other business operations i.e., joint ventures; subsidiaries, business partnership etc. are kept outside the boundary of reporting. Considering the impact, some topics which are not material are also covered to the required extent. The material topics boundary is appropriately mentioned in the report.

Reporting Standards

Financial performance of the organization is reported based on guidelines provided in the Company's Law. Quality, Environment, Health and Safety, and Energy audits are conducted regularly against International Standards which ensures data integrity. Further, various management system performances are verified and reviewed by the concerned government authorities for its appropriateness. Monitoring, measurement and calibration are carried out as per relevant Indian Standards.



Audience

The audience for this report is all our stakeholders and the report aims to apprise our stakeholders clearly about the applicable materiality issues, sustainability strategies, performance indices, major organizational achievements, difficulties and challenges and the steps taken to address the stakeholder concerns.

Data

Data is reviewed for completeness and accuracy at various levels. Data are mostly based on documents reviewed by the Board i.e., Annual Report, Financial Statements etc. Hence no third-party assurance is felt to be required. Wherever actual measurement is not feasible, recourse is taken to use data calculated based on standard assumptions. Estimation and quantification of data is done with clear elucidation of assumptions made, empirical formula used, and standardization applied.

Restatement and Changes in Reporting

There is no change in the material topic and its boundaries and there is no restatement of information

Contact Details

We value feedback and encourage contributions and suggestions from all our stakeholders. The contact person details are Mr Biswamaya Kar, DGM (TQM), NALCO Bhawan, P/1, Nayapalli Bhubaneswar-751 013, Odisha.

Email - sustainability@nalcoindia.co.in.

Website - www.nalcoindia.com





Message from the CMD



Shri Sridhar Patra

Chairman cum Managing Director, NALCO

Dear Stakeholders,

It is a matter of great satisfaction to present our 10th Annual Sustainability Report for the FY 2020-21 based on GRI Standards 'in accordance' Core option. The report showcases our untiring efforts, our trials and triumphs, in our Sustainable Development journey which is essentially a journey of triple bottom-line excellence in the areas of Economic, Environmental and Social.

Triumph on Pandemic

With the onset of the COVID-19 pandemic and subsequent lockdowns enforced by Government from March 2020, we formulated strategies to face the global crisis and kept the units running with reduced manpower which required extensive planning and strategizing. Despite the lockdowns and restriction in manpower mobilisation on account of COVID-19 pandemic, we achieved 99% capacity utilisation for Alumina Hydrate and 91% capacity utilisation of cast metal production. To tide over the crisis of COVID-19 while ensuring office productivity and individual wellbeing, we adopted a slew of digital measures such as e-Office, Cloud based desktop video conferencing, enhanced secure connectivity for Work from Home, email access from internet and enhancement of internet bandwidth.

Our stellar performance in the midst of adversity exemplified the strength of sustainability principles deeply embedded in the organization. We maintained our world leadership position as the lowest Cost Producer of Alumina and Bauxite in the World. We were 2nd highest net Foreign Exchange earning CPSE in the country. Export turnover at Rs 5,162.94 crores was 47% higher than that achieved during the previous year. Operating profit margin improved by 246% and return on net worth rose by 782% over the previous year's figures. Turnover increased to Rs 8869.29 crores from Rs 8425.79 crores of previous year. Profit after tax stood at Rs 1299.53 crore as compared to Rs 138.23 crores of previous year.

Our Company's provisional self-assessed score falls under "Excellent" rating for the year 2020-21, as per the Memorandum of Understanding (MoU) signed with the Government of India. NALCO truly rebounded from the shackles of Covid 19 with grit and determination.

The elements of sustainability ingrained in the organizational DNA rose to the occasion in the face of the unprecedented Global Pandemic of Covid-19 and we emerged triumphant, kept the production lines running following all the Covid protocols and guidelines to minimize adverse impacts on people.

Capability Building

NALCO is in the process of setting up of 5th Stream in its existing Alumina Refinery which shall add 1.0 MTPY to its existing installed capacity at an estimated cost of ₹6,435.90 crore based on improved Medium Pressure Digestion technology of M/s. Rio Tinto Alcan International Limited (RTAIL). To feed bauxite to 5th Stream expansion of Alumina Refinery sourcing of bauxite from existing Panchpatmali Mines South Block has been planned with a capital expenditure of ₹483 crore.

Our stellar performance over the years despite formidable odds is an outcome of our significant efforts regarding capability building in a regular manner. We have taken bold steps in the area of Raw Material Securitization. We secured extension of existing mining leases of Pattangi Bauxite Mines and South Block up to 2032 and 2029 respectively. Coal is a major element of our cost structure, and it came as a matter of great relief when NALCO was accorded mining leases of Utkal D and Utkal E blocks of coal mines which together account for extractable reserve of 175 million tonne of coal. In the meanwhile, we have entered into long term contracts with CIL and MCL for sourcing coal for its captive power plants catering to Alumina Refinery Plant and Aluminium Smelter Plant.

Based on our strategic goals we are diversifying in new areas and we have formed a joint venture with Gujarat Alkalies and Chemicals Ltd to set up a Caustic Soda Plant along with 130 MW Captive Power Plant (CPP) at Dahej in Gujarat. To meet the strategic demand of High-End Aluminium for Defence, Aerospace & Automobile Sectors we have signed a Memorandum of Understanding with Mishra Dhatu Nigam Ltd. (MIDHANI) for establishment of High-End Aluminium Alloy Plant in JV mode.

Opportunities and Threats

The per capita Aluminium consumption in India is around 2.7 kg, which is far below the global average of 11 kg. This augurs well for Aluminium Industry in India as there is a huge potential for growth of the industry. India will require additional annual consumption of 16 million tonnes of aluminium, thus, making it the second-largest consumer in the world. Even at low consumption, aluminium contributes to 2% of Gross Domestic Product (GDP) in manufacturing sector and this is expected to move up with consumption growth. This growth is critical for India's industrial vision of achieving 25% of GDP from manufacturing. The aluminium industry also has a high direct and indirect employment multiplier creating close to 8,00,000 jobs in India. Aluminium producing Plants are generally based in the hinterlands of the country and aid in generating peripheral employment and development of the region. The sector will be a key contributor to the Government's key flagship programs like Make in India, National Capital Goods Policy, Development of 100 smart cities and Government's commitment to reach a 100 GW solar capacity by 2022 as indicated by NITI Ayog.

In the short term, due to lockdown and recovery from COVID-19, domestic demand is likely to decline, due to slowdown in Transportation, Building & Construction, Industrial Equipment and Consumer Durables. Demand for aluminium is expected to pick up as the scenario improves for user industries like power, infrastructure and transportation. Domestic demand is likely to remain robust driven by construction and packaging.

A major threat to the Aluminium industry is its vulnerability in the face of unanticipated disruptions as seen during the outbreak of COVID-19 pandemic which caused significant decline in global Aluminium demand leading to price crash. The year 2020 also saw significant challenges faced due to cheap imports. Another threat includes stringent measures by the government against environmental hazards associated with discharge of effluents like red mud or air pollution due to coal based power plants. The threat of substitutes like improvised steel, PVC, engineered wood, glass, carbon fibre, composites etc. are also perennial in nature.

Environment Stewardship

The direct and cascading impacts of climate change are now well-documented and universally acknowledged with effects being felt across the globe, including in India. As a signatory to the Paris climate treaty, India has committed to deliver on its nationally determined targets of reducing emission intensity by 33-35% of 2005 level, increasing the share of non-fossil based electricity to 40%, and creating additional carbon sinks of 2.5-3 billion tonnes of CO₂ by 2030.

As a responsible Corporate Citizen, NALCO, shares the concern about Global warming & Climate change and we have a set a direction for our industrial operations The 4 R Principle (Reduce, Reuse, Recycle and Redesign) is adhered to for minimising the impact on the Environment on account of the Industrial activities by the Company. We are continuously augmenting our organizational strategy and harnessing technology to improve our performance in the use of energy as required by strategy to address climate change risks.

In line with the country's commitment to significant enhancement of renewable energy we have generated 285 MU from wind power & 0.52 MU from Solar power Plants. We are augmenting our wind power generation capacity by adding another wind power project of capacity 25.5 MW at Kayathar, Tamil Nadu at a capital expenditure of ₹163 crore. Substantial progress has been made on supply and erection of the equipment.

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Five Roof-top Solar Photo-Voltaic Plants of a total capacity of 670 kWp are operating at different locations of NALCO and in a bid to further enhance solar power generating capacity, we are undertaking the feasibility/viability study for setting up roof top solar plants at various other locations of the company.

A total of 1,39,256 saplings have been planted towards afforestation and plantation efforts apart from distribution of saplings and seedlings in peripheral communities to enthuse the spirit of plantation and increasing green cover.

Community Development

Our commitment to community care and development came to fore during the pandemic and we extended helping hand to the community to fight against COVID-19. Major initiatives taken by the Company include setting up of a 200 bedded exclusive COVID-19 hospital at Nabarangpur in collaboration with Government of Odisha. We have also set up two 50 bedded Covid Care Centers at Angul and Damanjodi for providing urgently needed medical facilities to the nearby

society. Collaborating with Odisha Government we funded a 150 bedded Covid hospital at ESI Banarpal, Angul district. Other significant contributions to the community in its fight against Covid include providing 2 ventilator ambulances to government, one refrigerated truck handing over to state agencies, distribution of masks, sanitizing surrounding areas and distribution of groceries to the community during the lockdown.

NALCO has spent a total of 35.00 crore in the FY 2020- 21 on various CSR projects against the mandated CSR obligation of INR 33.42 crore complying with the requirements of its CSR policy in line with the Companies Act, 2013. We have undertaken theme-based CSR activities on health and nutrition as per Department of Public Enterprises. The thrust areas of implementation are Healthcare, Education, Drinking water, Rural development, Environmental sustainability, and development of the Iconic city, Puri. We have taken exemplary initiatives to strengthen the health care system/facility to meet the increased demand in the face of the pandemic.

Employee Care

We value employees as the most important resource and give utmost importance to Safety, Occupational Health and Employee Development. Driven by the goal of zero accidents we ensure adherence to safety norms and achieve continual improvement in the areas of personnel safety, health, working environment, illness and incidents. In order to enhance the competency of the employees various training programs are organized through in-house resources and premier institutes in the country. We have imparted training to 3,384 employees with 4,379 training man-days during the year 2020-21 in spite of the Covid pandemic lock down scenario existing during the reporting period.

Sustainability is the way forward

The year witnessed tremendous challenges, especially that arising out of Covid 19 and its impact in terms of lockdown and working with reduced manpower. It is a matter of great satisfaction that we emerged victorious in these trying times and the adverse impact of these challenges was minimized with deployment of new strategies. These phenomena reinforced our belief in the principles of Sustainable Development, and we have redoubled our efforts in further leveraging sustainability to future proof our organization. We are confident that we will harness the opportunities in future and manage the risks & threats successfully. Our policy of deploying environmentally friendly and energy efficient technologies contribute to global efforts to address climate change challenges. I take this opportunity to thank all the stakeholders who are our partnering in our journey of sustainable development and assure all the stakeholders that we will continue to add value to our stakeholders as done in the past. We invite feedback and suggestions from our stakeholders to create a truly sustainable company.

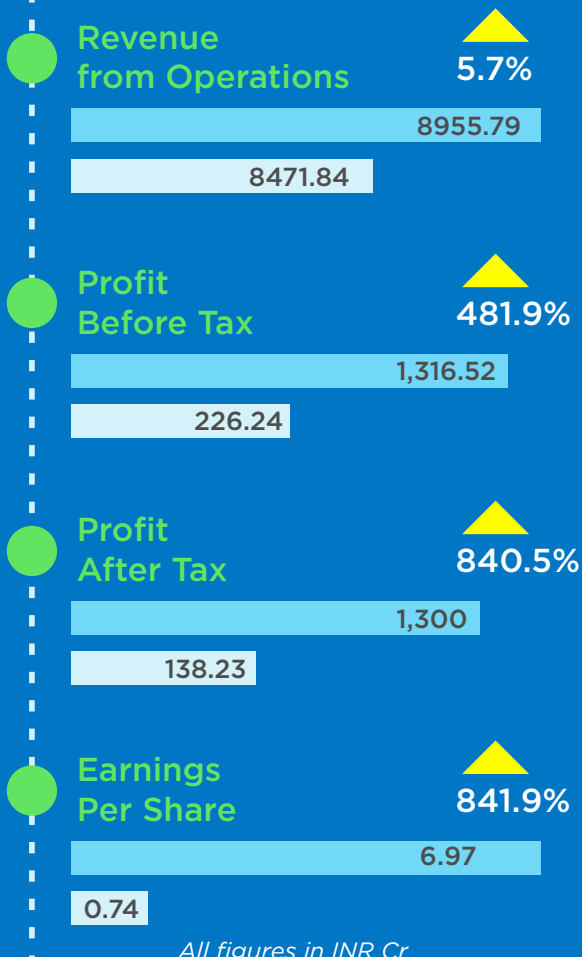
NALCO being a responsible Corporate Citizen took the leadership position in the fight against Covid 19 and took extensive measures for the society which included setting up covid care hospitals, sanitizing the surroundings, providing equipment to the local government, distribution of mask and groceries during the period.

Shri Sridhar Patra

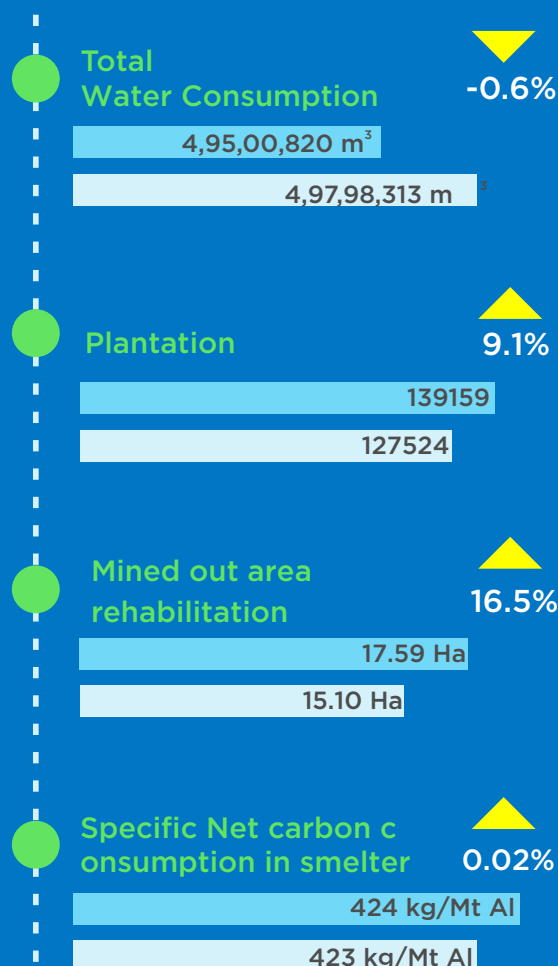
Chairman cum Managing Director, NALCO

Key Performance Indicators

Economic

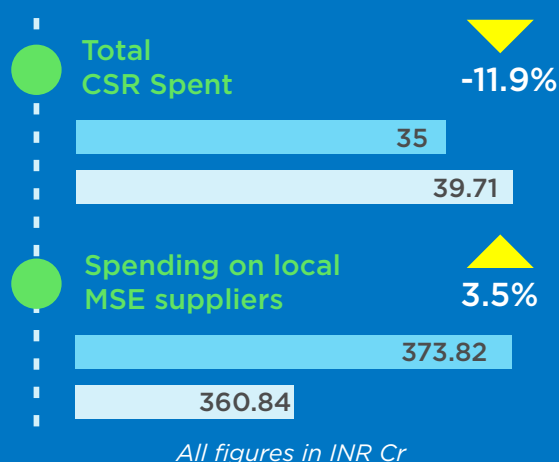


Environment



■ FY 2020-21 ■ FY 2019-20 ▲ % Change

Social



Performance on Business Parameters

Major MoU Parameters

A Memorandum of Understanding (MoU) has been signed between the Ministry of Mines and NALCO in which targets are set for different financial, operational and developmental parameters to ensure accountability and boost performance. Based on the audited accounts and physical achievements of other parameters, NALCO's provisional self-assessed score falls under "Excellent" rating for the year 2020-21, as per the Memorandum of Understanding (MoU) signed with the Government of India.

Organisation Profile

Location of the Company

National Aluminium Company Limited (NALCO) (102-1) is one of the largest integrated Bauxite-Alumina-Aluminium- Power Complex in the Country headquartered at Nalco Bhawan, Nayapalli, Bhubaneswar-751013, Odisha, India, (102-3), Website: <http://www.nalcoindia.com>.

The Company has a 68.25 Lakh ton Bauxite Mine & 21.00 Lakh ton (normative capacity) Alumina Refinery located at Damanjodi in Koraput district of Odisha, and 4.60 Lakh ton Aluminium Smelter & 1200MW Captive Power Plant located at Angul, Odisha. NALCO has bulk shipment facilities at Vizag port for export of Alumina/Aluminium and import of caustic soda and also utilizes the facilities at Kolkata and Paradeep Ports. The Company has registered sales offices in Delhi, Kolkata, Mumbai, Chennai and Bengaluru and 9 operating stockyards at various locations in the Country to facilitate domestic marketing.

NALCO is the first Public Sector Company in the country to venture into international market in a big way with London Metal Exchange (LME) registration since May 1989. The Company is listed at Bombay Stock Exchange (BSE) since 1992 and National Stock Exchange (NSE) since 1999.





Activities, Brands, Products, and Services

Established on 7th January 1981 in the Public Sector, National Aluminium Company Limited (NALCO) is a Navratna CPSE under Ministry of Mines. NALCO has its registered office at Bhubaneswar. The Company is a group 'A' CPSE, having integrated operations in mining, metal and power. NALCO has posted an impressive net turnover and net profit of Rs.8,869.29 crore and Rs.1,299.53 crore respectively in FY20-21.

Aluminium Products

Products

Standard Ingots, Alloy Ingots, T-Ingots, Sow Ingots, Billets, Wire rods, Cold-rolled coils and sheet, Chequered sheet, foil stock, fan-blade stock, High speed Alloy billets

Application and Use

- Ingots used for re-melting and casting and processing to various end-products
- Billets are basic input for manufacturing high-quality extrusions
- Wire rod coils have wide applications in conductor & cable industries
- Rolled & Chequered Sheets are used in manufacturing industries and automobile industries
- Foils have wide use in packaging and high speed alloy billets offer higher extrusion speed

Alumina products

Products

Calcined Alumina, Alumina Hydrate, speciality alumina & hydrate

Application and Use

- Calcined Alumina is used in aluminium smelting, refractory, ceramics & high alumina cement
- Alumina Hydrate is used in alum, poly Aluminium Chloride & others speciality chemicals
- Speciality alumina have applications in refractory, ceramic and abrasive industries
- Speciality hydrates is used as filler material in plastic, rubber, paper, fire retardant chemicals and manufacturing alumina chemicals

Power

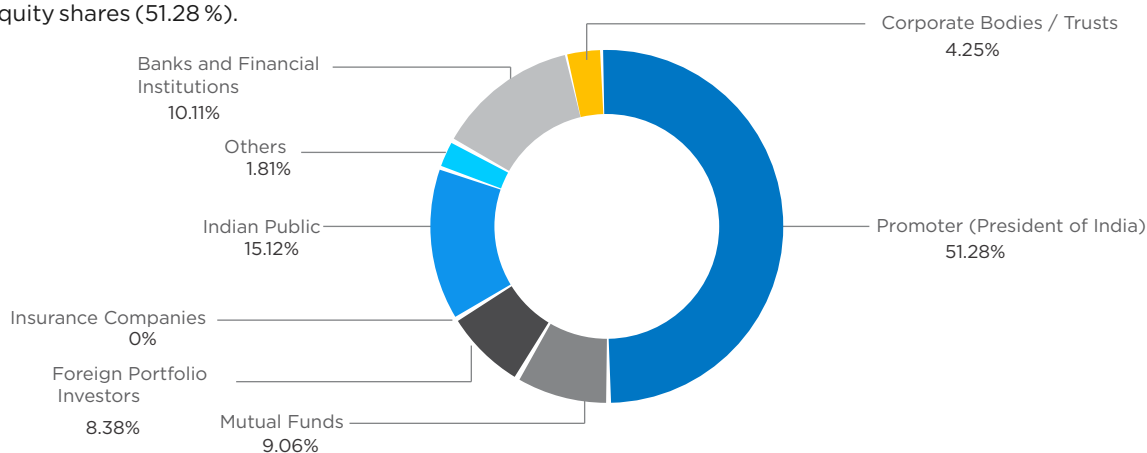
Thermal, Cogeneration, Wind and Solar

Application and Use

- Own plant use and excess power exported to grid

Ownership and Legal form

The shareholding pattern of NALCO as on March 31, 2021, is given below. The Govt. of India holds 96,07,93,011 equity shares (51.28 %).



Market Served

NALCO is the largest exporter of Alumina and Aluminium in India. We have established our footprint over a large geographical area covering countries in the Southeast Asia, Far East, Indian Sub-continent, the Gulf, China and USA. Our exports are primarily Calcined Alumina and Primary Aluminium. In the year 2020-21 we served the aluminium markets of Malaysia & Singapore.

During the year 2020-2021, the Alumina export markets catered to by NALCO included China, Egypt, Malaysia, Netherlands, Oman, Qatar, UK and UAE.

Scale of the organisation

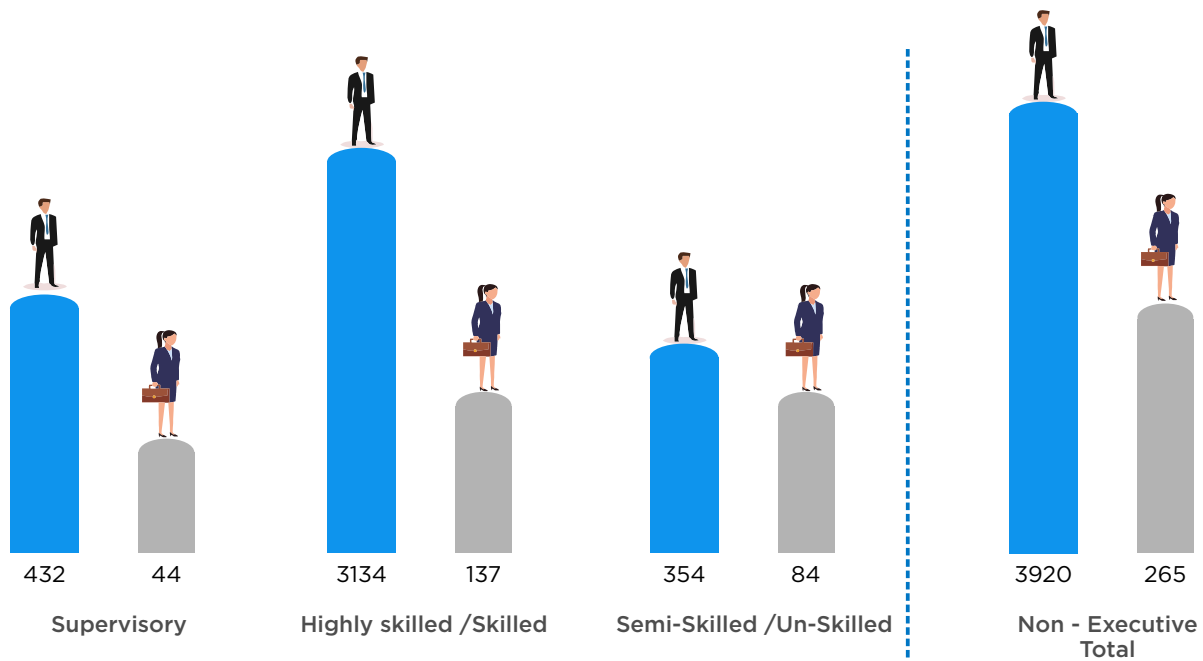
Particulars	Unit	FY 2018-19	FY 2019-20	FY 2020-21
Production				
Bauxite	Mt	72,30,546	73,02,245	73,65,001
Alumina Hydrate	Mt	21,52,500	21,60,500	20,85,500
Aluminium	Mt	4,40,242	4,18,373	4,18,522
Power (net)	MU	6,256	6,067	6,440
Wind Power	MU	363	312	285
Export Sales				
Alumina	Mt	12,44,256	12,40,704	11,84,680
Aluminium	Mt	38,463	56,898	1,92,174
Domestic Sales				
Alumina, Hydrate and Other Chemicals	Mt	73,377	63,000	42,992
Aluminium	Mt	4,02,134	3,38,864	2,30,643



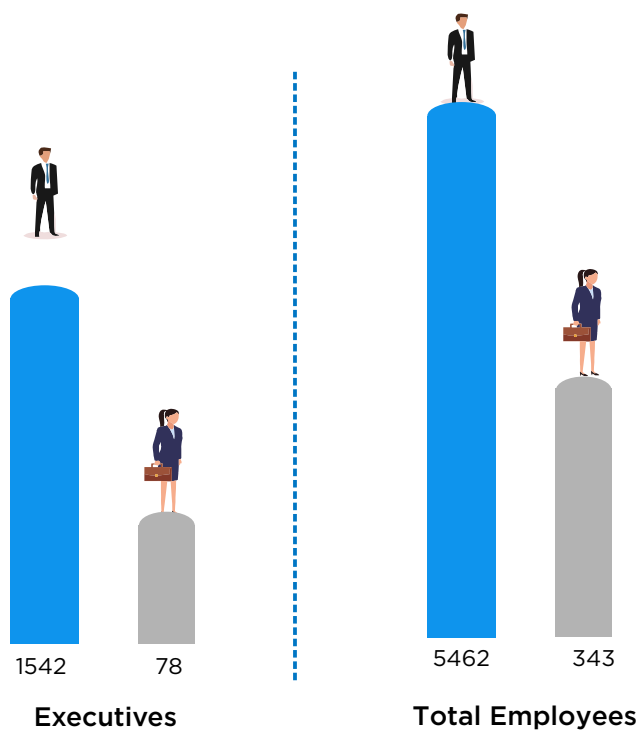


Employees and Other Workers

The breakup of Permanent Employees (as on 31.03.2021) by category and gender is given below



Non- Executives



Supply Chain

Medium & Small Enterprises (MSEs) and local suppliers in and around manufacturing units are integral part of NALCO'S supply chain and MSEs are supported by the Company in various ways. They are important stakeholders for the organization and are vital elements in our sustainable development endeavour. We are committed to reduce resource usage (energy, water, raw material) during sourcing/production/ distribution through the entire supply value chain through inclusiveness of suppliers. Selection of appropriate mode of transportation & verification of social responsibility of suppliers adds credibility to our supply chain. For further details please refer Procurement Practices at page no 42.

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 follow the precautionary principle, especially in areas involving environmental risks and human concerns. Our existing risk management principles supplement the requirements of the precautionary principles and address the mitigation measures related to environmental, social and economic risks. In addition to guidance received from ISO 9001, ISO 14001, OHSAS 18000, ISO 50001 & SA 8000, we continuously update ourselves regarding findings and recommendation of National Environmental Engineering Research Institute (NEERI), The Energy and Resources Institute (TERI), Intergovernmental Panel on Climate Change (IPCC) & UN Environment Programme(UNEP) etc.

Various policies and manuals strengthen and sustain the precautionary approach. Any proposed project or process is evaluated based on likely financial, environmental & social impacts before implementation. Any foreseen impact is properly redressed as per precautionary principle.

External Initiatives

UN Global Compact, GRI Standards, UN Sustainable Development Goals, The 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, etc., are adopted in different policies, manuals and procedures of company.



NALCO's Business Responsibility Report (BRR) is prepared In line with Listing Obligation and Disclosure Requirements (LODR) 2015 and is based on the 9 Principles describing the initiatives taken by the company from the Environmental, Social and Governance standpoint. Business Responsibility (BR) Report is published annually as part of the Annual Report.

Ministry of Mines (MoM), Government of India (GoI) has set up the Indian Bureau of Mines (IBM) as a multi-disciplinary government organisation for the promotion of systematic and sustainable development of mineral resources of the country. This is achieved through regulatory inspections of the mines, approval of mining plans and environment management plans to ensure minimal adverse impact on environment. IBM's sustainability framework complemented by regular audits/inspections facilitate the sustainability practices of NALCO's Bauxite mine.

We also participate in PAT scheme mandated by Bureau of Energy Efficiency (BEE), Swachh Bharat Abhiyan and iconic shrine development program of GOI. We are in the process of implementing Industry 4.0 in our production units.









Alignment to Sustainable Development Goals of United Nations

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all the member states of the United Nations in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The Sustainable Development Goals (SDGs), lay out a roadmap to end poverty, reduce inequality, and tackle climate change, among other ambitions.





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 is an excellent paymaster The Company has transformed the local economy in the area of its operation by sustainable livelihood and infrastructure development program. We undertake local community development programs based on local communities' needs
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 creating jobs, directly or indirectly, NALCO has nurtured the local suppliers. Has undertaken relief work during the covid lockdown.
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"> Medicines at subsidized costs in health centres/camps including operation of Mobile Health Units Well-equipped Occupational Health Centres. To prevent spread of occupational disease Continual monitoring of emission and effluent parameters
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"> Educational facilities, residential education to tribal students, financial assistance to meritorious BPL girls During the year despite covid restrictions 4379 training man-days for regular employee/4944.5 training man-days for contract worker/ Engagement of 895 apprentice trainees
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 of equal remuneration to both women and men The recruitment and selection processes enable representation from across gender, regions, ethnicities, religions and different social strata There is no discrimination on any basis.
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"> Water conservation, STP, Rainwater Harvesting Minimizing the adverse impact on water bodies following zero discharge to outside Swachh vidyalaya and ODF villages
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"> Procurement of Energy Efficient Product, services and design Achieved pat-II target and earned 62329 Escerts 198.4 MW of wind power plant 670 kWp solar power plants
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 in operations and in the supply chain. Investments towards roads, utilities, community social facilities, health and welfare centres, and sports centres. Wages are above the applicable minimum wages. All forms of forced or compulsory labour prevented. Benefits to workforce to foster economic growth. Earnings per share

SDG Goal	Elements of SDGs Mapped to GRI Standards	NALCO Contribution
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<ul style="list-style-type: none"> Infrastructure investments (GRI 201-1, 203-1) 	<ul style="list-style-type: none"> Significant amount of economic value is generated and distributed Infrastructure development initiatives for communities Rs 12.62 crore invested in R&D
10 REDUCED INEQUALITIES 	<ul style="list-style-type: none"> Equal remuneration for women and men (GRI 405-2) No discrimination based on caste, creed, religion, domicile status etc 	<ul style="list-style-type: none"> Reducing inequalities by helping the social reform, training programs for unemployed youth, support to underprivileged, needy and differently abled persons Equal remuneration for men and women ensured
11 SUSTAINABLE CITIES AND COMMUNITIES 	<ul style="list-style-type: none"> Infrastructure investments (GRI 203-1) 	<ul style="list-style-type: none"> Wind & solar power, energy reduction technologies and equipment's, LED lighting Emission control and zero discharge to outside
12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	<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) Sustainable mining 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"> Energy reduction, adoption of green technologies, pollution control and environmental protection, Ambient air quality monitoring, emission monitoring & control, Increased use of green energy, resource optimization recycling and reuse of wastes, prevention of ground water and surface water contamination. Sustainable mining. Recycling of waste and water with zero water discharge to outside. Monitored specific consumption of raw material and energy
13 CLIMATE ACTION 	<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"> Renewable energy and energy reduction measures Investments have been made for the control of emission and effluents GHG emissions are monitored and controlled Achievement of PAT-II Target
14 LIFE BELOW WATER 	<ul style="list-style-type: none"> Marine Biodiversity (GRI 304-1, 304-2, 304-3, 304-4) 	<ul style="list-style-type: none"> The operations and supply chain activities do not have any impact on marine life as we maintain zero water discharge.
15 LIFE ON LAND 	<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"> Investments have been made for the control of emission and effluents Bio-diversity studies have been conducted in the core and buffer zones of the bauxite mine by a professional agency and a Wildlife Management Plan has been prepared and approved by PCCF (Wildlife), Odisha
16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	<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"> Committed to ethics and transparency and have contract Manual, Purchase Manual, Code of Business Conduct & Ethics for Board Members and Senior Management, Core Values, Fraud Prevention Policy, Whistle Blower Policy, CDA rules Standing Order, Integrity Pact Strong policy of non-discrimination



Membership of Associations

1. Aluminium Association of India
2. Standing Conference of Public Enterprise (SCOPE), New Delhi
3. Federation of Indian Mineral Industries (FIMI), New Delhi.
4. National Safety Council, Mumbai
5. Confederation of Indian Industry (CII), New Delhi
6. Utkal Chamber of Commerce & Industries, Bhubaneswar
7. Engineering Export Promotion Council, Kolkata
8. Federation of Indian Export Organisation, New Delhi
9. International Chamber of Commerce, Delhi
10. Chemical and Allied Products Export Promotion Council, Kolkata
11. National Institute of Personnel Management, Kolkata
12. Indian Ceramic Society, Kolkata
13. Odisha State Productivity Council
14. All India Management Association



Corporate Governance

Governance is key to Sustainability

Good governance is the cradle of sustainability, and it promotes trust, responsibility and ethical business environment on the foundation of transparency, accountability and integrity. Our corporate governance practices derive its strength from our core values of Trust and Integrity and are marked by transparency, accountability, commitment and financial discipline which are driving our sustainable development efforts. Our philosophy is to create value for stakeholders including employees, shareholders, customers, suppliers, creditors, regulatory authorities, government departments and society at large while preserving the wealth of nature for our future generations. A robust system of internal control, timely and continuous flow of material information to stakeholders, compliance of statutes has strengthened governance practices in NALCO over the years.

Various policies, systems & procedures and guidelines help our organisation to achieve good governance for meeting desired goals. Our well-balanced governance structure helps us develop robust practices ensuring long term value creation for our stakeholders without disturbing the balance of sustainability. The well-articulated governance structure also helps us to ensure that timely and accurate material information is communicated to our stakeholders.

Governance Structure

The Board of Directors being at the apex level of the organization is responsible for function, strategic direction and performance of the company. An enlightened Board formulates vision, strategies and policies for the Company and reviews it periodically for its effectiveness. The Board believes in the inalienable rights of the shareholders as true owners of the Company and its role as trusteeship to the stakeholders. The Board also gives direction and exercises appropriate control to ensure that the Company meets stakeholders' aspiration and societal expectation.

NALCO recognizes that the Board is accountable to all shareholders and that each member of the Board owes his/her first duty for protecting and furthering the interest of the Company. Corporate governance adheres to the provisions as specified in Securities and Exchange Board of India, Listing Obligations and Disclosure Requirements Regulations 2015.



Being a public sector organisation, Directors are appointed by Government of India considering their capabilities, experience and expertise in their respective fields. The Board functions on the guidelines of Companies Act, 2013, Securities and Exchange Board of India (SEBI) listing Obligations and Disclosure Requirement (LODR) Regulations, 2015, Department of Public Enterprises (DPE) guidelines on the functioning of Navaratna Companies and other guidelines issued by the Government from time to time.

The sanctioned strength of the Board is 6 Full-time (Executive) Directors including Chairman-cum-Managing Director, 2 part-time Official Directors and 8 part-time Non-official Directors. As on March 31, 2021, our Board was headed by the Chairman-Cum- Managing Director and assisted by 3 full time Functional Directors and two part-time official Directors. The full-time executive functional Directors and part-time independent directors are selected through Public Sector Enterprises Board (PSEB).

The details of Board of Directors as on 31.3.2021 are given below:

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 M.P. Mishra Director (P & T) & Director (Finance)- Additional Charge	01.11.2020 Additional Charge w.e.f. 01.03.2021.
Shri Bijay Kumar Das Director (Production) & Director (Commercial) Additional Charge	01.12.2020 Additional charge w.e.f. 01.03.2021
Part time official Directors	
Shri Sanjay Lohiya, IAS	09.11.2020
Shri Satendra Singh, IAS	05.08.2020

Board Level Committees

For augmenting governance, the Board delegates responsibilities to different types of committees, constituted to deal with matters and monitor the activities falling within their respective terms of reference. Board level committees are constituted with judicious mix of executive and nonexecutive directors. The diverse mix of board members in different Board level committees continuously add value to decision making process that takes place in the ambit of their function. For smooth and hassle free governance NALCO has instituted both statutory and non-statutory committees.

Non statutory committees are constituted voluntarily to focus on specific areas and to smoothen the decision making process. Secretarial Standards relating to Board meeting are equally applicable to Committee meetings. The Terms of Reference of each Committee are approved by the Board.

Various committees constituted at the level of the Board of Directors of the company, for different aspects of governance of the company, are listed below.

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



CSR and Sustainability Development Committee

Sustainable development and CSR is the key to our business philosophy, and accordingly, a CSR & Sustainability Development Committee has been constituted with board members having the desired expertise in the area of CSR and Sustainability as per the provisions under the Act and Regulation 34(2)(f) of the SEBI Regulations. The Committee drives the organizational efforts in the areas of CSR and Sustainability and reviews the progress in these areas.

The Terms of Reference of the Committee is as follows:

- Overseeing peripheral development activities being undertaken by the Company through the respective Rehabilitation and Periphery Development Advisory Committees (RPDAC) and proposed to be taken under MMDR Act.
- NALCO Foundation.
- Environment Protection & Pollution controls



Ethics and Integrity

Business ethics is all about system of moral and ethical beliefs that guides the values, behaviors, and decisions of a business organization and the individuals within that organization. Organizational ethics includes various guidelines and principles which decide the way individuals should behave at the workplace.

Values and Principle driven Company

NALCO has championed 4 decades of Corporate Excellence powered by its values, principles and standards developed and nurtured over the years. It includes transparency, accountability, commitment to values, financial prudence and responsibility to stakeholders. These values and principles combined with guidelines issued by the Government of India and other applicable bodies & institutions constitute the framework of NALCO's Good Governance Practices. Our key principle is working responsibly to create value for the stakeholders i.e. employees, shareholders, customers, suppliers, creditors, Government of India, State Governments, Governmental agencies/ departments and the society at large. Our core values with the apt acronym BEST, also underline NALCO's philosophy of providing value to the stakeholders and ensuring the highest levels of ethical standards at the same time. Our values and principles are enshrined in the elaborate set of Policies and Manuals which ensures alignment to the right path of sustainable development in the myriad of complex organizational activities.

Policies and Manuals relevant to ethics, transparency & accountability

Our consistent performance in the area of Sustainable Development is an outcome of the carefully crafted organizational directions and developing ways and means for its implementation achieved by deployment of Policies and Manuals. Our policies and manuals are an embodiment the organizational philosophy and thought process. The policies and manuals are developed keeping in mind applicable factors or issues of the broad business environment which includes governmental laws & norms, trends in the industry and social & environmental responsibilities.

Our Contract Manual and Purchase Manual ensure fair deal in matter of contract and procurement whereas Marketing Manual provides procedure and guideline for fair and credible transaction in National and International scenario. The Sustainable Development Policy, and Core Values reflect the Company's commitment towards integrity, ethical practices, transparency and above all commitment to value creation for stakeholders achieved through responsible operations. The system of Integrity, Transparency and ethical working is further reinforced through Fraud Prevention Policy, Whistle Blower Policy, Code of Business Conduct & Ethics, Code of Conduct for prevention of Insider Trading, CDA rules, and Certified Standing Order. Any malafide 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. Integrity Pact is also implemented for all contracts of 50 lakh and above to further bolster the transparency drive. Protection is extended to any outsider complaining under Public Information Disclosure and Protection of Informer (PIDPI) Scheme of Govt. of India.



The table below lists down all the current policies and manuals which reinforce values, principles, standards, and norms of behaviour:

Sr. No	Current policies and Manuals
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 http://livetenders.nalcoindia.com/Website/webDownloads.aspx?Glnk=dwnld
8	Contracts Manual https://nalcoindia.com/wp-content/uploads/2020/03/CONTRACT-MANUAL-2013-updated-till-31-10-2021.pdf
9	Stores Manual (Internal circulation only)
10	Independent External Monitor Policy (Internal circulation only)
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-Fair-Disclosure-of-Unpublished-Price-Sensitive-Information.pdf
12	Risk Management Policy https://nalcoindia.com/wp-content/uploads/2019/01/Final-Nalco-Risk-Policy_Nalco-for-website-upload-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/2020/02/Policy-on-Related-Party-Transactions.pdf



Code of Conduct

NALCO has devised a Model Code of Business Conduct and Ethics. Code of Conduct, as adopted by the Board of Directors, is applicable to all the board members, government nominees, independent directors and senior management. 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>

It is based on inspired by NALCO's BEST values i.e. Benefitting Stakeholders, Excellence and Quality, Sustainability and Trust & Integrity. Our robust code of conduct helps us to uphold transparency and fairness in business operations while remaining responsible and sensitive in the dealings with our stakeholders. The code of conduct establishes guidelines for various organisational activities and ensures non-discrimination, human rights & dignity. Legal compliance, conflict of interest, ethics, transparency, accountability, compliance audits and protection of confidential information are all part of our code of conduct. We have mechanisms in place for disciplinary action by Board against violation of the code of conduct. No complaints of its violation were received during the reporting period.

Mechanisms for Advice and Concerns about Ethics

Various mechanisms are in place to address advice and mitigate concerns about ethics. The Comptroller and Auditor General (CAG) audit, corporate governance audit and secretarial audit reveal shortcomings regarding ethics related issues. The external audits also help us to strengthen our ethical practices by providing a timely and valuable feedback. Our Vigilance department performs routine checks and conducts preventive study to find out concerns about ethics. As per Integrity Pact signed with Transparency International India any deviations from contract condition will be dealt by Independent External Monitors.

In case of irregularity or misdemeanour, based on the severity of the case, appropriate actions are taken following our Vigilance Manual, CVC Guideline, Code of Conduct and related circulars or guidelines, etc. Detailed investigations are carried out based on prescribed procedures with functional guidance sought from CVC in referenced cases and appropriate DAR actions and remedial measures are taken. Required measures are carried out regularly for ensuring equity, fairness & transparency in all spheres of activities including maintaining ethical standards. If necessary, 1st stage and 2nd stage advice of CVC is sought, as per provision and appropriate DAR actions and remedial measures are taken.

Integrity Pact

In order to fight corruption NALCO has adopted Integrity Pact as per latest SOP issued by CVC. The core values and principles defined in the pact are guiding principle for our tendering, contract and procurement activities. This pact is applicable for all the purchases made and contracts signed which are of INR 50 Lakh and above. The Pact mandates an agreement between NALCO and bidder, to mutually avoid all forms of corruption by following a system that is fair, transparent and free from any influence or prejudiced dealings in the entire period of the particular transaction. Meetings with Independent External Monitors (IEMs) are conducted to ensure procurement related grievances and complaints are addressed within reasonable time period.

Whistle Blower Policy

Whistle blowing helps the organisation to uncover serious irregularities. We have drafted our Whistle Blower policy in such a way that it promotes safe and secure way of whistle blowing and this helps us to promote loyalty in our organisation. Our policy provides adequate masking or protection of the whistle blower and thus it encourages more and more employees to come forward and report any form of misconduct, corruption related practices, irregularities in the company, abuse of power and breach of contract. The Policy covers malpractices and events which have taken place/ suspected to take place involving:

- 1 Abuse of authority
- 2 Breach of contract
- 3 Negligence causing substantial and specific danger to public health and safety
- 4 Manipulation of company data/records
- 5 Financial irregularities, including fraud, or suspected fraud
- 6 Criminal offence
- 7 Pilferation of confidential/propriety information
- 8 Deliberate violation of law/regulation
- 9 Wastage / misappropriation of company funds/assets
- 10 Breach of employee Code of Conduct or Rules
- 11 Any other unethical, biased, favoured, imprudent event

Fraud Prevention Policy

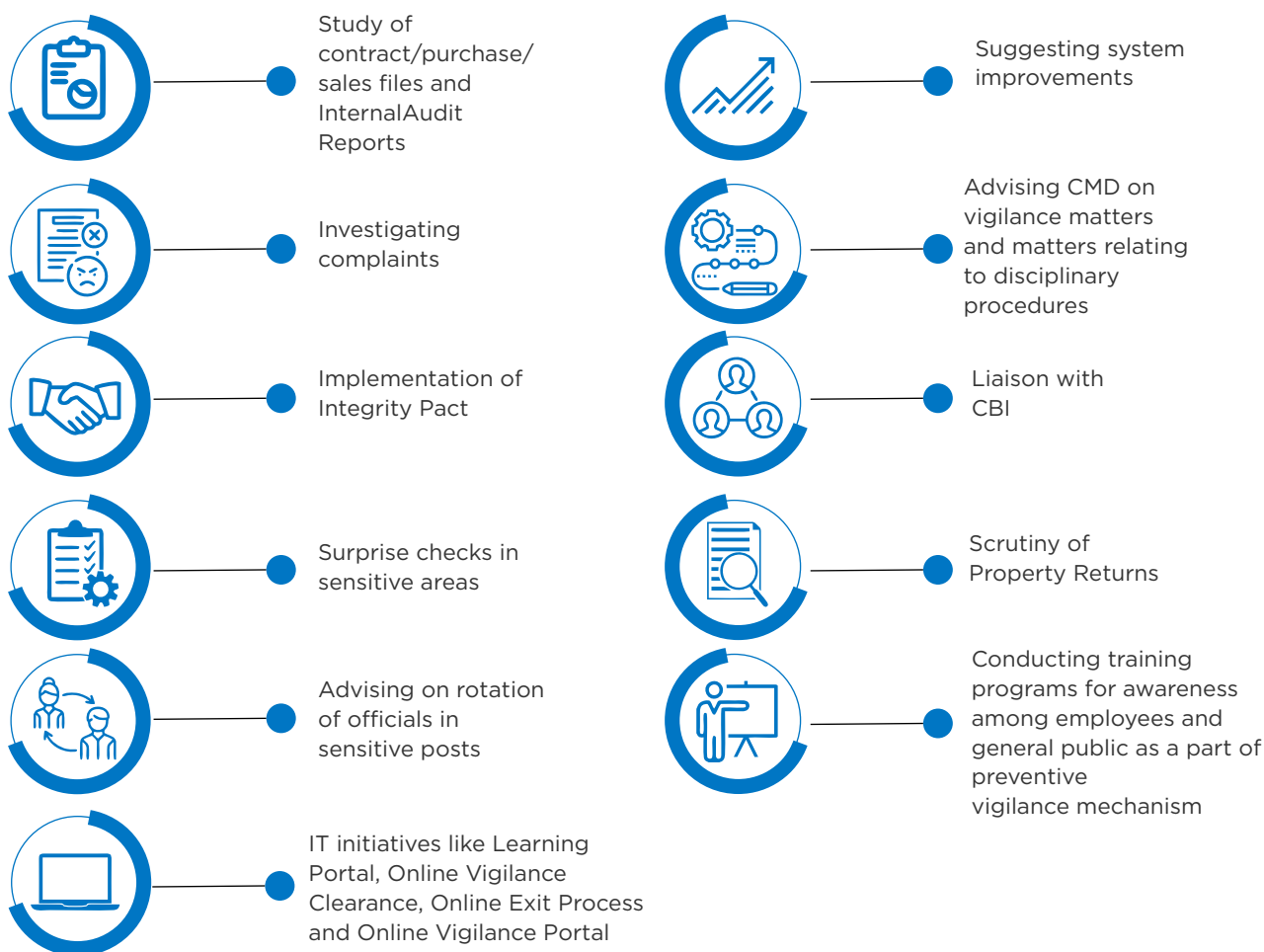
We have board approved Fraud Prevention Policy. The prime objective of this policy is to provide a system for detection and prevention of fraud, reporting of any fraud that is detected or suspected and fair dealing of matters pertaining to fraud. This policy is applicable to any fraud, or suspected fraud involving employees of NALCO (all employees full time, part time including the management of NALCO or employees appointed on adhoc/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 of NALCO. We also ensure that this policy is strictly implemented and diligently followed in all our business practices. The details of the policy can be found on our website.

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

Vigilance

"Highlights of Vigilance Functions



Vigilance function protects an organisation from external threats as well as strengthens the internal mechanism as regards non ethical practices. NALCO has a well-established vigilance department headed by a Chief Vigilance Officer (CVO) who is appointed on deputation from Government of India. Other vigilance officers who assist the CVO are selected on deputation basis in consultation with and concurrence of CVO. Our Company has its vigilance set up at three locations, i.e., Corporate Office at Bhubaneswar, S&P Complex at Angul and M&R Complex at Damanjodi. The vigilance

functions are further divided into preventive, punitive & surveillance and detection.

Online Vigilance Portal has been developed to meet the different needs of vigilance function of the Company. The Portal provides information about vigilance function like different activities, practices or initiatives undertaken by the Vigilance Department. It also has the facilities to lodge complaint and to check the status of the complaint in online mode which facilitates complaint lodging thus strengthening vigilance function as a whole.



A total of 12 vigilance related stakeholder complaints were received during the year while 5 complaints were pending at different stages of investigation from previous year. Out of these 17 complaints, 16 complaints were investigated and closed during the year while 1 complaint is pending at the end of year.

e-Governance

Technology has proved to be great enabler in enhancing transparency, integrity and ethical practices as it frees up the dealings from human biases and manipulations. e-governance in our context is the application of IT in providing services, exchange of information, communication transactions, integration of various stand-alone systems between organization to stakeholders as well as back-office processes and interactions within the entire organizational framework.

NALCO has adopted SAP Enterprise Resource Planning (ERP) application integrating business functions such as Sales & Distribution, Finance & Controlling, Materials, Human Resource and Production Planning to ensure uniform process and to improve information availability as single version of truth. e-procurement of goods and services are performed through SAP SRM, Central Public Procurement Portal and GeM. Vendor Purchase Order, Invoice and payment effected in GeM Portal has been integrated with the ERP. Centralized employee applications and employee self-service applications are part of the digital application ecosystem. Computerised Hospital Management System has been implemented

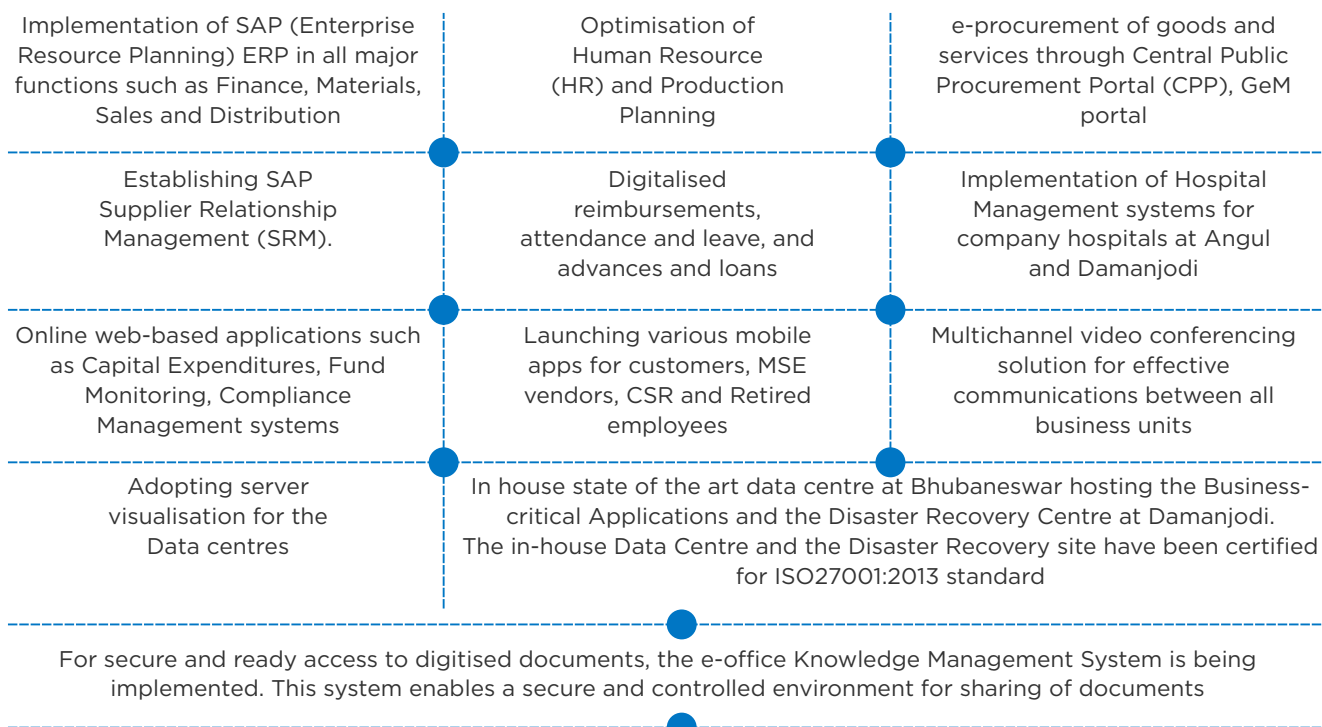
for the Company hospitals at Angul and Damanjodi.

At NALCO, e-Office, a product of NIC, has been implemented in the organization as a drive towards higher transparency, accountability, and speed in management of proposals. This system also enables authorized users to act on files even beyond office premises using secured VPN access. For secure and ready access to digitized documents, the e-office Knowledge Management System have been implemented. Online web-based applications such as Capital Expenditure monitoring, Fund monitoring, Compliance Management System, Vendor Bill Tracking System and Contract Labour Management System are in use for the purpose of regular tracking and monitoring. As a measure towards enhanced transparency, Online Vigilance portal and Complaint Management System have been implemented. The efficacy of e-governance was proved during the crisis of COVID-19. Ensuring office productivity and individual wellbeing, the company adopted a host of digital measures such as e-Office, Cloud Based Desktop Video conferencing, enhanced secure connectivity for Work from Home, email access from internet and enhancement of internet bandwidth.

NALCO is increasingly deploying various e-applications applications to harness the power of technology. Some of the Apps are "Naginaa" - for Customer, "Namasya" - for MSE Vendors, "Nisarg" - on CSR, "Hamesha Nalconian" for retired employees and "Suraksha" for onsite safety inspection.

An overview of our e-governance management at NALCO is given below:

The highlights of our e-Governance initiatives are given below.



Right to Information

Our Right to Information (RTI) response framework consists of one appellate authority, one Public Information Officer (PIO) and nine Assistant Public Information Officers (APIO). The officials are responsible for providing clarification demanded by our stakeholders & public. We respond to RTI requests and appeals in both physical and online manner. We are aligned with online RTI portal of Department of Personnel and Training, Government of India (www.rtionline.gov.in) since January 2017.

The following are the details of the RTI applications and appeals during 2020-21:

	Requests	First Appeals
Under Process as on 01.04.2020	25	1
Received during the year (including cases transferred from other Public Authority)	282	50
No. of cases transferred to other Public Authorities	1	0
Decisions where requests/appeals rejected	111	0
Decisions where requests/appeals accepted and settled	210	51
Under Process as on 31.03.2021	27	0

Operations Assessed for Risks related to Corruption

Critical assessments of our operations help us to minimise corruption at our facility. We assess all the major transactions to make sure that the transaction is in line with our policies and procedures. Also, during CAG audit all the major transactions get audited. Regular inspections are conducted by our vigilance department. This involves intensive examinations (CTE type) and sample checks. We also undertake internal audits to ensure maximum compliance of the anti-corruption policies and procedures.

Communication and Training about Anti-Corruption Policies and Procedures

We believe that proper communication and training can go a long way in strengthening the core of our organisation and imparting organisational values. We provide regular training to our employees on vigilance and anti-corruption. Regular training help us to keep our employees updated and build awareness about the new policies and procedures. The trainings provided are of the following nature:

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

Apart from the trainings listed above we conduct various other trainings in which vigilance officers are given specialised training by CBI Institute to function effectively. Various talks, seminars and discussion on vigilance and anti-corruption forms a holistic aspect our training culture. Total 25 persons were imparted training on anticorruption during the year amidst covid pandemic.

Compliance of the guidelines on Corporate Governance

The Company is submitting self-appraisal reports on compliance of the guidelines on Corporate Governance, prescribed by the Dept. of Public Enterprises (DPE) on quarterly basis. The Company is rated 'Very Good' as per the self-appraisal report for the financial year 2020-21. The self-appraisal report for 2020-21 can be accessed in the website at

<https://nalcoindia.com/wpcontent/uploads/2021/04/For-Quarter-ended-31.03.2021.pdf>

The Statutory Auditors of the Company have issued a certificate on Corporate Governance which is appended to the Corporate Governance Report. The certificate obtained from statutory auditors can be found in page 38 109 of the Annual Report 2020-21.

(<https://nalcoindia.com/wp-content/uploads/2021/09/40th-Annual-Report.pdf>)



Risk Management and Sustainability Strategy

Enterprise Risk Management

One of the key enablers to sustainable development of an organisation in a complex, dynamic and interdependent global business scenario is a robust risk management system in place which ensures timely identification and mitigation of inherent business risks. NALCO has developed a Risk Management Framework which addresses various aspects of risk management i.e., anticipation, identification, mitigation, remediation and elimination.

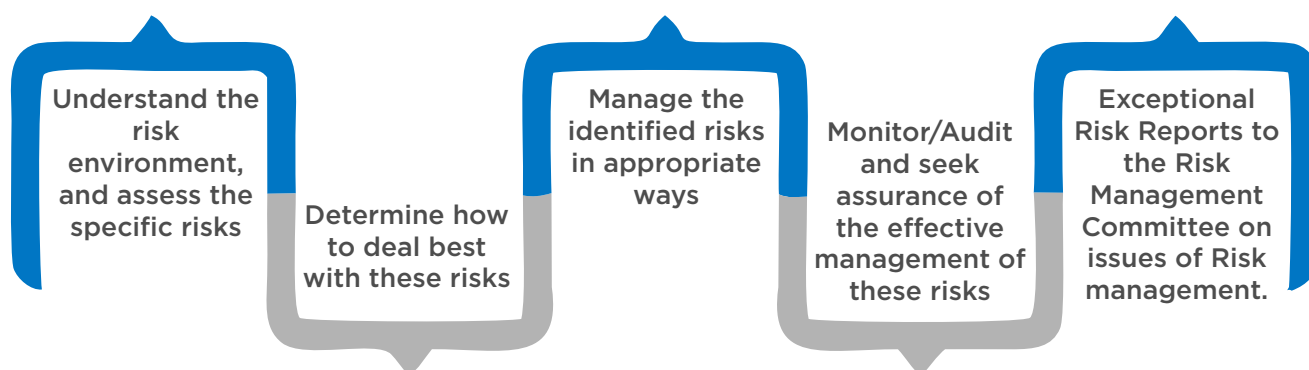
Risk statement of NALCO

“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.”

Risk Management is undertaken as a part of overall business strategies. The Company has a Risk Management Committee at Board level. The Committee reviews the exception Risk Reports and advises remedial measures from time to time. The risk mitigation measures are periodically reviewed to ensure that risks are managed through properly defined framework and established systems and procedures. 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 as well as senior management. Deviations, if any, are reported to the Risk Management Committee.

The Risk Management steps are given below:



Major Risks & Opportunities

Risk from Pandemic, Natural Calamities, Global Warming

Risk

The risk to business organization arising out of global warming in the form of extreme weather and natural calamities is becoming one of the biggest risk. Adding to this the risk from pandemic is a real one as seen during Covid 19.

NALCO's Response

Sustainability principles embedded in the Organization help NALCO to overcome such challenges through appropriate counter measures. In the face of the Covid Pandemic, which was unprecedented, NALCO took appropriate measures and minimized the adverse impacts due to the disruptions caused by pandemic.

Business Growth and Diversification

Opportunities

The demand for Aluminium is likely to move upwards based on projected growth in sectors where Aluminium consumption is high like automobiles, construction, power etc. in the Domestic Market. Government of India thrust on infrastructure projects in last few years and the recent announcement of mega investments in infrastructure projects, will see a significant rise in the demand of the metal.

NALCO's Response

NALCO has chartered an ambitious growth plan where the volume of key items will see a significant growth to tap the opportunities of rising demand of the metal. NALCO has planned to produce high end Aluminium alloys in JV to serve sophisticated markets of defence, aerospace and automobile sectors. NALCO is diversifying its business portfolio and moving into areas like sourcing strategic minerals in foreign locations, production of caustic soda.

Raw Material Security

Risk

The availability of Raw Material on a sustainable basis for present use and future use, where the capacity is being enhanced significantly, is a major risk.

NALCO's Response

The company has secured the extension of leases for the central, north and south blocks of Panchpatmali Mines. Over and above Pottangi Bauxite Mines with a reserve of 75 million tons has been reserved for NALCO by Government of India. All this has led to long term security of sourcing bauxite as a raw material.

Fuel Security

Risk

Coal is sourced through various instruments like linkages, e-auction and imports. The energy component in the cost structure is highest at around 32%. Furthermore, depending of the instrument of obtaining coal, its prices have a wide fluctuation proving to be a major risk in the supply chain

NALCO's Response

NALCO has been accorded the mining lease of Utkal D and Utkal E coal mines which have a combined extractable reserve of 175 million tonnes. Mining activities for Utkal D are expected to start in near future followed by Utkal E. This will have favourable impact on the cost of fuels and the associated risks are mitigated.

Water Availability

Risk

Water availability is becoming very critical, and it is a major risk for sustainable development in view of significant stress on available water bodies. Reducing availability, increasing cost and stricter statutory controls are proving to be a major risk to availability of water in a sustainable manner which is a key input to operations.

NALCO's Response

We have achieved zero discharge with respect to wastewater and sewerage water in all our units. Treated wastewater is used in the production process and treated sewerage water is used for horticulture and gardening purpose. We have installed Rainwater harvesting in all the major areas to conserve rainwater.

Emission Control

Risk

The norms of emissions are becoming more and more stringent which are proving to be major risks as stricter norms will result in significant amount of investments.

NALCO's Response

Elaborate measures have been taken to control emissions within norms and some of key measures include installation of Electrostatic Precipitators (ESPs) in Boiler, ESP in Calciners for collection of Alumina dust generated in calcinations process. Bag filters and de-dusting system are provided in Alumina loading and unloading area to prevent dust emission.



Sustainability Policy and Strategy

Sustainability strategy is an integral part of Nalco business strategy. We leverage business opportunities, minimize risk and seek to address social and environmental challenges such as community development, scarcity of resources and climate change at an early stage. Our sustainability strategy is based on the premise that value is delivered for the business and the stakeholders with inclusive growth and harmonious socio-economic development of community.

The organizational direction set by Vision, Mission and Value statement shapes our Sustainability Strategy which is a prioritised set of actions. It provides an agreed framework to focus investment and drive performance, as well as engage internal and external stakeholders.

Our well-articulated Sustainability policy has deeply ingrained principles that guides our actions and supports our purpose to create value and improve lives through sustainable and responsible corporate citizenship. We revised our policy during the reporting period taking into consideration the key elements of newly introduced National Guidelines on Responsible Business Conduct (NGRBC) bringing the sustainability goals of the company in agreement with the national sustainability goals and targets. The organizational goals are broken into departmental and functional goals & targets which are monitored through KPIs. We review our sustainability practices annually and improve them as required. In doing so, we also take the changing requirements of our stakeholders into account.

Raw Material Security



To address the risk of availability of raw materials on a sustainable basis, strategic intervention has been undertaken and a long-term raw material security for the company has been ensured. The company has secured the extension of leases for the Central & North, South blocks of Panchpatmali Mines. Over and above Pottangi Bauxite Mines with a reserve of 75 million Tons has been reserved for NALCO by Government of India. All this has led to long term security of sourcing bauxite as a raw material. As regards coal, another major raw material for our Captive Power Plant, NALCO has been accorded the mining lease of Utkal D and Utkal E coal mines. It is expected that the mining activities for Utkal D are expected to start in near future followed by Utkal E. NALCO is setting up 2.7 lakh Tonne per Annum caustic soda plant in joint venture with Gujarat Alkalies & Chemical Ltd. (GACL) in Gujarat. This will mitigate the risk of unavailability of raw materials on a sustainable basis.

Environmental Strategy

We are committed to adopt the highest standards of environmental performance in our operations. In planning and implementing various activities, we focus on minimizing and remediating any adverse impact on the environment. Our strategic focus on environment are reducing environmental degradation, enhanced production of renewable energy, use of cleaner fuels, technological up gradation and installation of energy efficient technologies, greening activities by tree plantation, responsible consumption of natural resources and sound waste management practices. Our strategic intent towards environment is addressed through system building and all our operating units are certified to ISO 14001: 2015 Environment Management System Standards. We strive to go beyond 100% compliance with all environmental statutory and regulatory requirements.



Responsible Mining

Open cast mining of bauxite gives rise to breaking up of large areas which results in destruction of forest, change in natural topography and danger to wildlife, together with associated risks of noise, vibration, air & water pollution. At NALCO sustainable mining includes selection of appropriate mining technology, use of proper mining equipment, adherence to scientific mining and mine closure plan, reclamation of mined out area and restoration of forest cover.

NALCO's mining practice involves minimum blasting with measures in place for controlling air pollution, noise and vibration. In order to prevent excess noise & vibration and degradation of topsoil fertility, secondary blasting of hard strata is completely avoided. Ensuring proper maintenance of mining equipment and machines go a long way in preventing excess noise and vibration. Haul roads in the mines are water sprinkled properly to minimise plume dust arising out of operation of heavy earthmoving equipment.



Social Strategy

CSR Policy of NALCO affirms our commitment for Inclusive growth and equitable development, which we believe is the only acceptable business model. The CSR Policy of NALCO, in conformity with the provisions of Companies Act, 2013, provides for formulation, implementation, monitoring, evaluation, documentation and reporting of CSR initiatives of NALCO towards building a sustainable community around the area of its operations. NALCO aspires to grow its business by creating positive social impact among the vulnerable and marginalized section of the society in the sphere of education, healthcare, women empowerment, promotion of livelihood, rural infrastructure, promoting and restoring cultural heritage, promoting sports etc.

NALCO Foundation has been created for implementing our social strategies in a unified and structured manner. Our social development activity is focused on socio-economic development of the immediate villages located in the periphery of NALCO's operational areas. NALCO Foundation has adopted a project-based accountability through need-based approach by ensuring participation of the primary stakeholders at the grassroots level in the project management process. The Foundation further intervenes in capacity building of youths, women, PRI members & other stake holders.





Stakeholders Engagement

At NALCO we believe that inclusive and responsible growth is the way forward which is facilitated by building and nurturing strong relationships with stakeholders. We focus on understanding the needs, interests and expectations of our stakeholders and work on the same to create value for both, the organization and its stakeholders.

We promote open and transparent dialogues with our stakeholders which has been an enabler for strong stakeholder relationships. Identification of stakeholders is based on the degree to which they are affected by our activities and relationships, as well as by their ability to influence the achievement of our business objectives.

Stakeholder Identification

Listing of all the entities/groups impacted by the organization's activities or having influence over the organization



Evaluating against the attributes shown below

Dependency

Groups or individuals who are directly or indirectly dependent on the organisation's activities, products or services and associated performance, or on whom the organisation is dependent in order to operate

Responsibility

Groups or individuals towards whom the organisation has, or in the future may have, legal, commercial, operational or ethical/moral responsibilities

Influence

Groups or individuals who can have an impact on the organisations or a stakeholder's strategic or operational decision-making



Prioritised Stakeholders

List of Prioritised Stakeholders



Suppliers & Vendors



Customers & Consumers



Employees



Government / Regulatory Bodies



Investors and Shareholders



Industry Association



Civil Society/ NGO and Local Communities



Contractors/Other service providers

Approach to Stakeholder Engagement

Nalco engages with all its stakeholders and the level of engagement is commensurate with the influence / interest of the stakeholder' in the organization and vice-versa. Nalco has mapped its internal and external stakeholder for the purpose of stakeholder engagements.

Assessment of the organization with reference to its internal and external context pertaining to three pillars of sustainability viz. economic, environmental and social aspects is taken into consideration during stakeholder engagement. The inputs received give us an opportunity to carry out self-analysis, identification of deviation from responsible business strategy and to find out ways to address them. This information is periodically updated through formal or informal channels of communication on an ongoing basis.





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 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
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 & anticorruption 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, e-Procurement & e- Payment Support including financial privilege to MSE units Plant level sub-committee meet at Angul & Damanjodi. Plant level advisory committee meeting at Bhubaneswar
Community/ civil society organisations	<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 	<ul style="list-style-type: none"> 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

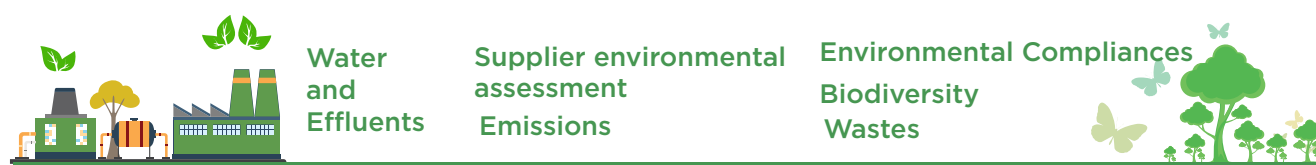
Stakeholder group	Mode of engagement	Frequency of engagement	Key concerns
Industry Associations	<ul style="list-style-type: none"> Conference, workshops & seminars. Trade Fair, exhibitions and industrial expo Membership in different industrial & professional association, confederation, etc. 	<ul style="list-style-type: none"> Policy issues Statutory regulations International & internal market condition. Technological developments 	<ul style="list-style-type: none"> Active participation and sharing of common issues in different industrial and professional platform, 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 overtime (wages) Forced labour, child labour, and discrimination 	<ul style="list-style-type: none"> On the job counselling 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.

Environment



Social



Economic





Materiality Assessment is defined as identifying, prioritizing and defining the aspects that are of highest importance to the stakeholders as well as the management of a company. Material issues are those that represent the most significant challenges and opportunities faced by the company in context of sustainability which in turn are the foundation for the sustainability strategy. Materiality, in this context, is the threshold at which an issue or interest should be reported.

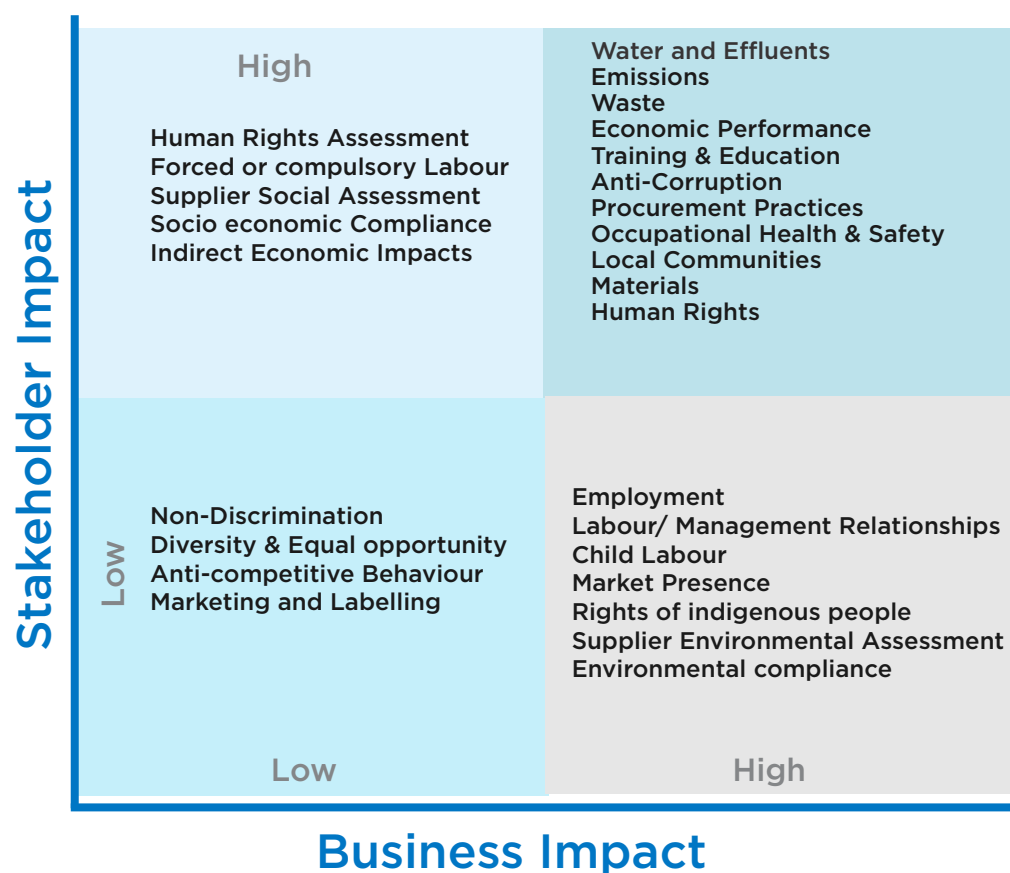
Global Reporting Initiative Standards are used to formulate and guide the materiality analysis process while applying the Report Content Principles and Materiality Test. A structured materiality assessment exercise has been carried out to capture perspectives of different stakeholders. In addition to informal verbal discussions, the stakeholders were included in a survey, based on a carefully designed questionnaire, the inputs for which were based on GRI topics, our experience, and current challenges. Feedbacks of stakeholders from different locations were also collected by circulating the above questionnaire to selected stakeholders.

The output received from the exercise has been reviewed based on various aspects of the business operations and insight gained from stakeholder engagement process. The different inputs and various engagements we had during the year with different stakeholders is the basis of our refinement of the material aspects. The MOU signed between Management and Ministry for the fiscal is the basis of capturing the importance assigned by the Government to different issues. The materiality was plotted on a 2X2 matrix and the key concerns were plotted based on their relevance to the management on one axis and their significant impact on the stakeholder on the other. Identified material issues which are important from the business perspective of NALCO and those which are of concern to our stakeholders, form the focus of this sustainability report. There are no significant changes in scope or topic boundary compared to previous year. Due care and diligence are exercised to ensure reporting on the identified material issues as per GRI Standards in Accordance “Core” option.

Materiality Process



Materiality Matrix



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	Employment	Inside
10	Occupational Health and Safety	Inside
11	Training and Education	Inside
12	Local Community	Outside

Entities Included in the Consolidated Financial Statement-

All the operations of NALCO have been included in consolidated financial statements

Please refer annual report- <https://nalcoindia.com/wp-content/uploads/2021/09/40th-Annual-Report.pdf>

Economic Performance



Economic Scenario

Economic health of an organization is one of the vital indicators of its performance and sustainability. NALCO, an organization which have earned profit since commercialization and a zero debt company by its own virtue, has always given priority on the financial performance in tune with aspiration of shareholders, investors, Government and society. Nalco management assisted by a functional Finance department having its presence in corporate, unit and regional level examines every investment and expenditure proposal and accounts for all the pecuniary resource of the company. The boundary of financial function extends beyond the physical limits of the company to requirements of value chain partners, shareholders, financial institutions and national and international scenario. Given below are some of the stimuli which we observe for boosting our financial performance and take calculated risk for furthering our Economic interest.

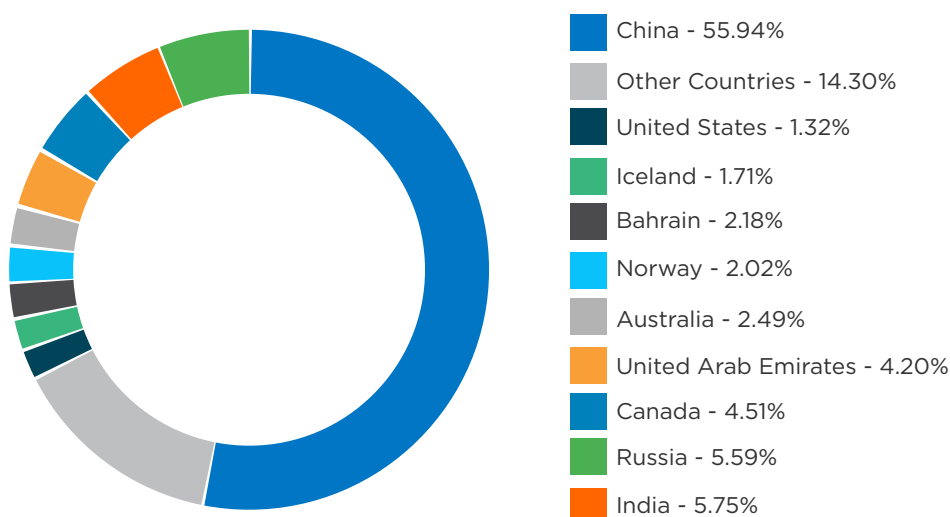
Total Alumina production in India during the Financial Year 2020-21 was 6.60 MT, thereby registering a YoY decline of 0.55%. Out of this, your Company's contribution was 2.06 MT (31.20%). During FY 2020-21, aluminium price rally has not been complimented with a corresponding increase in alumina prices, and alumina price remains weighed down by a

well-supplied market and further subdued by high alumina freight costs*.

World bauxite production during 2020 was around 359.76 MT, which is 5.65% higher than 340.51 MT produced in 2019. Global bauxite production during 2021 is expected to be around 391.53 MT. Augmented by production hike from Guinea, world Bauxite production will create a surplus market.

World production of Aluminium during the year 2020 was 64.76 MT, registering a rise of 2.44% compared to production figures of 63.22 MT achieved in 2019. At the same time, worldwide consumption of Aluminium shrank 2.74% from 64.57 MT in 2019 to 62.80 MT in 2020. The market, thus, registered a surplus of around 1.96 MT during 2020. Indian Aluminium production during the year 2020 (Up to Mar 2021) was 3.614 MT compared to previous year production of 3.619 MT out of which NALCO's contribution was 418522 MT. Aluminium consumption during the same period was 3.408 MT compared to 3.701 MT of previous year registering a decrease of 7.92%. Hence domestic market was a surplus market during the year which was further aggravated by import of 2.06 MT.

Share of Global Aluminium Production 2020



* <https://www.indiaonline.com/company/national-aluminium-company-amp-amp-amp-ltd-share-price-share-price-share-price-share-price/management-discussions/2304>

China was the largest producer as well as consumer during the year, contributing 56.67% share (36.70 MT) of the world production and 60.14% (37.77 MT) of the world consumption of Aluminium. China registered Aluminium production growth of 3.98% during 2020, while the rest of the world exhibited a meagre 0.48% growth in production. As far as Aluminium consumption is concerned, China's figures displayed a robust growth of 4.31% during 2020, while the rest of the world registered a contraction of 11.74%. During FY 2020-21, consumption of Aluminium in India fell by 7.92%.

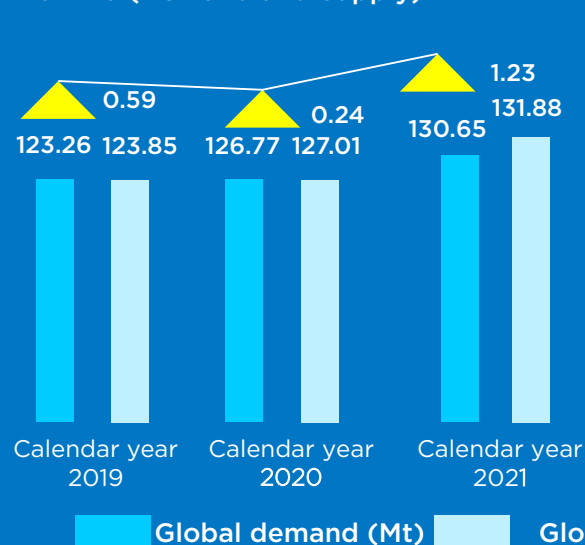
The average LME Cash Settlement Price during the financial year 2020-21 was USD 1,802 per Mt, rising 3.03% against the corresponding figure of USD 1,749 per Mt

during 2019-20. The price has gained further during the first quarter of FY 2021-22.

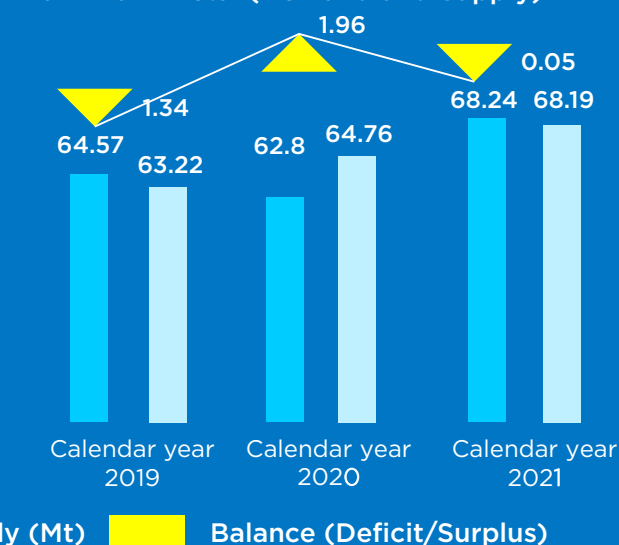
Estimated global Aluminium stocks at the end of Financial Year 2020-21 stood at 13.16 MT, registering a growth of 4.86% against stocks of 12.55 MT at the end of FY 2019-20.

In contrast to global market deficit of about 1.34 MT in 2019, a market surplus of 1.96 MT was recorded in 2020, mainly due to sharp drop in demand due to COVID-19 without any significant production cuts.

Alumina (Demand and Supply)



Aluminium metal (Demand and Supply)



Economic Scenario

NALCO understands the opportunities and dangers that the aluminium sector faces. It takes into account a variety of aspects in corporate contexts to determine the opportunities and threats that exist. This includes growth in high-consumption categories, price

fluctuations, geopolitical issues, the Indian government's budget and its priority regions. As a result, based on research and investigation, the following are the opportunities and risks for the organisation:

Opportunities	Threats
<ul style="list-style-type: none"> As per NITI Aayog report of 2018, aluminum will help India to achieve its CO₂ emissions target by adopting electric vehicles, which will improve the share of renewable energy to 40 per cent or more. In future, India will require additional annual consumption of 16 MT of aluminium, thus, making it the second-largest consumer in the world. Even at low consumption, aluminium contributes to 2% of Gross Domestic Product (GDP) in manufacturing sector (steel 12%, cement 9%) and this is expected to move up with consumption growth 	<ul style="list-style-type: none"> Crackdown by Governments against environmental hazards associated with discharge of effluents like red mud or air pollution due to coal based power plants Vulnerability in the face of unanticipated disruptions Disruptions of supply Chain The surplus global production of Alumina & Aluminium

Opportunities	Threats
<p>The Indian Government has plans to invest over US\$ 1 billion in its “Make in India” initiative. The aluminium industry will benefit from this, as there is great demand to build new production facilities.</p>	<p>The Government has, w.e.f., 01.01.2021, discontinued its export incentive scheme – Merchandise Export from India Scheme (MEIS), which has been a major source of encouragement for all Indian exporters including NALCO</p> <p>The Remission of Duties and Taxes on Export Products (RoDTEP) scheme, which is supposed to replace the MEIS scheme, is yet to be implemented. This has an adverse impact on Aluminium producers in the country, who were already coming to terms with the sluggish domestic demand and were attempting to keep smelters running by exporting sizeable quantities.</p>

To address the threats and opportunities as detailed above, NALCO has prepared a Corporate Plan which envisages 3 years action plan, 7 years strategy and 15 years vision to improve both bottom line and top line of the Company.

It has identified functional and business initiatives to give the Company a competitive edge in order to overcome the impact of commodity cycle in the long run.

The new business initiative includes growth through expansion in core business, forward integration through value addition, downstream facilities, selective

diversification and backward integration for raw material security. The identified functional and business initiatives are under various stages of implementation. NALCO is currently undertaking brownfield expansion of its Alumina Refinery which will increase its capacity by 1 MT per annum. In Aluminium segment, your Company is exploring through JV with MCL for a 0.5 MT Greenfield Smelter-cum-Power Plant in addition to the 0.5 MT brown field expansion being considered at existing plant.

The new Vision and Mission adopted by the Company is available in the link <http://www.nalcoindia.com>

New Projects

5th Stream of Alumina Refinery:

The Company is executing the 5th Stream brownfield expansion project at its existing Alumina Refinery which shall add 1.0 MTpY to its existing installed capacity of 2.275 MTpY (total capacity 3.275 MTpY), at a projected expenditure of 6,435.90 crore at December, 2018 price level, based on improved Medium Pressure Digestion technology of M/s. Rio Tinto Alcan International Limited (RTAIL).

For the refinery and the steam and power plant, EPCM consultants have been engaged. The EPCM consultant is now working on detailed engineering. The majority of the long-term contracts have already been given. Contractors for the awarded packages have arrived on site to start execution of the work. Project progress was hampered during the year due to demobilisation of labour due to social distancing and restrictions imposed by the government as a result of the COVID-19 pandemic. Manpower deployment by various agencies has improved as a result of close monitoring and persistent follow-up.

Alternate sourcing of Bauxite for 5th Stream:

To feed bauxite to 5th Stream of Alumina Refinery before commissioning of Pottangi Mines, and also to mitigate the risk of any disruption of transfer of bauxite through the existing cable belt conveyor, an alternate facility is being created from South Block with a capital expenditure of INR 483 crore. M/s. DCPL has been engaged as the EPCM consultant for the project.

Business Development:

Caustic Soda Project in JV with M/s. Gujarat Alkalies and Chemicals Ltd. (GACL):

A JV company named M/s. GACL-NALCO Alkalies & Chemicals Pvt. Ltd. (GNAL) with 40% equity participation with GACL to set up a 2.7 Lakh MtpA Caustic Soda Plant along with 130 MW Captive Power Plant at Dahej in Gujarat has been formed to meet the Caustic Soda requirement of Alumina Refinery, as a part of raw material securitisation. Around 93% of the project activities have been completed. The Project is scheduled to be completed in November 2021. NALCO has already released INR 276 crore towards full equity contribution to the JV Company as promoter.

High End Aluminium Alloy Plant in JV with M/s. Mishra Dhatu Nigam Ltd. (MIDHANI):

As a part of import substitution and diversification with value added products NALCO has formed a JV Company named M/s. Utkarsha Aluminium Dhatu Nigam Limited (UADNL) in August 2019 with MIDHANI for establishment of 60,000 MtpA High End Aluminium Alloy Plant for application in Defence, Aerospace and Automobile Sectors. NALCO has released INR 20 crore towards its share of equity contribution. The plant is being set up in Nellore district of Andhra Pradesh and is expected to be commissioned by FY 2024-25.

Angul Aluminium Park Pvt. Ltd. in JV with M/s. Odisha Industrial Infrastructure Development Corporation (IDCO):

NALCO and IDCO are developing Angul Aluminium Park for promotion of Aluminium downstream industries in Odisha with equity holding of 49% and 51% respectively. NALCO has already released INR 16.22 crore towards full equity contribution to the JV Company. Internal infrastructure development of the park is under progress. The Project is expected to be completed in the 4th quarter of FY 2021-22.

Acquisition of Strategic minerals in overseas in JV with M/s. Hindustan Copper Limited (HCL) and M/s. Mineral Exploration Corporation Limited (MECL):

NALCO has formed a JV Company named M/s. Khanij Bidesh India Limited (KABIL) with HCL and MECL in August 2019 for acquisition of some strategic minerals in overseas locations to promote "Make in India" initiative of the Government of India. Study on 12 shortlisted minerals completed. KABIL has signed two Memorandum of Understandings (MoU) with JEMSE and YPF (Government Companies of Argentina) in July 2020 and September 2020 respectively to explore sourcing of lithium and other mineral assets. NALCO has released Rs.1 crore so far towards its share of equity contribution.

Aluminium Downstream Projects:

NALCO has prepared a Detailed Project Report (DPR) for establishment of Aluminium Downstream Projects including Rolled Product Unit and Foil Plant in Kamakhyanagar block of Dhenkanal district in Odisha. Government of Odisha has allocated 83.34 acres of land out of 152 acres. The 1st phase of the Project is expected to be completed within three years after obtaining requisite approvals and clearances.

R&D Initiatives

Following R & D activities were completed during 2020-21

- R&D trial for Development of AP2XN0 technology in Smelter plant for DC energy reduction in electrolysis process successfully completed on 30.01.2021.
- NALCO has setup a world class research center named “NALCO Research & Technology Center (NRTC)” at Bhubaneswar, Odisha equipped with state of art testing and analyzing equipment such as QEMSCAN (SEMEDX), XRD, XRF, ICP-MS, Sedigraph, Laser Particle size analyser, UTM, DSC, TGA, ICPOES, BET Analyzer, Potentiometer, OES, CHNS Analyzer, Metallurgical Microscope, Whiteness Index meter etc. Research and testing activity has already started since 2019. NRTC has got the recognition of Department of Scientific & Industrial Research (DSIR), Government of India. During this financial year around 4,108 numbers of Pre-production drill bauxite samples from Mines, 2,352 numbers of aluminium metal samples from smelter plant and other plant samples have been tested.
- Development of Integrated model through SysCAD software has been completed for all four phases at Alumina Refinery which also covers unit operation like Washing circuit, Evaporation circuit etc.
- Inline fully automated anode butt monitoring system in collaboration with JNARDDC, Nagpur has been successfully installed and commissioned at Rodding shop 2, Carbon Area of Smelter Plant which provides data, helpful for improving anode fabrication process, calculation of net carbon consumption, anode cycle optimization and improvement of electrolytic cell performance.
- Wi-Fi enabled sensor arrangement has been developed in collaboration with JNARDDC, Nagpur for the online measurement of anode current distribution of aluminium electrolysis cell which would provide better understanding of cell phenomenon and thereby enhancing cell efficiency.
- One Patent has been granted on “A pyro/hydro metallurgical process for the recovery of alumina and calcium silicate from fly ash”.
- One paper on 'Impact of quality changes in CP Coke on anodes used for aluminium production' was published.

Benefits derived

- 40 MV reduction in voltage was observed in newly developed AP2XN0 trial pots resulting in reduction of around 150 kwh/T DC Energy.
- Data obtained from inline automated butt monitoring system would help in further improvement in anode fabrication process, minimization of bath contamination, calculation of net carbon consumption & anode cycle optimization.
- Online Wi-Fi enabled sensor arrangement would provide vital information on pot parameters for individual pots, which helps in enhancing the cell current efficiency.
- Use of integral model of Bayer circuit through SysCAD software helps in further optimization of process parameters.

As on 31st March 2021, 05 in-house projects and 23 collaborative projects are in progress.

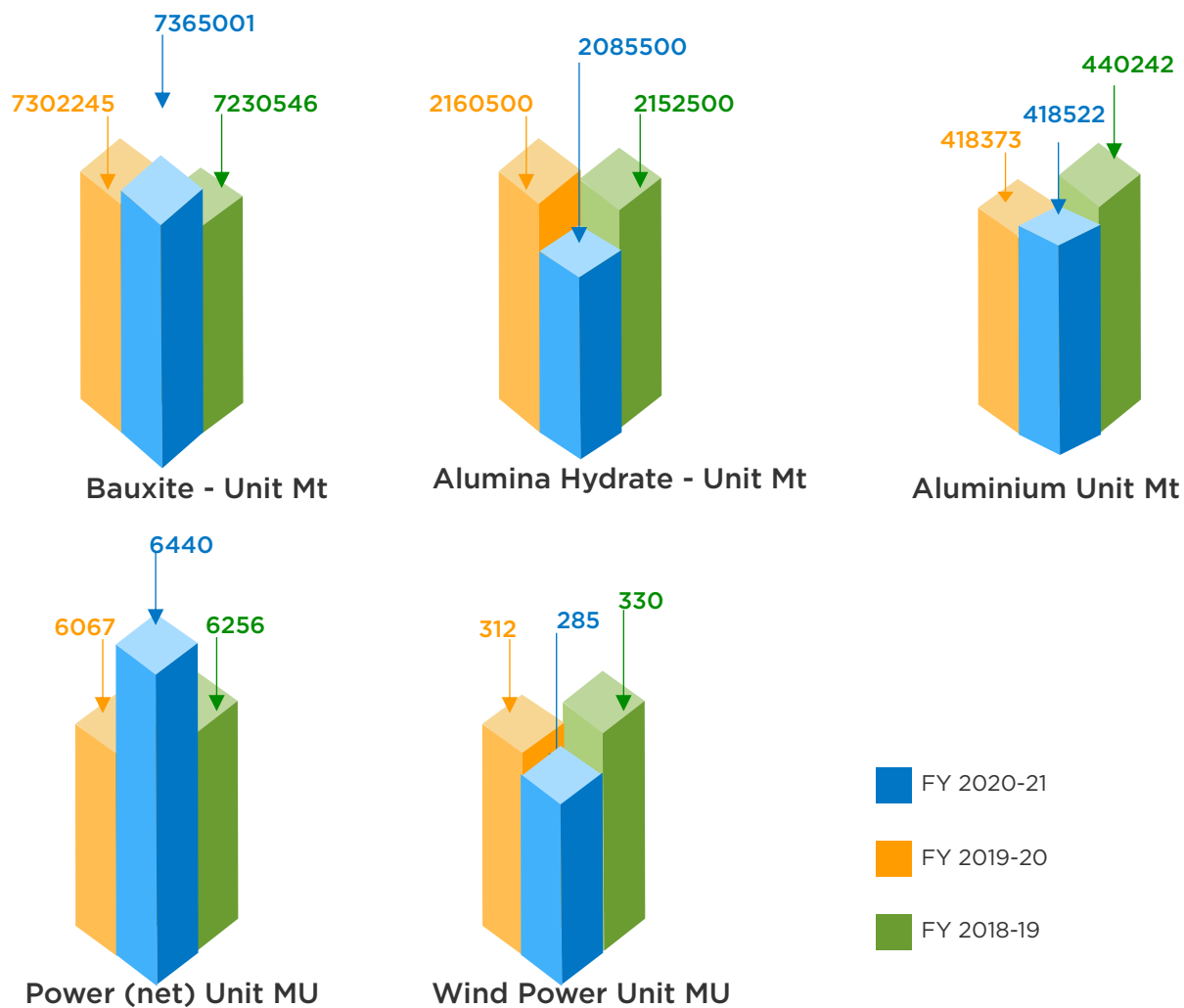
Nature	2020-21	2019-20
Capital	0.79	2.76
Revenue	11.83	10.82
Total	12.62	13.55
R&D Expenditure as % of turnover	0.14	0.16

Expenditure on R&D: INR crore





Performance During the Year Production



Financial & sales Performance

Item	Unit	2018-19	2019-20	2020-21
Sales Performance				
Total Alumina Sale	in '000 Mt	1317	1304	1,228
Total Aluminium Sale	in '000 Mt	440	396	423
Financial Performance				
Gross Sales	in ₹ Crores	11,386.32	8,425.75	8,869.29
Domestic Sales	in ₹ Crores	6593.61	4,914.83	3,706.35
Export Turnover	in ₹ Crores	4,792.71	3,510.92	5,162.94
Net Worth	in ₹ Crores	10484.51	9,988.07	10,680.70
Profit Before Tax	in ₹ Crores	2,739.92	226.24	1,316.52
Profit After Tax	in ₹ Crores	1,732.40	138.23	1299.53
Return on Net Worth	%	16.52	1.38	12.17
Book value per share (face value ₹ 5/-)	₹	56.20	53.54	58.15
Earnings Per Share	₹	9.06	0.74	6.97



Direct economic value generated and distributed

Particulars	FY 2018-19	FY 2019-20	FY 2020-21
Direct Economic Value Generated (Values in INR Crores)			
Revenue from operations	11,499.33	8,471.84	8,955.79
Revenue from other sources	325.87	272.58	146.60
Total	11,825.20	8,744.42	9,102.39
Economic Value Distributed (Values in INR Crores)			
Operating expenses (Excluding employees' wages and benefits)	7,013	6,524.11	5,855.63
Employee wages and benefits	2,072	1,994.07	1,930.24
Payments to providers of capital	978.82	513.04	460.61
Payments to government (Tax on PBT)			
Corporate Tax	1024.65	151.40	177.70
Dividend distribution Tax	212.3	105.46	-
Total economic value distributed	11,301.04	9,288.08	8,424.18
Economic Value Retained	524.15	-543.66	678.21
Additional information on Expenditures included in operating expenses (Values in INR Crores)			
Community investment			
CSR expenses	30.35	39.71	35.00
Total community expenses	30.35	39.71	35.00
Horticulture (Green belts within and vicinity of the plants)	10.22	11.64	11.92



Financial Implications And Other Risks And Opportunities Due To Climate Change

We at NALCO are well aware of the issues consequent upon climate change, the risk it poses and opportunities that open up while tackling the menace. So at one end we try to eradicate the causes that actuate climate change and on the other end we try to exploit the opportunity that open up as a means to fight climate change. Thus on one side we try to control emissions, damage to biodiversity, and ecosystem, uncontrolled use of energy etc. and on the other end we expect increased use of Aluminium in automobile, railway traction, packaging and construction sector as a preventive measure against climate change. Use of aluminium in vehicles & railway traction will reduce weight and promote fuel efficiency. In packaging sector it can replace polythene and plastic. In construction sector it will replace wood almost in all applications. Being aware of above facts as well as the immediate actions required to mitigate the threats it poses, a strong emphasis is placed on taking environmental responsibility in the mining and manufacturing industries in order to achieve long-term sustenance. We are working towards a low-carbon future and have implemented renewable energy sources such as wind and solar energy. We quantify and publish GHG

emissions on an annual basis, which are on the decline. Conservation of resources, decrease of energy use, and increasing the share of renewable energy are some of our contributions to mitigation efforts. India as a country is totally dedicated to combating climate change and has launched the National Action Plan on Climate Change (NAPCC). The National Mission on Enhanced Energy Efficiency (NMEEE), which was framed by the Bureau of Energy Efficiency (BEE) under the auspices of NAPCC, has taken on the mission of boosting energy efficiency and has implemented the Perform, Achieve, and Trade plan (PAT), a market-driven scheme. Our S&P complex and Alumina Refinery as Designated Consumers have contributed significantly to the scheme and achieved beyond the target, earning 36119 Energy Saving Certificates during Cycle-1. PAT cycle 2 has started from year 2016 and through active energy conservation and efficiency enhancement measures S&P Complex has achieved energy consumption of 4.03 TOE/Mt against a target of 4.7199 TOE/Mt and M&R Complex has achieved 0.2910 TOE/Mt against a target of 0.3165 TOE/Mt. All the three production units CPP, Smelter and Alumina Refinery, included in the Perform, Achieve & Trade (PAT) scheme, are operating with ISO 50001 certification.

Defined benefit plan obligations and other retirement plans

Net liability arising from defined benefit obligation (₹ Crores)

Liability	Post-Retirement Medical Benefit	Settling in Benefit	NALCO Benevolent Fund Scheme	NALCO Retirement Welfare Scheme	Super-annuation Gift Scheme	Gratuity (Funded)
Net liability arising from defined benefit obligation as on March 31, 2021	155.35	19.58	2.73	12.38	7.16	10.63

Defined Benefit Plans

a) Gratuity: Gratuity payable to employees as per The Payment of Gratuity Act subject to a maximum of ₹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.

b) 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 outpatient subject to

maximum ceiling of expenses fixed by the Company. The liability under the scheme is recognised based on actuarial valuation.

c) 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 hometown. Transport of personal conveyance shall also be admissible. The liability for the same is recognised based on actuarial valuation.

d) 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 @ ₹ 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.

e) 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 ₹ 10/- per retiring member. The Company would provide equivalent sum as matching contribution. The liability for the same is recognised on the basis of actuarial valuation.

f) 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 ₹ 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

a) Provident fund: The Company pays fixed contribution 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 contribution 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

a) 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 based on actuarial valuation.

b) Long Service Reward: The employee who completes 25 years of service are 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.

c) 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 up to the date of notional superannuation. The liability for the same is recognised based on actuarial valuation.

Procurement Practices

Vendors and suppliers are our lifeline, and we acknowledge the fact that their coalition with NALCO is instrumental for our better performance. The mutually beneficial relationship has been further strengthened by active engagement, grievance resolution and sharing their concern. We at NALCO try to build a lasting relationship of cooperation and trust with our supply chain.

We have an extensive network of suppliers and vendors which includes raw material suppliers, plant and machinery suppliers, transporters and service providers. We are committed to develop a lasting business relationship with the suppliers who not only meet the specific requirements but also are aligned to our organizational principles and practices. We have a robust supplier management system which facilitates supplier value management. NALCO engages with the suppliers to ensure practice of highest ethical standards and best practices as per the guidelines of Government of India. Reviews are carried out on regular basis to mitigate the supply chain risks and expedite the procurement process.

Micro & Small businesses (MSEs) and local suppliers are supported by NALCO in and around its operating units. MSEs (including local suppliers) are invited to regular vendor meetings and supplier development programmes, which serve as a platform for identifying requirements and formulating action plans for mutual benefit.

Our captive mine provides us with bauxite. The availability of coal is mostly determined by the allocation of linkage coal. Shortage of coal is replenished by purchase through e-Auction, bridge linkage coal, or import. Our raw material security has been reinforced by the allocation of bauxite mine and coal blocks. Multiple procurement sources have been established for various raw materials such as Caustic, lime, and Aluminium Fluoride, among others, to deal with supply uncertainty. Raw materials are bought in accordance with the half-yearly procurement plan, which is drawn up at the start of the year. The timely receipt of ordered raw materials is facilitated by keeping a close eye on consignments.



Nurturing local suppliers

Ancillary Development Policy of the organization promotes development of local vendors. Complex level MSE Facilitation Cells implement the Ancillary Development Policy as well as the PPP-MSE order of Govt. of India by providing Technical & Commercial guidance areas to these vendors to improve their competitiveness. All the goods and services which can be offered by MSE/Ancillaries units are listed and displayed prominently and web hosted in the Company's website and incorporated in MSE App NAMASYA (NALCO Micro and Small enterprise Yogayog Application - Bi-lingual App for MSE) a mobile App for MSE Vendors. The App provides required information about vendor registration process, items which can be supplied by them with technical specification, vendor development programmes and training programmes of NALCO on one single platform. The products which can be supplied by MSEs/Ancillaries are displayed at Display Halls at M&R and S&P complex. The product details along with technical knowhow for developing the product & information regarding annual requirement and last procurement price etc. are provided to Micro & Small entrepreneurs. The Company follows the guidelines of PPP-MSE Order and has reserved 4% & 3% of the total

procurement for SC/ST owned MSEs and women owned MSEs respectively out of the target of up to 25% of the total procurement from MSEs. Relaxation in tendering process i.e., waiver of EMD and tender fees etc. are extended to such units to encourage them to participate in bidding. Our Purchase Manual is suitably amended to extend purchase preference to MSE units quoting in the band of 15% of lowest quoted price for the products and service earmarked for them.

The procurement of products and services rendered by MSEs (Micro and Small Enterprises) of Odisha including Ancillary Units for FY 2020-21 stands at ₹ 373.82 crore (as against ₹ 360.84 crore of last FY). The total procurement of products produced, and services rendered by MSE units (including those from outside Odisha) stands at ₹ 536.73 crore during FY 2020-21 (as against ₹ 484.51 crore during FY 2019-20) and it is 30.42 % of the total procurement of Goods and Services made by NALCO against Govt. target of up to 25%. For FY 2021-22, the target for procurement of products and services rendered by MSEs has been set at ₹ 441 Crore.

Highlights of Nalco's support to Ancillary Units & MSEs

1

NALCO was awarded **"Certificate of Excellence"** in Odisha MSME International Trade fair, 2021 organized by MSME Deptt., Govt. of Odisha at Bhubaneswar held from 5th-9th March, 2021.

2

The **Sub-PLAC (Plant Level Advisory Sub-Committee)** meeting for the year 2020-21 was conducted at M&R Complex, Damanjodi on 15.01.2021 in association with DIC, Koraput. However, similar Sub-PLAC meeting for the year 2020-21 could not be conducted at S&P complex, Angul due to the outbreak of Covid.

3

"Buyer-Seller Meet for SC-ST Entrepreneurs" was conducted at S&P complex, Angul on 25.08.2020 on virtual mode. However, no buyer-seller meet could be held at M&R Complex, Damanjodi due to the ongoing scenario of Covid.

4

The Company had organized two **vendor development programs** through Google meet on 06.07.2020 and 16.10.2020 at M&R Complex, Damanjodi.

5

Special efforts have been made for **registration of women owned MSEs** & 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 NALCO.

6

All MSE vendors (including Ancillaries) are being requested to onboard in **GeM (Government e Marketplace) Platform**. Also, as NALCO is registered with Receivables Exchange of India Ltd. (RXIL), Trade Receivables Discounting System (TReDS) Portal, all MSE vendors (including Ancillaries) are being requested to register in TReDS Portal (RXIL) to avail the benefits extended to MSEs.

7

NALCO's **procurement data from MSEs (Micro and Small Enterprises)** are being uploaded on a monthly basis in "MSME SAMBANDH" App of MSME Department, Government of India.

8

Due to the outbreak of Covid and lockdowns/shutdowns declared by Central Govt. & different State Govt., the Company could organize only **08 vendor meets (including MSEs & Ancillaries)** in 2020-21. All the above meets were on virtual mode only.

9

NAMASYA (**NALCO Micro & Small Enterprise Yogayog Application**) App has been launched by NALCO on 13.07.2018 to help the existing MSEs registered with NALCO 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 NALCO etc.

Highlights of Nalco's support to Ancillary Units & MSEs

Nature	2019-20	2020-21
Total annual procurement (In value) (In ₹ crore)*	1,558.62	1,764.25
Total value of goods & services procured from MSEs (Including MSEs owned by SC/ST entrepreneurs) (In ₹ crore)	484.51	536.73
Total value of goods & services procured from only MSEs owned by SC/ST entrepreneurs (In ₹ crore)	13.77	8.22
Total value of goods & services procured from only MSEs owned by women entrepreneurs (In ₹ crore)	3.50	16.498
Percentage of procurement from MSEs (Including MSEs owned by SC/ST & women entrepreneurs) out of total procurement	31.08	30.42
Percentage of procurement from only MSEs owned by SC/ST entrepreneurs out of total procurement	0.88	0.466
Percentage of procurement from only MSEs owned by women entrepreneurs out of total procurement	0.22	0.935
Total number of Vendor Development programmes for MSEs	10	08

*This value excludes procurement of coal, fuel oil, caustic soda, Aluminium Fluoride, Synthetic Flocculants, Steel, Cement, Bearings, Lubricants, Proprietary items, and Contracts for professional services/Consultancy/Turnkey Contracts/ Contracts linked to specific technology".

Environmental Performance



Sharing the concern of the world on climate change we have adopted environmental activism as our cherished goal. Being a responsible Navaratna CPSE, NALCO's environmental policy lays emphasis on adoption of pollution prevention technologies and accords high importance to promotion and maintenance of clean environment in all our activities. An efficient system is in place to assess the environmental threats, opportunities, and challenges. Environmental Risk is monitored by our Board level risk Management Committee which oversee identification, management and mitigation of such risks. Environmental protection and pollution control is included in terms of reference of Board level CSR & SD Committee. Our top management is deeply involved in evaluating and ratifying the policies and decisions in environment-related aspects of the business. Environment Management Systems Standard based on ISO 14001:2015 has been implemented and maintained at all our production sites which is duly supported by robust environmental compliance system.

NALCO has demonstrated its commitment to environmental stewardship through activities such as sustainable bauxite mining and rehabilitation, efficient resource use, effective emission control, water pollution control including ground water contamination, water conservation, waste reduction, and land use optimization over the years. At NALCO, environmental preservation and conservation have always been an important aspect of the entire management curricula. To reduce the potential negative effects, proactive and robust environmental conservation measures are implemented in mines, refineries, and smelter operations. Our energy intensive units i.e., CPP, Smelter & Alumina Refinery have implemented Energy Management Systems duly certified to ISO 50001 standards.

A full-fledged Safety, Health, and Environment Department has been established in our Corporate Office and production units to measure, monitor, assess, & regulate different environmental parameters and implement environmental protection measures for the management of diverse environmental concerns. State-of-the-art pollution control facilities, afforestation of mined-out areas, and the use of fly ash and red mud are just a few of NALCO's key environmental management initiatives.

Adequate provisions are made in the annual Capital and Revenue budgets to adopt new technology, implement emission control technologies to meet the stricter environmental norms for future. Some of the efforts in this direction include revamping of ESPs, and adoption of high concentration slurry disposal. Emission control and efficiency improvement has been achieved by adoption of better combustion technology, proper fuel handling, automated burner management and fume/gas treatment.

Energy efficiency is given high priority in our sustainability agenda. Through process improvements, adoption of better technology and replacement with energy efficient machineries, we continued to focus on processes that improve energy efficiency, reduce greenhouse gas emissions, and enhance our natural environment.

Environmental Excellence & Protection

Operating with valid Consents, Authorizations Licenses

Environment policy explicitly declares adoption of non-polluting & environment friendly technology.

All production units certified to Environment Management System ISO 14001:2015

Well-furnished Laboratories for monitoring of effluents and emissions quality.

Focused on alternative use, recycling and reuse of wastes and rejects through in house and collaborative R&D efforts.

Hazardous chemicals are stored, handled as per laid-down procedures of OSPCB/CPCB.

Provision of ESP, FTP, Bag Filters, Dust Suppression System, Dust Extraction System in areas susceptible to Air pollution and dust pollution.

Adoption of better combustion technology, proper fuel handling and automated burner management for emission control and efficiency improvement.

Hazardous Waste, e-waste and non-biodegradable solid waste are disposed to Authorized Recyclers as per statutes.

Through in-house and joint R&D initiatives, management has consistently pushed for gainful alternate uses for wastes and rejects. We continue to use innovative technology to reduce water pollution by introducing recycling measures for waste and sewage water, resulting in zero discharge to water bodies. All hazardous substances are stored and utilised in accordance with established protocols. Fluoride contamination in the smelter plant and caustic pollution in the refinery unit are given special attention due to their polluting potential. We review and update our policies and targets on a regular basis. Biodiversity conservation is actively endorsed in our mines and other units so as to minimise adverse effects on natural habitats and biological resources.

We understand the relevance of growing concerns over climate vulnerabilities, and resource scarcity; and hence we incorporate environmental considerations into our strategic or routine decision-making process. For us, Ecology is inextricably interwoven with Economy





Pollution Control and Environmental Protection Measures

Mines



- Use of Rippers to avoid drilling & blasting wherever possible
- Wet drilling practiced in the blast-hole drills in dry seasons
- Suitable blast design to avoid excess dust during blasting
- Blasting is preferably done in mid-day and break hours
- During the year one more rainwater harvesting pond of 10000 m³ capacity was developed which will help in storing rainwater to be used by wildlife and dust suppression purpose in case of emergency.
- During the year 1,10,234 nos. of trees were planted
- A Butterfly Garden was set up to improve biodiversity at Panchpatmali Bauxite Mine.
- A biogas plant of 5 m³/day capacity had been commissioned to treat the entire food waste from canteen for biogas. Process has been initiated for installation of two more biogas plants in industrial canteen and CISF barrack.
- Pressurized water sprinkling /dry fog system at vulnerable points of crushing & conveying system.
- Water sprinkling by auto sprinklers on haulage road. Additional fixed cum automatic sprinkler system was installed in Central and North Block haul road for a length of about 2.5 km for dust suppression.

Smelter

5140

Saplings
planted



18020

Saplings
distributed

3500 Mt

SPL carbon portion
disposed for reprocessing



Disposal of
Hazardous waste
at landfill

- Monitoring through Continuous Emission Monitoring system at all stacks and throughout the pot rooms G&H.
- Scheduled changing of bags to avoid any unwanted leakage.
- Manual measurement of emission twice in a month to verify no abnormal emission.
- Use of slotted anodes to minimize anode effects, resulting minimum PFC generation The ALPSYS pot regulation system minimises the anode effect by timely dosing Alumina.
- 5140 nos. (Saplings) planted, and 18020 saplings distributed.
- Around 3,500 Mt SPL Carbon Portion disposed to authorized re-processor M/s. Green Energy, Sambalpur for detoxification and subsequent recovery of energy value.
- Around 183.29 Mt SPL Refractory portion disposed to common hazardous waste landfill at Jajpur for trial run.
- Disposal of hazardous waste such as asbestos waste (8 Mt) and ladle cleaning residues (39 Mt) started for the first time to common hazardous waste landfill at Jajpur.
- Disposal of discarded empty barrels (hazardous waste) started for the first time to M/s. Eco Resource Solution, Bhubaneswar.
- Sale of 6,000 Mt of legacy stock of dross to authorized re-processor completed.
- Augmentation of existing capacity of Emrion Nano Plant is undertaken by Corporate R&D department.

Alumina Refinery

101.47%

Ash Utilization

2nd

Red Mud Pond construction started



- Total ash utilization is 101.47 % during the financial year.
- 18785 nos. (Saplings) planted.
- Hazardous wastes such as used oil, discarded asbestos, empty chemical containers/barrels and spent resins are disposed through authorized agencies.
- By addition of bottom aerator and Moving Bed Bio Reactor (MBBR), bio additive microbial dosing is continued in STP-IV for achieving the norm for discharge effluent water.
- A 2nd red mud pond construction has been initiated for accommodating red mud from expansion phase of Alumina Refinery.

CPP



- Implementation of seepage water recycle system in ash pond by commissioning of 2x300 m³/hr recycle system. The recycled water is recycled back to plant for use in ash slurry making.
- Total ash utilization is 75.69 % during the financial year
- Upgradation of Surface run-off recycle system by installation of 2 Nos. of submersible pumps of 2 x200 m³/hr. The recycled water is used in ash handling system.
- Ammonia dozing to reduce the particulate emission from flue gas.
- 23393587 m³ of wastewater recycled and re-used.
- 5000 nos. (Saplings) planted

Unit/ Initiatives	New Emission control initiatives
Mines	<ul style="list-style-type: none"> • Additional fixed cum automatic sprinkler system was installed in Central and North Block haul road for a length of about 2.5 km for dust suppression.
Refinery	<ul style="list-style-type: none"> • Boiler-4 pass-A retrofitting is completed, during Y20-21 and Boiler-1,3 pass-A, B retrofitting work is ongoing. Additional pass-C erection work will also be taken up for Boiler-1 &3.
Smelter	<ul style="list-style-type: none"> • Procurement action underway for Supply and installation of surveillance cameras to view emission from all the stacks and fugitive emission of the plants: • Procurement action underway for online fugitive Flouride monitoring system in Pot line I, II & III. • Proposal initiated for monitoring of SO₂ in stacks in FTC's. • Proposal initiated for emission monitoring of incinerator stacks • Proposal imitated for engagement of additional mechanical sweepers maintaining housekeeping and preventing fugitive emission in the carbon area.
CPP	<ul style="list-style-type: none"> • 2 Nos. of online Mercury analysers has been procured and installed at CPP for real time mercury measurement for compliance to statutory requirement. • Revamping of 1st 4 fields of ESP of Unit-5 has been carried out during annual overhauling in Dec'2020 for improvement in stack emission.



Environmental Risk and Concern Management

Under the ISO 14001 Environmental Management System, each operating unit undergoes biannual environmental audits. Environmental risks that arise during Environmental Aspects & Impact studies are typically dealt with and regulated in accordance with our policy of causing the least amount of harm to the environment. Risks that have been identified are dealt with on a priority basis using appropriate mitigation methods. In the fields of waste management and hazardous waste disposal, our R&D efforts have paid off handsomely. Our plants' environmental risk matrix is shown below.

Mines

Concern	Mitigation
Air Pollution: Emissions due to movement of heavy vehicles, Emissions from crusher and mining activities	<ol style="list-style-type: none">1. Regular maintenance of vehicles.2. Spraying water on haul roads and stockpile area3. Suitable blast design and delayed blasting using NONEL detonators to minimize dust generation4. Installation of dry fog system at Crusher and Conveyor to suppress dust and prevent dust generation5. Adoption of vacuum suction/wet drilling in all drill machines6. Peripheral barrier of 7.5 m width with plantation to retain dust particles
Water Pollution: Excess rainwater overflow from mines, Wastewater from Canteen, Vehicle Washing and sewage from toilets	<ol style="list-style-type: none">1. Check dams at strategic points to filter muddy water from mining areas2. Collection of rainwater in the mining area in sumps for groundwater recharging3. Treated water from canteen and vehicle wash area is completely, reused for dust suppression and plantation
Sound Pollution: Noise due to operation of heavy earth moving equipment and blasting	<ol style="list-style-type: none">1. Suitable blast design and delayed blasting using NONEL detonators to minimize noise2. Peripheral Plantation to reduce propagation of noise3. Proper maintenance of vehicles
Solid Waste Pollution: Overburden material from the excavation of minerals	<ol style="list-style-type: none">1. 100% reuse of topsoil and overburden for backfilling of mined-out areas
Land Degradation: Excavation of overburden and ore material	<ol style="list-style-type: none">1. Concurrent mining and backfilling of mined-out areas by rehabilitating the land through afforestation

Captive Power Plant

Concern	Mitigation
Air Pollution: Emissions from boiler stacks, Fugitive emissions from Coal and ash handling, Heat emissions from the flue gas	<ol style="list-style-type: none">1. Boiler stacks fitted with ESP's2. Sprinklers and Dust extraction are facilitated at Coal and Ash Handling areas3. Heat recovery from flue gas to reduce coal consumption
Water Pollution: Effluent water, Sewage, Surface runoff water	<ol style="list-style-type: none">1. ETP processed effluent water used for ash slurry making2. Decanted water from ash pond after treatment used in ash slurry making.3. STP water is treated for horticultural use4. Rainwater harvesting & surface runoff used for fire hydrant make up5. Ash pond recycle water used for ash slurry making.

Captive Power Plant

Concern	Mitigation
Land Contamination: Mill Rejects, Ash, Scrap (metallic and non-metallic)	<ol style="list-style-type: none"> 1. Mill Rejects is stored in low-lying areas and later disposed to authorized parties for reuse. 2. Ash utilized for brick making etc. The project for lean slurry disposal to Mines Void for reclamation of the mined-out area is in progress. 3. Scrap is sold to authorized recyclers.

Smelter

Concern	Mitigation
Air Pollution: Emissions from the FTP stacks, PFC emissions from smelting pots	<ol style="list-style-type: none"> 1. Monitoring through Continuous Emission Monitoring system at all stacks and throughout the pot rooms G and H. 2. Scheduled changing of bags to avoid any unwanted leakage. 3. Manual measurement of emission twice in a month to verify no abnormal emission. 4. Use of slotted anodes to minimize anode effects, resulting in minimum PFC generation. 5. The ALPSYS pot regulation system minimizes the anode effect by timely dosing Alumina.
Water Pollution: Fluoride contaminated surface runoffs	<ol style="list-style-type: none"> 1. Different methods like Emrion Nano Technologies used for water treatment. 2. Augmentation of existing capacity of Emrion Nano Plant is undertaken by Corporate R&D dept. 3. Consultancy study for utilization of non – plant water, flowing through culvert near Watch Tower 23, started.
Land Contamination Through hazardous wastes like SPL, dross and shot blasting waste	<ol style="list-style-type: none"> 1. SPL is stored in impervious lined secured landfill and concreted floor covered sheds. Carbon portion of SPL is disposed to authorized recycler. The SLF & Sheds are surrounded with garland drain. 2. Dross is re-cycled and sold to authorized recyclers 3. Shot blasting waste, rejected lining of furnace, floor sweeping waste of Carbon Area, ladle cleaning residues and asbestos waste of potlines are disposed to common Hazardous waste landfill.

Alumina Refinery

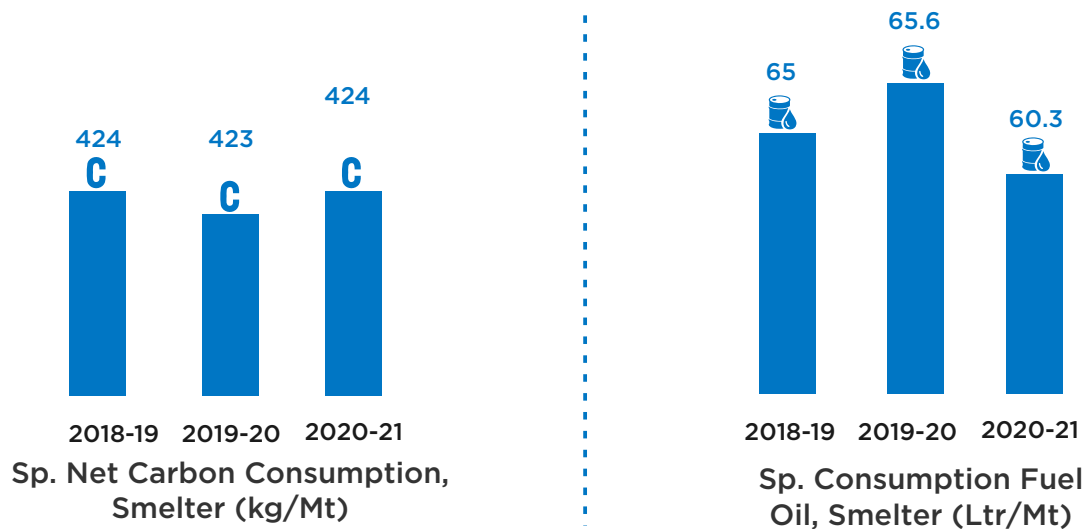
Concern	Mitigation
Air Pollution: Stack emission, dust in calcined alumina	<ol style="list-style-type: none"> 1. Installation of ESP at boilers 2. ESP fitted at calciners to collect alumina dust
Water Pollution: Waste effluent, Sewage, Surface run-off	<ol style="list-style-type: none"> 1. Waste effluents are treated in STP 2. Recycled return water from ash pond is reused for ash slurry making. 3. Red mud pond return water is reused for red mud slurry making and mud washing 4. Runoff water treated and re-used
Land pollution: Lime Grit, Red Mud	<ol style="list-style-type: none"> 1. Lime Grit is sold to the authorized recycler for making brick and other related products: balance disposed to red mud pond 2. Extraction of Iron concentrate and Gallium from Red mud is being explored. 3. Utilization of fly ash for bricks, cement, road construction, etc.



Responsible Consumption of Materials

Our fundamental raw material strategy is to ensure consistent availability of our input raw materials and to conserve resources by monitoring and controlling their specific consumption. The conservation of bauxite and coal, both of which have limited availability in nature, is at the top of our priority list. We also consider the most efficient use of other raw materials.

The consumption of raw materials is closely monitored to meet the benchmark specific consumption targets set by our Technology Committee. NALCO is devoted to progressively improving raw material utilisation through the use of superior technologies, process redesign, and waste elimination. The use of high-silica bauxite and coal with low calorific value is the primary problem we face right now.

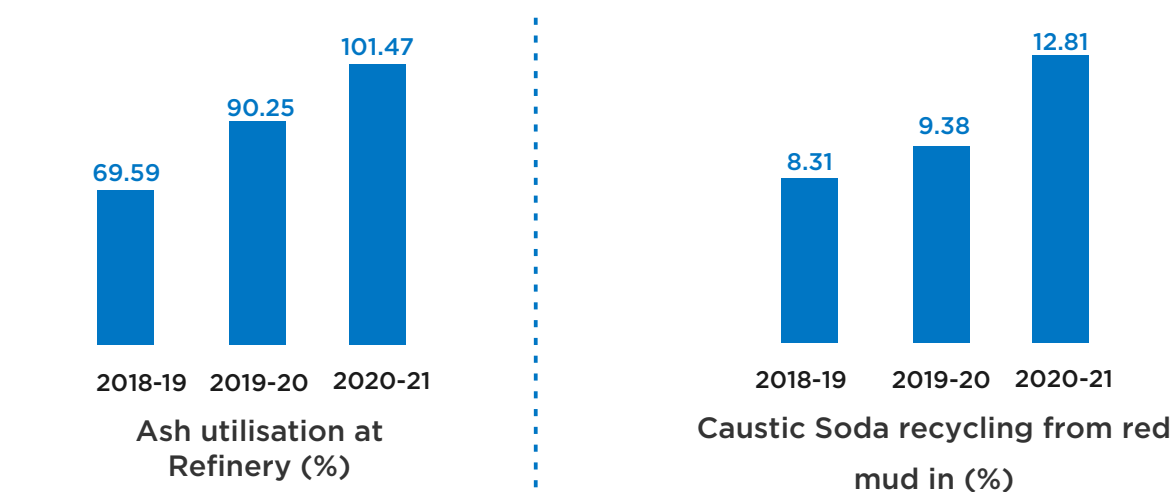


Materials Used by Weight or Volume

	Materials consumed		Source	FY 2018-19	FY 2019-20	FY 2020-21
Raw Material	Alumina	Mt	Internal Production	8,51,208	8,09,046	8,09,241
	CP Coke	Mt	External Suppliers	1,85,593	1,66,472	1,62,197
	CT Pitch	Mt	External Suppliers	42,168	38,182	38,742
	Bauxite	Mt	Internal Production	72,30,546	75,44,704	73,46,377
	Caustic Soda	Mt	External Suppliers	2,25,754	2,46,478	2,40,266
Associated Process Material	Aluminium Flouride	Mt	External Suppliers	7,145	7,057	7,440
	Lime	Mt	External Suppliers	63,388	64,714	59,857
	Explosives	Mt	External Suppliers	570.38	434.83	574.20
Packaging Material	VSI HDPE fabric	m ²	External Suppliers	6,79,500	5,77,750	6,82,231
	Wood in wooden pallets	m ³	External Suppliers	1,244	45,113	74,836
	Steel Straps	Mt	External Suppliers	237	263	154
	Polyester Strap	Mt	External Suppliers	75	75	91

Recycled Input Materials

The indigestible parts of the ore are disposed of as red mud in the alumina refining process. To minimize the caustic liquor that goes with the red mud, it is washed and thickened to the extent possible. Washed red mud is pumped and kept in a red mud pond with specific lining. Solids settle to the bottom of the pond, and the water clarifies to the surface. This surface water (containing roughly 2-3 grams per litre of caustic soda) is pumped back to the plant and used for mud washing and for other purposes. As a result of the reclamation of red-mud pond water, portion of caustic soda lost with mud is returned to the circuit.





Energy

Due to the energy intensive nature of aluminium production, NALCO has been concerned about energy efficient technology and energy conserving operations since the beginning of the project to generate cost savings and a competitive advantage in the market. The Bureau of Energy Efficiency, Ministry of Power's implementation of the National Mission on Enhanced Energy Efficiency has placed a substantial duty on industries to improve overall energy efficiency, giving a new push to our efforts in this field. Improvements in energy efficiency, energy conservation, and the use of green energy are all important measures in mitigating climate change threats.

NALCO's energy policy places a premium on maximising energy efficiency and conservation, and the company is dedicated to improving its Energy Performance. Our policy is available on public domain, at <https://nalcoindia.com/wp-content/uploads/2019/01/Energy-Policy-14-10-2020.pdf>

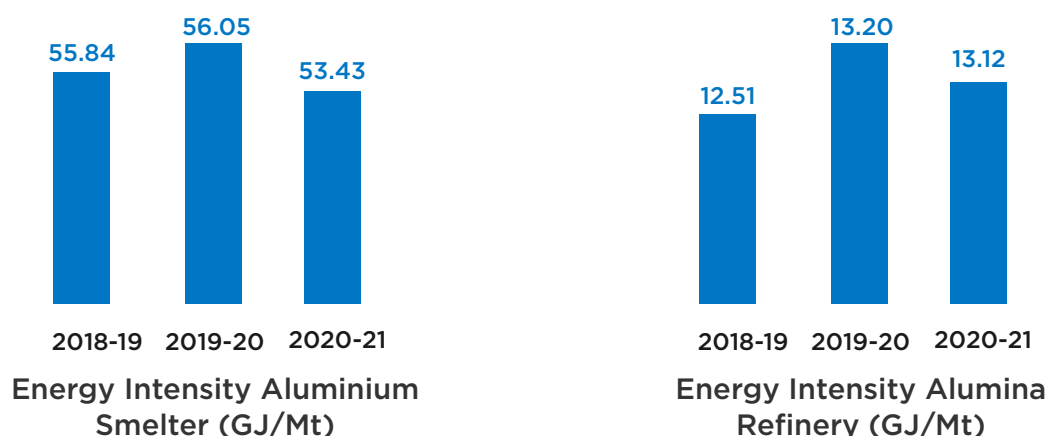
Energy consumption within the organization

Total energy consumption in our operations during 2020-21 was 132,364.541 TJ. Site specific calorific values were used for determining energy consumption from fuels. In absence of site-specific values, calorific values by IPCC were used.

Energy Consumption

Energy (GJ)	FY 2018-19	FY 2019-20	FY 2020-21
HFO	7,895,650	8,008,708	7,928,602
LPG	989	925	603
LDO	117,280	165,913	183,883
Diesel	300,665	275,682	311,098
Coal	99,226,640	97,040,734	100,022,337
Indirect Energy consumption	1,606,104	1,039,068	142,255
Total Energy Consumption	109,147,328	106,531,030	108,522,106

Values of emission factors has been taken from 2006 IPCC Guidelines for National Greenhouse Gas Inventories



Reduction of energy consumption

Due to the sheer energy-intensive nature of aluminium smelting, energy conservation is a market-driven requirement for our long-term viability. The selection of technology and purchase of equipment is primarily based on this and is aptly reflected in our Energy Policy "To espouse Energy Efficient Technology encompassing procurement of Energy Efficient Product & Services and design for Energy Performance improvement". This attitude is also reflected in our sustainable development policy.

Some of the process interventions adopted by us for ensuring energy efficiency of fuels and other non-electrical sources are:

- Maintenance of proper process parameters,
- Better fuel preparation,
- Proper air to fuel ratio,
- Heat recovery from exhaust, prevention of heat loss,
- Clean heat transfer surfaces,
- Leak proof compressed air, steam and water system etc.

Building behavioural awareness in our workforce has helped us in using light, fan, ventilation system, air conditioning, and other electrical equipment responsibly. Furthermore, we saved energy and reduced GHG emissions by minimizing equipment wear, cleaning, and lubrication, and boosting throughput without overloading equipment.

Energy conservation initiatives

During the year NALCO has attributed maximum thrust on energy conservation and major initiatives in this area are presented below.

Bauxite Mines:

- Reduction in diesel consumption in dumpers by use of fuel additive has resulted in savings of 42.66 KL of HSD.
- Reduction in diesel consumption by parking of vehicles at mining face has resulted in saving of 119.46 KL of HSD.
- Reduction in diesel consumption by enhanced usage of backhoe shovels in place of ripper dozers-wheel loader combination has resulted in savings of 76.93 KL of HSD.
- For energy conservation, the balance jobs of replacement of conventional luminaries to energy efficient LED retrofits were completed by July 2020. A total of 28 kW of luminaries have been replaced in 2020-21 which has potential of approx. 44 MWh annual energy saving.

Alumina Refinery

- Replacement of conventional profile heating elements with advanced profile heating elements in Unit #2 Boiler to increase Boiler efficiency due to increased heat transfer.
- 2,000 nos. of 70W lights for area illumination have been replaced with 40W LED lights, saving 4,02,100 kWh/annum.
- 70 nos. of old & low-efficiency ACs have been replaced with 3-star and above rated energy-efficient ACs, saving 4,36,000 kWh/annum.
- 16 nos. of old & multiple wound motors have been replaced with energy efficient IE2/IE3 LT motors, saving 63,300 kWh/annum.
- In November 2020, a Rooftop Solar Power Plant of 2 x 20 kWp capacity was commissioned at SPP of the Refinery, with a capital investment of 41.23 lakhs. Till March 2021, 15,051 kWh green energy was generated.
- Grinding media of Ball Mill - 004 is replaced with Hi-Chrome media to improve grinding efficiency hence saving energy.

Smelter Plant:

- Graphitization of cathode blocks for total 866 pots have been completed out of which 110 pots have been graphitised in 2020-21, resulted in reduction of specific electrical Energy consumption in pot line @ 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 your Company has been carried out with reduction of specific DC energy consumption around 150 kWh/MT in the pot line.
- Replacement of old motors with Energy Efficient IE2/IE3 Motors: 185 motors replaced in 2020-21 leading to saving of 2.506 MU energy due to use of IE3.
- High temperature burner with Recuperator was installed in melting furnace no. 2 of RPU to reduce HFO consumption by 96 kL/annum.
- Hot Well Pumps of Cooling Tower-1(E) was replaced with Energy Efficient Pumps leading to energy saving of 7,36,560 kWh/annum.



Captive Power Plant

- Renovation & Modernization of existing Air-Preheater in Unit-6 with advanced profile heating element and double sealing arrangement has been completed successfully. This has resulted in increase in Boiler efficiency due to reduction in air leakage and increased heat transfer.
- The old inefficient reciprocating compressors of Unit #1 to 6 (Total 9 nos.) have been replaced with energy efficient screw compressors; out of it 2 nos. have been replaced in 2020-21. This has helped in reduction in Auxiliary Power Consumption.
- Energy saving of 20,75,487 kWh was achieved through replacement of total 14,039 nos. LED lights in place of conventional MV/SV lights.

Recognitions

NALCO's CPP plant has been awarded as "Best Energy Efficient Power Plant-Coal (CPP)" in eastern region for the year 2020 by Mission Energy Foundation in virtual conference held on 19th February 2021. Smelter unit of NALCO was awarded the 1st runner up trophy as well as five-star energy conservation awards (Highest star) for large-scale categories of Energy Conservation Awards during 13th ENCON awards-2020 by CII-Easter Region at Kolkata.

Energy conservation projects proposed or in progress during 2020-21:

Bauxite Mines:

- The water level monitoring system on industrial water storage tanks has been executed and is under observation while the same system for drinking water storage tank is in progress. The above project shall support reduction of electrical energy consumption towards water supply by a tentative amount of 41.06 MWh per year as well as reduction in industrial water consumption avoiding overflow from raw storage tanks.
- Procurement of 130 kWp grid connected roof top solar plant has been completed and installation is under progress.

Alumina Refinery

- Replacement of Unit 4 Air Pre-Heater conventional profile heating elements with advanced profile heating elements.
- Provision of VFD in Recirculating Pumps motors of Phase 1, 2 & 3 Digestion and Desilication.
- Replacement of old & multiple rewound LT motors with IE2/ IE3 class motors.

Smelter Plant:

- Installation of Main Ring Dampers at Anode Baking Furnace (ABF)-I to reduce Fuel oil consumption in baking furnace.
- Installation and commissioning of Anode Slot Cutting Machine at Rodding Shop-II under implementation so as to reduce specific DC energy consumption in Pots and to improve process stability.
- Installation of Refrigerant type dryers in old compressor house (Two nos.) for energy saving.
- Solid metal charging door (SMCD) replacement for enhancement of thermal efficiency in Cast House-A, Furnace no.8.

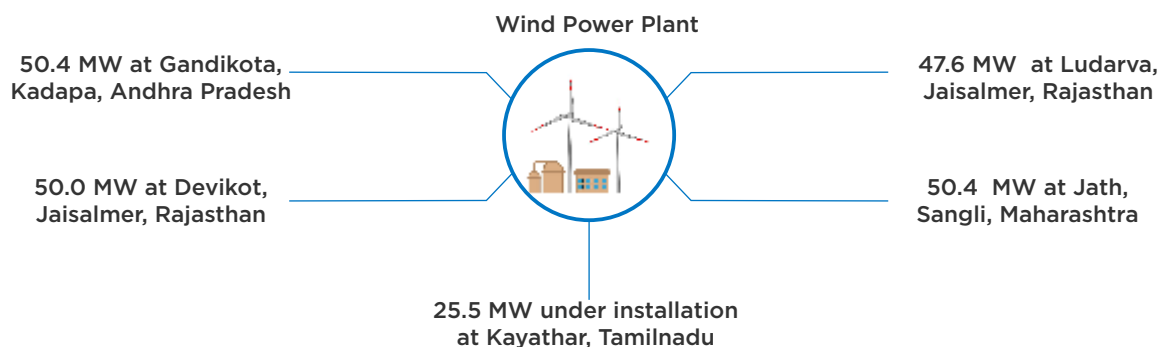
Captive Power Plant

- Renovation & Modernization of 4 sets of existing Air-Preheater in Unit-2 to 5 with advanced profile heating element and double sealing arrangement.
- Revamping of one Cooling Tower in Unit -1 to 5: Condenser vacuum will improve, which will result in reduction of heat rate and coal consumption.
- Implementation of VVFD panel in cooling tower fans of #1 to #5: This will help in Reduction of power consumption of cooling tower fans.

Renewable energy

During the year NALCO has generated 285 MU from wind power & 0.52 MU from Solar power Plants. Some of the steps taken by the company in the area of alternate sources of energy are given below:

The Company is commercially operating the following Wind and Solar Generating Units:

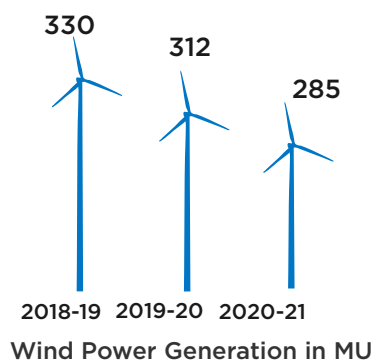
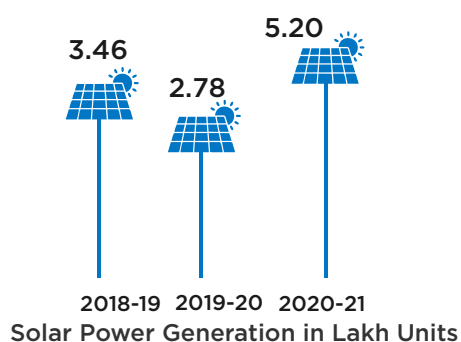


670 kWp Capacity Rooftop Solar PV plant at NALCO Bhawan, NALCO Nagar, NRTC and refinery Buildings.

Action under progress towards enhancing alternate sources of energy:

A 130 kWp RT SPV Plant installation at Mines

A 100 kWp RT SPV Plant at Port Facilities is under installation.





Water Stewardship

NALCO recognizes that global concerns about water and its availability is very high. The World Economic Forum considers water to be a one-of-a-kind resource that underpins all growth drivers. Water conservation and management are vital for the industrial sector in India due to irregular rainfall and depleting groundwater reserves. The International Council on Mining and Metals (ICMM) issued a new water stewardship position statement in 2017, emphasizing strong and transparent corporate water governance, effective water management at operations, and collaboration to achieve responsible and sustainable water usage. Taking a cue from them, we display leadership in water management by conserving water, protecting water quality, and collaborating with communities to manage water resource and optimize the water consumption.

Our management plan includes the responsible use of water resources throughout the life cycle of business. Water stewardship is an important aspect of our project planning, which is further improved by implementation of current technological advancements in the field. As a following step after building up recycling systems for Ash Pond and Red Mud Pond water, we have ventured into high concentration slurry disposal and dry disposal of fly ash to further conserve water.

For usage in the production process and horticulture, all of our plants include wastewater and sewerage water treatment systems. Following the successful implementation of a wastewater zero discharge policy, our focus has shifted to rainwater gathering and groundwater recharge. A world-first water treatment plant for de-fluoridation of water, based on "Emiron Nano Technology," is in operation at our smelter plant.

Water Withdrawal by Source

All the freshwater withdrawal is from different rivers thereby ensuring that there is no withdrawal from groundwater and problems like forced lowering of the ground water table is not caused by the water usage of NALCO.

Surface Water	Unit	Source	FY 2018-19	FY 2019-20	FY 2020-21
Smelter & CPP	ML	Brahmani River	39,320.46	40,064.15	40,116.40
Alumina Refinery	ML	Kerandi River	8,910.92	9,031.89	8,759.98
Bauxite Mines	ML	Jholaguda stream	620.35	702.27	624.44
Total Withdrawal	ML		48,851.73	49,798.31	49,500.82

Water discharge by quality and destination

All our production facilities are Zero Liquid Discharge (ZLD) units. For industrial effluent, ash pond overflow water, and sewage water we have installed necessary treatment facilities and water is reused in different plant processes and horticulture.

Water Conservation in 2020-21

Mines



During the year one more rainwater harvesting pond of 10000 m³ capacity was developed which will help in storing rainwater to be used by wildlife and dust suppression purpose in case of emergency.

Refinery

04 no. of new rainwater harvesting units are under construction

Smelter

- Construction of reservoir was done for accumulation of surface runoff of at SPL Sheds and Dross Storage Area. This surface run off is pumped to holding pools for further treatment in De-fluoridation Plants
- Augmentation of existing capacity of Emrion Nano Plant is undertaken by Corporate R&D dept.
- Consultancy study for utilization of non – plant water, flowing through culvert near Watch Tower 23, started.

CPP

- Zero discharge has been achieved with respect to industrial effluent, ash pond overflow water and sewerage treatment plant treated water.
- Seepage water recycle system of 2 x 300 m³/hr. recycle capacity has been commissioned at Ash Pond to re-use the seepage water in ash handling system
- During FY 2020-21 35,19,581 m³ of industrial water has been recycled after treatment and used in ash handling system. Capacity of 3 nos. of Industrial drain water recycling pumps has been enhanced from 400 m³/hr. to 500 m³/hr. to achieve zero liquid discharge.
- During the FY 2020-21, 1,85,70,280 m³ of ash pond overflow water was recycled and re-used.
- During FY 2020-21, 27,58,891 m³ of water from rainwater harvesting system was recycled and re-used.

Water Recycled and Reused

In all of our units, we have achieved zero discharge of wastewater and sewage water. Rooftop rainwater collecting, surface runoff rainwater harvesting, and ground water recharging systems are included in all our units. The recycling of ash pond and red mud pond water is another noteworthy achievement. We recently progressed to Emiron Nano Technology method of de-fluoridation in our Smelter Plant after adopting ion exchange and reverse osmosis methods of water purification.

In the FY 2020-21, 18570.28 ML water from CPP ash pond; 7427.774ML water from Refinery ash pond and 3443.254ML water from Refinery Red Mud Pond was recycled.

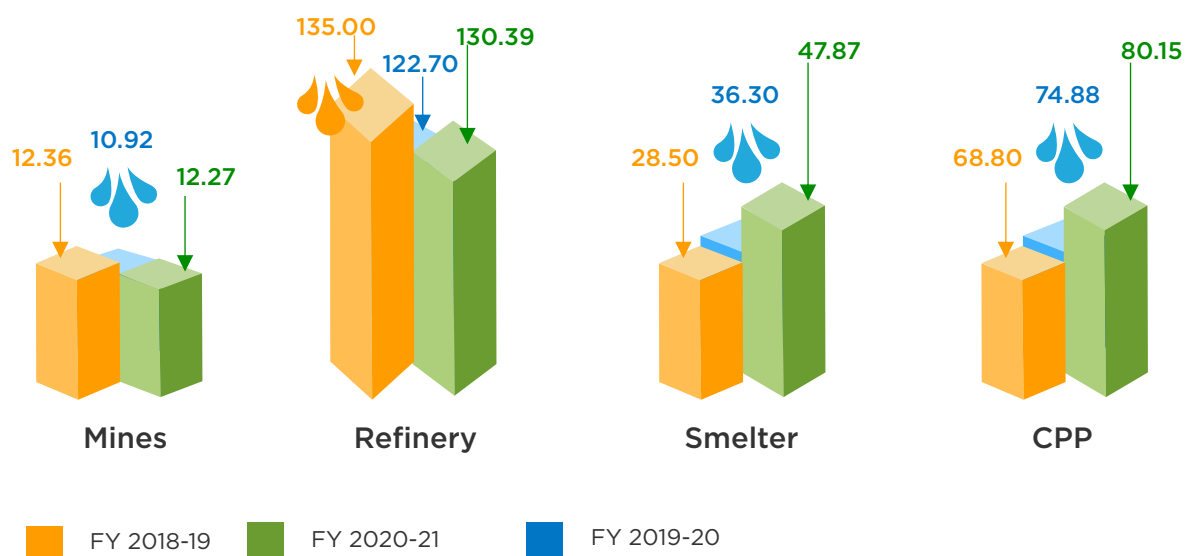




Conservation and Recycling of water-

Source	Unit	FY 2018-19	FY 2019-20	FY 2020-21
Mines				
ETP and STP	ML	76.65	76.65	76.65
Water Recycled/Reused as proportion of water intake	%	12.36	10.92	12.27
Refinery				
STP	ML	556.40	549.50	551.00
Ash Pond	ML	8140.66	7290.03	7427.77
RMP	ML	3132.85	3245.77	3443.25
Water Recycled/Reused as proportion of water intake	%	135.00	122.70	130.00
Smelter				
STP	ML	Included in ETP	Included in ETP	Included in ETP
ETP, Subsoil Water and Others	ML	532.21	637.75	851.82
Water Recycled/Reused as proportion of water intake	%	28.50	36.30	48.00
CPP				
STP	ML	65.0	50.0	50.5
ETP	ML	3313.21	4403.69	4772.807
Ash Pond	ML	17017.96	18172.66	18570.28
Water Recycled/Reused as proportion of water intake	%	68.80	74.88	80.15

% Water Recycled



Biodiversity

Protecting and enhancing biodiversity, i.e., the abundance and variety of living organisms and ecosystems in nature, is an integral part of global sustainability. Alteration of many of the world's ecosystems, and loss of biodiversity is a major concern. Governments and businesses have been set on the path of addressing biodiversity on a global scale by the United Nations. The SDG 15 is focused on sustainably managing forests, combating desertification, halting and reversing land degradation, and loss of biodiversity.

Impact on biodiversity and alteration of ecosystems in a significant and highly visible way is a possible outcome of mining activities. Direct impacts can be land disturbance or discharges to waterbodies or the air. Indirect impacts are the result of social or environmental changes that arise when mining opens an area for other economic activities and increased habitation.

Conscious efforts have been made at all our operating units to manage our land together with the adjacent forest cover and development of green belts. None of our units are in proximity to any world heritage site. The bauxite mine is beyond 10 km of International Union for Conservation of Nature (IUCN) protected areas or areas of high biodiversity value having risk of direct impact on ecosystem leading to any threat to IUCN Red List Species.

Preservation of Natural Resources, Ecosystems & Biodiversity

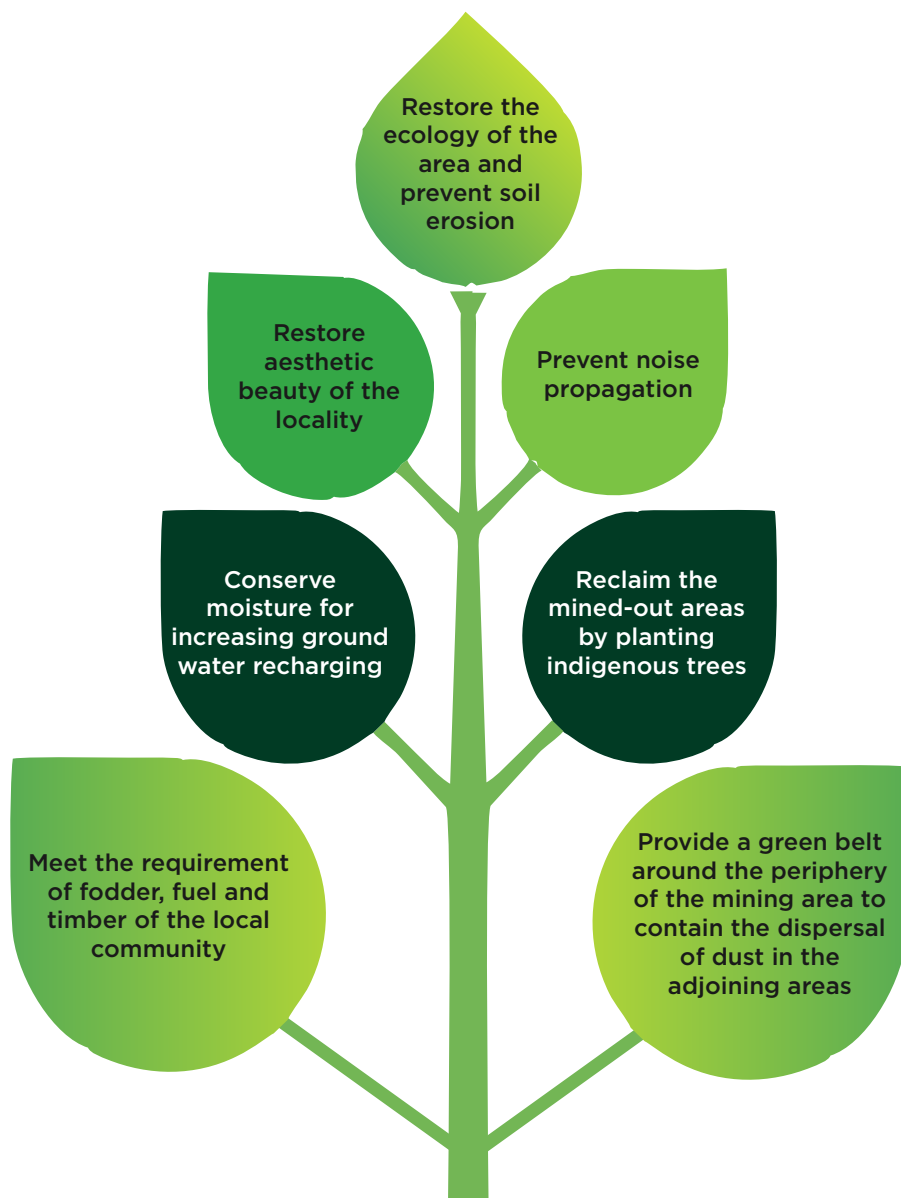
Extensive Plantation in and around the production units.	Prevention of ground water & surface water contamination, air pollution and proper utilisation of waste.	Opening of mining faces is carried out as per approved Mining Plan.
After exploitation of minerals, the site is restored as per Mines closure plan with indigenous species.	Wildlife Conservation Plan and Biodiversity Management Plan are in place.	Adoption of Rainwater Harvesting Ponds and roof top rainwater harvesting system in all production units.
Implementation of Renewable Energy projects.	Adoption of green technologies.	Eradication of use of Ozone Depleting substances.
Zero Discharge with respect to industrial and sewerage wastewater by recycling and reuse.		



NALCO has carried out a study on biodiversity in and around Panchpatmali Bauxite Mine through the Botany Department, Utkal University at a cost of 16,28,000/-. They have drawn up a Wildlife Management Plans for its both leases which has been approved by the State Forest Department. NALCO has implemented the measures suggested for conservation of biodiversity. Although our bauxite mines are in hilly areas, the possibility of damage from mining is minimum as bauxite bearing hill tops are barren with only sparse bushes. Extensive plantation activities have improved the greenery on the hilltops. Annually, about 1,10,000 trees consisting of fruit bearing, forest and economic native species, are planted in the Mines and peripheral areas. Our other units i.e. Alumina Refinery, Smelter, CPP and the Port Facilities do not operate in biodiversity sensitive areas. We have already initiated a vegetation survey for crops and vegetables in the nearby area of our Alumina Refinery.



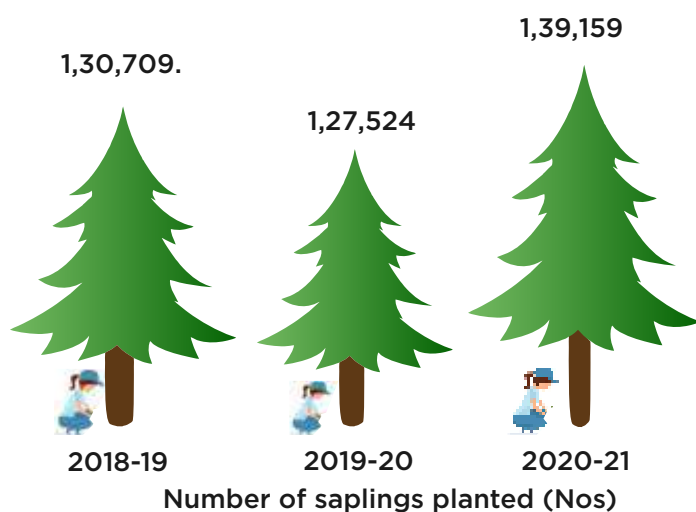
Afforestation activities & wildlife conservation



The mining lease area has Dry Deciduous Forest (5/DS1) and Dry Deciduous Savannah (5/DS2). Subsequent afforestation has populated the area with trees belonging to local species. The afforestation plan has been prepared keeping in view the land use changes that are likely to occur due to mining operation in the core area.

Plantation & Green Belt Development

As an antidote to environment degradation & reverse global warming we do massive plantation at all our units thorough our horticulture departments. The details of plantation done during the reporting period are shown below.



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

Though there are no IUCN Red list species in our Mines area still we have prepared a wildlife management plan. The wildlife management plan prepared by M/s CEMC; Bhubaneswar anticipates the following impacts due to mine operation.

- Fragmentation of habitat due to conveyor belt, service road and HT power line
- Dust in atmosphere, contributed by mining and associated activities, noise and vibrations due to blasting and operation of the machines may scare wild animals and birds from the nearby forests.
- Lights from mining area during night disturbs the wild animals

Their survey indicates that, the mines lease area (core area) is devoid of tree growth, the vegetation consists of scrub only, which supports only a few small animals. The result of the survey and the position of Schedule-I species, as per the Wildlife Conservation Act -1972, are shown below

Core Zone (Species)	Buffer Zone (Species)	Insect (Species)
<ul style="list-style-type: none"> • 5 mammals • 4 reptiles • 9 birds • No Schedule I species 	<ul style="list-style-type: none"> • 16 mammals • 9 reptiles • 29 birds • 2 mammalian species (Elephant and Sloth bear) belong to Schedule - I category 	<ul style="list-style-type: none"> • 3 butterflies • 2 crickets • 1 grass hopper



In the report by the M/s CEMC, the following major suggestions have been given, regarding implementation of the wildlife management plan which has been implemented.

- Undertake appropriate alternative measures in mine working to avoid / minimise or mitigate the adverse impacts on wildlife in and around the mine.
- Maintain / enhance food and cover values in buffer habitats while counterbalancing decimating factors.
- Initiate studies on habitat utilization pattern of the wildlife with a view to strengthen and secure the critical habitat.
- Control depredation by wild animals to generate public support in conservation management and build up synergy in conjunction with regular protection set up.

A butterfly park over an area of approximately 1500 sq. metre has been developed at mines which not only serves as a recreational avenue for employees and outsiders but also helps to improve the biodiversity of the area. About 5550 nos. of fruit bearing seedlings were distributed during the year to local villagers to spread awareness about plantation of trees.



Distribution of fruit bearing seedlings



Butterfly Garden



Emissions

NALCO is committed to decreasing GHG and other harmful emissions by reducing fossil fuel usage and & improving combustion controls and adopting responsible smelting technology with the goal of restricting emissions to the lower end of the IPCC emission scenarios in accordance with current international accords.

Our principal source of energy is the combustion of fossil fuels. As a result, real-time monitoring stations are installed to keep a close eye on stack emissions such as CO₂, CO, NO_x, SO_x, and particulate matter, as well as their content in ambient air. For monitoring and recording, monitoring station data is uploaded to the OSPCB server. During the reporting period, emissions were within acceptable limits. Every year, regulatory authorities receive an Environmental Statement comprising data on emissions, hazardous waste, solid waste, and other topics.

Sites	Units	Pollutant	Unit	Norm	FY 2018-19	FY 2019-20	FY 2020-21
CPP	Emission from ESP	PM	Mg/Nm ³	100	54.36	64.58	83.57
Smelter	Emission from Pot line FTP Stack	PM	Mg/Nm ³	100	18.87	15.41	21.50
		Fluoride	Kg/Mt	0.3	0.21	0.16	0.18
	Emission from Bake Oven	PM	Mg/Nm ³	100	18.54	22.19	27.27
		Fluoride	Kg/Mt	0.1	0.0076	0.0088	0.0096
Alumina Refinery	Emission from Boiler Stack	PM	Mg/Nm ³	150	116.80	102.70	86.78
	Emission from Calciner stack	PM	Mg/Nm ³	50	29.37	26.18	28.66

Total Green House Gas emissions

Fuel	Unit	GHG Emissions 2019-20	GHG Emissions 2020-21
HFO (Scope 1)	tCO ₂ e	6,19,874	613,674
LDO (Scope 1)	tCO ₂ e	12,294	13,626
Coal (Scope 1)	tCO ₂ e	93,25,614	9,612,147
Diesel (Scope 1)	tCO ₂ e	20,428	23,052
LPG (Scope 1)	tCO ₂ e	58	38
Electricity from Grid (Scope 2)	tCO ₂ e	2,52,418	31,217
Emission from PFC (Scope 1)	tCO ₂ e	87,902	94,166
Process carbon Emission from electrolysis in pots (Scope 1)	tCO ₂ e	638,005	639,641
Process carbon Emission from anode baking (Scope 1)	tCO ₂ e	60,707	5,9315
Total Scope 1+ Scope 2 GHG Emissions	tCO ₂ e	11,017,300	11,086,876
Scope 3 emissions (Estimated considering transportation of major raw materials, fuels and products in-bound & out-bound inside the country)	tCO ₂ e	27363	25,408

Relevant direct and indirect greenhouse gas emissions are evaluated based on GHG protocol.
<http://ghgprotocol.org/>



Emissions of Perfluorocarbon (PFCs)

During anode effects, the emissions of per-fluorinated compounds (PFCs), such as tetrafluoromethane (CF₄) and hexafluoroethane (C₂F₆), which are created in the main aluminium reduction process at Smelter are continuously monitored. The most advanced ALPSYS pot regulating system at the Smelter Plant helps to reduce the frequency and duration of anode effect by injecting alumina into the pot at the right moment. The PFC emission from the Smelter Pot line has been calculated using the AP (Aluminium Pechiney) overvoltage method and the results are as follows:

Particular	Unit	Value	Emissions (Tonnes CO ₂ e)
Cf4	kg/t of Al	0.028	78256.5
C2F6	kg/t of Al	0.0034	15909.6
Total	Tonnes of CO ₂ e	-	94166



Emissions of Ozone Depleting Substances (ODS)

NALCO has been restricting the consumption of refrigerant gases i.e. R-22, R-124, R-134a & R-227 in all our production units as given below;

Particular	Unit	CPP	Refinery	Smelter	Mines
R-22	kgs	610	NIL	549	NIL
R-124	kgs	NIL	NIL	512	NIL
R-134a	kgs	NIL	NIL	62	NIL
R227	kgs	NIL	NIL	420	NIL

Waste

In NALCO, waste management plan is an important part of project planning. The selection of technology is based on the identification of process wastes and the strategy for managing them. We examine the waste management plan on a regular basis to keep up with new technological advancements and changing regulatory standards. All of our manufacturing facilities have received ISO 14001 certification for environmental management. Environmental Impact Assessment and Environment Management Plan also provides a chance for waste management planning. Our waste management system is also assessed through EMS's internal and periodic surveillance audits, and any shortcomings found are corrected. Regulatory organisations such as the State Pollution Control Board, IBM, and the Ministry of Environment, Forest, and Climate Change (MoEF&CC) keep an eye on the entire process. Proper waste handling is also assigned due weightage during Aspect Impact Study, Hazard Identification & Risk Assessment and Disaster Management Plans.

Our waste management practices subscribe to 4R concept i.e., Reduce, Reuse, Recycle and Recover. NALCO's approach towards waste management involves finding alternate use of wastes created during the process.

NALCO's captive thermal power plant generates fly ash as waste in bulk quantity which are used for -

- Brick making,
- Road & embankment construction,
- Use in cement industry and concrete making,
- Mine void filling etc.

R&D - Find Alternate Use

Employee - Educate & Upgrade Skill

Recycling Facilities

Technology - Upgrade



Similarly, bauxite beneficiation generates a large volume of red mud. Through R&D activities, we plan to investigate alternative uses for this iron and other mineral-rich refuse. In the case of hazardous wastes for which safe reuse is not possible, NALCO follows a policy of safe disposal and segregation to reduce pollution and biodiversity risk.

Employees are constantly educated, and their skills are improved in order to reduce waste created by process instabilities and human error. For garbage recycling, technology upgrades and facility renovations are carried out. Through R&D activities, we are constantly attempting to develop alternative uses for waste.

Waste by type and disposal method

Hazardous and Non-hazardous Wastes are identified and segregated right at the generation point. Hazardous wastes are safely disposed as per the laid-down procedure developed for their handling complying with all the applicable statutory guidelines as given below.

- Spent Pot lining and cathode residues are segregated in secured landfills and concrete storage sheds.
- Most of the dross generated is recycled into the smelting process which is inbuilt into the system. Left out and legacy stock dross is being sold to authorized recyclers.
- Left over portions of anode are reused for anode making.
- Red-mud generated during refining process are washed to reduce caustic content and disposed in Red-mud Pond in slurry form.
- Decanted water from red-mud pond is used for mud washing, thereby recovering valuable caustic for process use.
- Apart from alternate use of fly ash from our CPP & SPP, excess fly ash is hydro sluiced to ash pond and excess water from pond is recycled back.
- Over burden & topsoil excavated during mining are stored separately and used for reclamation of mines as per progressive mine closure plan.





Steps taken for Recycling & utilization of different wastes are summarized below:

Non – Hazardous waste details

Sites	Non-hazardous Waste	Unit	FY 2019-20	FY 2020-21	Waste Management Method
Alumina Refinery	Lime Grit	Mt	28,829.69	25,376.90	Sold to the authorised recycler for making brick and other related products. The rest is disposed to red mud pond
	Fly Ash	Mt	5,90,245	5,87,573	Used for cement and brick making. Excess ash is dumped in ash pond.
	Red Mud	Mt	33,51,021	32,34,786	Disposed to Red Mud Pond.
Smelter	Ferrous Scrap	Mt	3459.98	2962.29	Sold to the authorised recycler.
	Non-Ferrous Scrap	Mt	623.08	160.96	Sold to the authorised recycler.
	Refractory Bricks	Mt	4,692	1737	Used for hard surfacing and making roads inside plant.
CPP	Fly Ash	Mt	24,86,199	28,91,987	Used for cement, concrete and brick making. Excess ash is dumped in the ash pond.
Mines	Overburden	Mt	8,04,640	9,22,705	Reused in backfilling of mined-out area.

Hazardous waste details

Sites	Non-hazardous Waste	Unit	FY 2019-20	FY 2020-21	Waste Management Method
Alumina Refinery	Spent Resin	Mt	16.96	9.64	Disposed in the landfill.
	Used Oil	kl	125.22	80.29	Sold to the authorised recycler.
	Discarded Asbestos	Mt	150.80	41.44	Dumped in the specified pits
	Empty Container	Nos.	2,555	1,877	Sold to the authorised recycler.
Smelter	Aluminium Dross	Mt	7,059	7,922	Majority portion of Aluminium dross is recycled in the process. Legacy stock of dross is sold to authorised recycler.
	Spent Anode	Mt	60,772	58,469	Recycled in anode making.
	Cathode Residue including pot lining	Mt	5,500	6,160	Carbon portion disposed to authorised recycler for energy recovery.
	Rejected Filter Bags	Mt	10.55	28.20	Incinerated in the pots.
	Rejected AlF ₃ Bags	Nos.	32,964 small bags and 6,295 large bags	11629 small bags and 16330 large bags	Small bags are incinerated in the pots and large bags are disposed in the HW incinerator.
	Used Oils	kl	51	31	101.6 sold to the authorised recycler.
CPP	Spent Resin	kl	8	5.8	Stored in impervious pit for final disposal for incineration to authorized approved agency of SPCB.
	Used Oils	kl	53.59	12.45	Sold to the authorised recyclers.
Mines	Used Oils	kl	86.82	93.50	Sold to the authorised recycler

Total ash utilization of 75.69% was achieved in CPP and 101.47 % in Alumina Refinery during 2020-21.

Recycling & Reuse

We give utmost importance to recycling and reuse of our process waste and rejects. The aluminum dross produced in the smelter's melting furnaces is recycled after being treated in autogenous mills. Through a pot line scrap melting furnace, the aluminum wedges used for bypassing pots, pot hoods, pot cowls, residual metal pads, and other items are melted and recycled. Spilled metal can also be recycled by collecting it and melting it again. Ash from our CPP and SPP are used in cement making, concrete mixture, road construction and filling of low lying areas. Overburden and topsoil is used for reclamation of mined out area. The details of some of our recycling and reuse activities are presented below.

Unit	Percentage	Utilisation
Bauxite Mines	100.00%	Overburden is utilized for reclamation for mined out areas
Alumina Refinery	12.81%	Caustic Soda is recycled from red mud
	101.47%	Ash utilization
Smelter	100.00%	Recycling of Aluminium scrap
	61.00%	Aluminium dross recycled as input to process
	100.00%	Recycling of spent anode
CPP	75.69%	Ash utilization

Some Recycling Initiatives of 2020-21

New Waste management initiatives in FY 2020-21

Unit/ Initiatives	New Emission control initiatives
Mines	Biogas plant of 5 m ³ /day capacity was installed at canteen for treatment of organic waste. Process has been initiated for installation of two more biogas plants in industrial canteen and CISF barrack. Previous waste management practices are also being continued
Refinery	A 2nd red mud pond construction has been initiated for accommodating red mud from expansion phase of Alumina Refinery
Smelter	<ul style="list-style-type: none"> Proposal initiated construction of a additional sheds for storage of coke dust and hazardous waste ESA-II Study by M/s NEERI, Nagpur is under progress. Around 3500 Mt SPL Carbon Portion disposed to authorized re-processor M/s Green Energy, Sambalpur for detoxification and subsequent recovery of energy value. Around 183.29 Mt SPL Refractory portion disposed to common hazardous waste landfill at Jajpur for trial run. Disposal hazardous waste such as asbestos waste (8 Mt) and ladle cleaning residues (39 Mt) started for the first time to common hazardous waste landfill at Jajpur. Disposal of discarded empty barrels (hazardous waste) started for the first time to M/s Eco Resource Solution, Bhubaneswar Installation of mechanized wheel washing system for the material transport vehicles at the exit gate completed and is under operation. Sale of 6000 Mt of legacy stock of dross to authorized re-processor completed. Sale of another 3000 Mt & 1984 Mt of dross through M/s MSTC are scheduled.
CPP	<ul style="list-style-type: none"> CPP, Nalco has implemented incentive scheme of Rs 150/Mt to Brick manufacturer to enhance ash utilization. In the year 2020-21, around 6.29 lakh Mt (21.77% of total ash generated) of dry ash has been supplied to Brick manufacturer. In the year 2020-21 around 3.77 lakh Mt of pond Ash has been supplied to NH for road construction. Further follow up is being done with National highway & State highway to enhance utilization of Pond ash in upcoming project for using in road and flyover construction. A long-term agreement has been made with M/s Shree Cement, Athgarh for supply of pond ash/fly ash. Organic waste converter (Food waste composting machine) has been installed at main canteen and the food waste is converted to compost for use in horticulture purpose.



Overburden Management

Due to the progress of bauxite mining faces, overburden and topsoil are scraped and placed in the backfilled/mined out area or stacked correctly for reclamation. Following the levelling of lateritic overburden, topsoil is laid and appropriately treated to make the reclaimed area suitable for plantation, with adequate provision of benches and terraces. The restoration of mined out area is through concurrent reclamation as per Progressive Mine Closure Plan of the approved Mining Plan/Scheme. The strategy adopted for total reclamation of the mined-out regions involves backfilling, reforestation, and the building of water basins at critical spots to ensure appropriate drainage. The backfilled areas are reforested with native foliage and fruit yielding species. The important aspect where due care is given is the preservation of the virgin area's natural topography and the prevention of soil erosion. Subsequent to plantation these areas are covered with dense vegetation, which is evident from the present-day scenic greenery of our bauxite mine.

Year	Unit	Mined out area rehabilitated in FY 2020-21	Cumulative Area Rehabilitated since Inception
FY 2018-19	Ha	16.23	330.60
FY 2019-20	Ha	15.10	345.70
FY 2020-21	Ha	17.59	363.29

Mined out area rehabilitated in Ha



Social Performance





Social interaction of industries is the dimension which cannot be neglected for sustenance, growth and peaceful coexistence of industrial agglomeration. In a sense every industry thrives on social license for human resource which is the driving force for any industry. Our principle in this regard is, not to deplete resources enjoyed by society for our own interest. Maintaining socio-industrial balance, NALCO accords highest priority to the social impact of the organization and shoulders its responsibilities to people, both, inside the organization and outside the organization in an exemplary manner which is well evidenced by the value it creates for employees, society and other stakeholders. Sustainability principles are at the core of our organizational DNA creating positive significant impact through well planned social development programs supported by provision of adequate resources to make a difference in the lives of the surrounding population. The network of relationship between people, inside & outside, and the organization is a precious social capital which drives our growth and prosperity.

We are driven by the principle of inclusive growth and have a distinguished and consistent record when it comes to making a difference in the lives of local community and society at large. We create direct and indirect employment facility for people and are instrumental in accelerating economic activity in the region we operate,

which brings prosperity to the area. The continuous implementation of the community development initiatives over the years has changed the development landscape of the surrounding. The thrust areas of the community development comprise of Healthcare, Education, Drinking water, Rural development, Environmental sustainability and development of Iconic city, Puri.

We are totally committed to the wellbeing of our employees by undertaking measures in the areas of health and safety, employee benefits, work-life balance, human rights protection and positive work environment. The work environment we provide is conducive, harmonious and supports the development of employees which enables the workforce to give their best performance and contribute to organizational growth. The strong commitment of employees enables the Company to overcome challenging business and economic situations and emerge stronger. The Company ensures that there is no discrimination against any employee on grounds of race, color, religion, caste, gender, age, marital status, disability, nationality or any other factors under applicable laws and modern practices at the workplace. Our commitment to employee care is shown through financial compensation, amenities, capability building, engagement, social security and career growth.



Employment

We have adopted a host of employee-oriented measures like excellent remuneration, career growth, harmonious industrial relations, non-discrimination and human rights protection. We are committed to foster health, safety and empowerment of employees by building a unique culture of collaborative working. NALCO provides a conducive and harmonious work environment for employees to actualise their potential and contribute to the growth of the organization. As an equal opportunity employer there is no discrimination on the basis of caste, creed, gender, religion or area of domicile etc. amongst the employees. The HR practices championed in the organisation are aimed at attracting, developing and retaining the right talent at the right place.

A holistic approach to learning & development facilitates a rewarding career with ample growth and development. Grievances or conflicts, if any, between employee and management is resolved through defined processes. HR department acts as an enabler to employee management relationship, projecting employees views, arranging for negotiation and resolving their genuine grievances. All this has resulted in exemplary employee management relation best illustrated by non-occurrence of any strike, lockout or stand off during the reporting period.



Resilient Industrial Relations

Despite the formidable challenges of Covid 19 we maintained a conducive and cordial Industrial relation climate during the year 2020-21. The year was yet another year with zero man-days loss on account of labour disputes. In spite of restrictions imposed by the Government due to the COVID-19 pandemic, a cordial Industrial climate was ensured through participative management. Compliance of applicable Labour Laws, adherence to Government Guidelines and consultative decision making, continued to remain the core strengths in dealing with employee benefits and welfare issues.

Employee Benefits

Employee satisfaction is an important condition for Success of an organisation. For ensuring satisfaction of employees NALCO extends many tangible and intangible benefits to its employees. The pay package of NALCO is one of the best among the class of industries. Apart from salary company provides plethora of other perquisite and benefits which include medical facilities, leave travel concession, subsidised accommodation, subsidised electricity & water facilities, different allowances, parental leave, pension schemes, incentives for acquiring higher education, different loans & advances, scholarship for dependent children, social security scheme etc.

Company has provision of dedicated fund for different defined benefit schemes like long-service award, gratuity, benevolent fund, settling-in allowance, provident fund, post-retirement medical benefit etc. Full-fledged townships have been developed over the years at the plant locations with the modern infrastructural facilities

such as premier schools, hospitals, shopping complexes, clubs, parks, gymnasium, stadiums etc. Contractors' employees are also extended various benefits such as Provident Fund, Medical benefits, weekly off etc.

Apart from these direct benefits, company also extends many tacit benefits like multipurpose co-operative society, 24-hour security in township, community bus service, subsidised canteen, Guest House and Transit House at different locations.

The benefits provided to contractual and temporary employees are guided by government rules and living wage factor. Contractual employees enjoy different benefits like PF, ESI, Overtime, Canteen Allowance, Bonus etc.

During the reporting period ₹ 1,930.24 Crore was spent towards employee benefits expenses including salary.

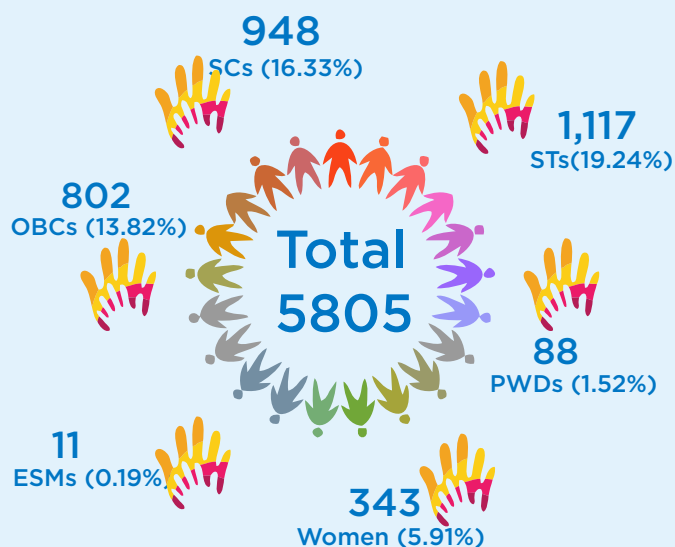


Employee Benefits

- ☐ 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 Permanent employees
- ☐ Performance Related Pay
- ☐ Multipurpose Allowance
- ☐ Best performance reward scheme
- ☐ Accidental Insurance cover to all employees
- ☐ Subsidised canteens
- ☐ Gratuity (as per prevailing statutory law)
- ☐ Employee Family Benefit Scheme (EFBS)
- ☐ Parental Leave
- ☐ Settling-in-benefit
- ☐ Retirement welfare scheme
- ☐ Superannuation gift scheme
- ☐ Long Service reward
- ☐ NEFFARS- NALCO
- ☐ Employee Family Financial
- ☐ Assistance Rehabilitation Scheme

Employee Diversity

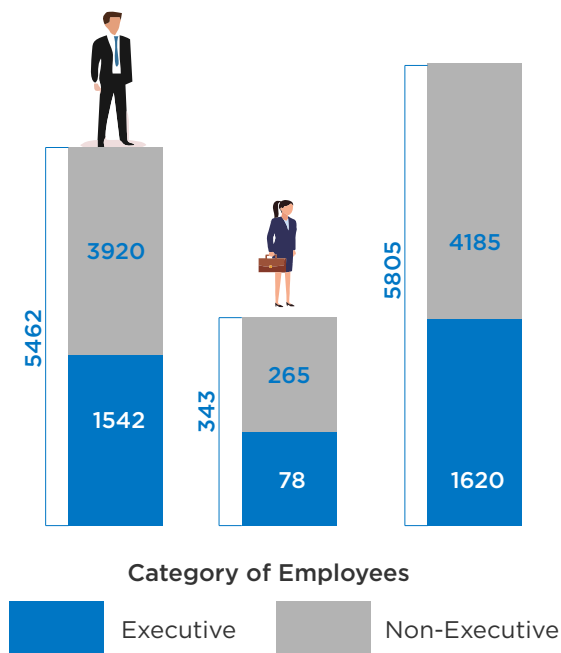
NALCO values diversity and is aware that unique talents from each diverse group combine to produce a synergetic organizational effectiveness resulting in immense value for all. This creates a positive vibe in the work environment which brings the best from people. We promote diversity and ensure that there is no discrimination in compensation, promotion, training and employee benefits based on caste, religion, disability, gender, sexual orientation, race, colour, ancestry, marital status or affiliation with a trade union or majority/minority group. The recruitment and selection processes are geared towards enabling representation from across regions, ethnicities, religions and different social strata and in line with Government of India guidelines.



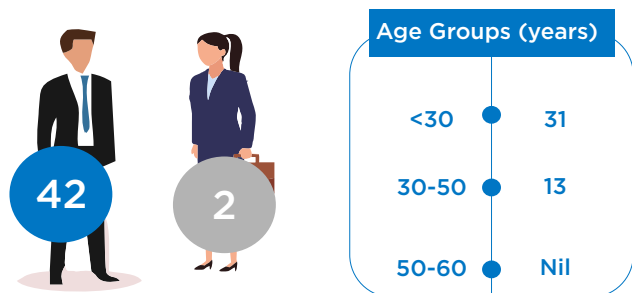
Gender Diversity

The representation of females in executive and non-executive categories stood at 4.81% and 6.33%. We encourage female employment as a form of female empowerment which also improves the gender diversity of the workforce.

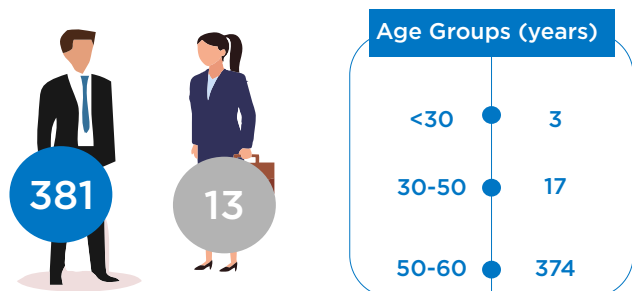
There is no difference between basic salaries for Male and Female at any position within the organization. The principle of 'Equal Remuneration for men and women workers for Work of Equal Value' is strictly followed in our Company. The Company provides equal opportunity to both men and women employees in all the matters, such as, salaries and perks, career growth, social security measures etc.



New employee hires



Employee Separation in 2020-21





Employee Engagement

Employee engagement in NALCO is bidirectional. Different information are shared with employees through intranet portal, e-mails, web sites, web based applications (Apps), press releases, circulars, notices, official gatherings and functions. At the same time communications from employees are received through union-management meetings, Structured meeting with officer association, wage negotiations, safety committee meetings, valedictory sessions of training and seminars, employee grievances, shop council meetings etc. Mass communication campaigns are undertaken at Senior Officers' level involving structured discussion with large group of employees. These sessions help employees to align their working with the goals and objective of the Company leading to enhanced productivity and

employee's belongingness to the company. The IT tools are used extensively to enhance communication through website and emails. Employee suggestions through Sarjana Scheme and kaizens and feedbacks from the employees are other channels by which we assess the level of satisfaction among our employees. The regular postings in our websites through our corporate communications helps keep our employees engaged with the ongoing developments within the company.

Quality Circle activity has proved to be an excellent instrument for employee engagement through its process steps of forming a team, identifying a problem, brainstorming on the problem, finding the solution and presenting at different forums.

Human Rights and Forced Labour

We subscribe to the principles of the United Nations Global Compact on Human Rights, Universal Declaration of Human Rights of UNO and are committed to protect human rights in our operations and supply chain. Our employee related policies are in line with the principles of Human Rights, The Constitution of India and various Labour Laws of the country.

The Human Rights practices mandated vide applicable statutes i.e., Factories Act, 1948, Industrial Disputes Act, 1947, Mines Act, 1972, Contract Labour (R&A) Act, 1970, Payment of Gratuity Act, 1972 are followed strictly in the Company. Also, in the job contract conditions for Suppliers & Contractors, important human rights issues i.e., Child Labour, Forced & Compulsory Labour, Discrimination, Wages & Work Schedule are suitably addressed vide SA 8000:2014 requirements in which the suppliers are controlled w.r.t. human right violation by following means:

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.

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.

The service rule and regulations manuals are available in all the units for reference and use. The workmen are given a copy of the certified Standing Orders precisely containing the general terms and conditions governing service conditions. The HR Manual is available in the Intranet site for reference. During the year 2020-21 there was no case in any form of forced or compulsory labour.

Corporate office and Units of NALCO are certified to SA8000:2014 Social Accountability Standard which testimonies our commitment to human rights. Social Accountability International (SAI) is a non-governmental, multi-stakeholder organization whose mission is to advance the human rights of workers around the world. It partners to advance the human rights of workers and to eliminate sweatshops by promoting ethical working conditions, labour rights, corporate social responsibility and social dialogue



The details of complaints relating to child labour, forced labour, involuntary labour, sexual harassment in the year 2020-21 are given below:

Category	No. of complaints filed during the F.Y. 2020-21	No. of complaints pending as on 31.03.2021
Child labour/ forced labour/ involuntary labour	Nil	Nil
Sexual harassment	Nil	Nil
Discriminatory employment	Nil	Nil

Equal Opportunity Employer

NALCO provides equal opportunity to all its employees and our policies and manuals are aligned to the above principle so far as service conditions, growth avenues and disciplinary procedure etc. are concerned. Uniform set of rules are provided in the HR manual which apply equally to all employees, irrespective of factors such as sex, caste, religion, race etc. All recruitments are conducted in a transparent and impartial manner, thereby, giving equal opportunity to all eligible candidates, without any discrimination whatsoever. Various activities affecting employees are carried out in the spirit of equal opportunity employer and that include recruitment, placement, promotion, transfer, compensation, training and other benefits which are based on the merit and competence of the individual and the business needs of the organization.

During recruitment we comply with all applicable Government Guidelines related to reservation for SC, ST & OBC candidates. Differently able persons are also

considered for recruitment under the provision of Persons with the Disabilities Act, 1995. In order to oversee implementation of Presidential Directives as well as Government instructions, Liaison Officers for SC/ST/OBC have been appointed to look after the reservation matters for SCs/STs/OBCs as well as Persons with Disabilities (PWD).



Grievance Redressal Mechanism

At NALCO the grievances are addressed through well designed procedures for different stakeholders. For key stakeholders i.e., Employee, Shareholders, Vendors, and Customers there are formal grievance redressal system where any grievance can be registered which are addressed as per well laid down procedures.

Depending upon their service conditions there are separate formal grievance procedure for executives and non-executives for impartial and unbiased handling of genuine grievances. Under the scheme a grievance committee is formed for non-executives comprised of a chairman, nominated by Management, two representatives of the Recognised Union & two representatives of Management. An aggrieved employee can intimate verbally to superior officer about the problem and if not satisfied with the decision, he/she may submit written request to HOD. If the grievance persists, grievance committee may be approached. Any grievance

application received from any employee is scrutinized by the committee and action is taken to resolve the grievance within the framework of the company policy. If still not satisfied concerned employee may prefer an appeal to head of the Unit. Likewise, an executive can take advantage of three tier arrangement of HOD, Unit Head & Head of Organisation for redressal of his grievances.





Occupational Health & Safety

We accord highest priority to employee health and safety. We aim at no harm to employees and a zero-tolerance for unsafe work and non-conformance to safety norms in all our operations. Our Occupational Health & Safety policy gives highest priority to prevention of accidents and occupational health issues. SOPs, work instructions and maintenance schedule etc., are designed to safeguard operators and workmen subscribing to our OHS policy. Selection of technology, Procurement of equipment, layout of shop floor and recommendation of PPE etc., all have built in safety considerations. All our production units including port facility at Vizag are certified to Occupational Health & Safety Management Standard ISO 45001:2018. Periodic audits by the certifying agency ensure the effectiveness and continual improvement of the system.

We have dedicated Safety & Health department in each production unit which looks after safety and health management, adopting a structured approach to control safety risks in operations and maintenance activities and ensure compliance with the statutory norms. The safety management system accords a very high importance to life and wellbeing of employees, contractual workers, security personnel, visitors and people living in the vicinity. Well-equipped Occupational Health Centres are in place in all the Units to address safety and occupational health issues. Adequate PPEs, firefighting equipment and other resources are provided as per requirement to shop floor personnel.

Assessment of safety hazards and risks forms the basis of development of safety management plans and procedures. Regular internal Safety inspections and Audits by external agencies are organised whose findings are analysed, and appropriate actions are taken to enhance the effectiveness. Systematic root-cause analysis of the incidents leads to underlying causes which are eliminated through corrective actions. Preventive actions are taken to pre-empt potential incidents. There is major thrust on the Behaviour Based Safety which has proved to be one of the most effective ways to improve safety performance leading to drastic reduction in the incidents caused by human errors.

All the applicable regulatory and statutory laws of Safety and Occupational Health are complied with, in a proactive manner. Worker participation in Health and Safety management further enhances the effectiveness of safety management at NALCO. A



Safety Committee in all units formed with representatives from management and workers helps in identification of unsafe areas and practices and suggests corrective action.

To facilitate safe practices, several different types of safety signage are displayed at appropriate locations. For a speedy response during fire accidents, the fire extinguisher usage instructions are provided at proper locations. Safety campaigns are carried out through various activities like distribution of handouts and safety badges, playing of skits and audio-visual communications. Use of PPE (personal protective equipment) i.e. helmets, safety shoes, gloves, safety goggles and safety belt are complied with as per the established norms. Safety permit and use of safety gadgets are made mandatory for executing work at a height and other hazardous areas. Observance of required workplace safety regulations is a contract condition in every contract and in case of any violation necessary actions are taken like imposition of penalty, issue of warning and termination of contract is depending on gravity of violation. Documentation of accidents and near miss cases are duly maintained and analysed to take suitable corrective actions on priority basis.

Health & Safety Highlights 2020-21

Mines

- Annual Mines Safety Week Celebration 2020-21 was successfully conducted at Bauxite Mines.
- Safety Gathering/Safety Talk are being conducted in every department on monthly basis.
- NALCO "Suraksha" App successfully implemented for reporting of online various aspects of safety.
- Onsite emergency plan has been prepared by M/s. Visiontek, Bhubaneswar.
- Successfully conducted Mock Drill in September & December 2020.
- Regular PME conducted for 406 employees following COVID-19 guidelines.

Alumina Refinery

- Total 2,201 nos. of contractor workers undergone training through various instruments.
- "NALCO Suraksha app" implemented for identification of unsafe act/conditions
- For visitors, trainees, stakeholders etc., 2 nos. safety training Kiosks were installed in Alumina Refinery
- 2 nos. of statutory mock drills were conducted.
- Annual EHS Magazine "Suraksha Kabach" 25th edition (Silver Jubilee) was released.

Captive Power Plant

- Survey for height work safety (Fixing of Lifelines) has been carried out by M/s. Life Gear, Mumbai.
- Reflective Signage Boards displayed at the conspicuous locations of the plant for Safety & Environment awareness.
- The 10 Point Action Plan issued by Directorate of Factories & Boilers; Odisha has been implemented in CPP for accident prevention.
- Safety Mobile App was implemented in CPP covering all areas.
- PME conducted for 1,077 employees abiding all COVID-19 guidelines

Smelter

- M/s. Life Gear, Mumbai completed the survey work for providing lifeline and other infrastructure for safe working at height.
- 24 nos. of AV SOPs on various safety aspects of the departments prepared and uploaded for spreading awareness.
- Formation of departmental level safety bodies started in Potline (Operation) for identification and immediate compliance of safe practices
- Conventional open type bus bar replaced with DSL shrouded bus bar wherever not available.
- AAINAA (Advance Action in Industries to Abate Accidents) completed in 02 areas
- An in-house mobile app was developed for instant recording and analysing of unsafe acts, unsafe conditions.



Training is provided to employees on various aspects of safety i.e., Factories Act, Accident Prevention, Safe use of equipment's & accessories, Workplace Safety, Safe Crane Operation and Material Handling. Behaviour based safety, handling of hazardous material, firefighting, electrical safety is some of the other selected subjects on which training is imparted. Safety training is routinely imparted in all our units, and we try to build a culture of safety through training. Training details are given below:

Employee Category	No. Of persons trained			Training Man-Days		
	Male	Female	Total	Male	Female	Total
Executives	426	41	467	293	27.5	320.5
Non- Executives	466	55	521	346	39	385
Total	892	96	988	639	66.5	705.5

Safety & Health Training for Year 2020-21

Worker Health and Safety Committees

There is Unit level Safety Committee in each of the units involving senior officials, workers Union Representatives. Meetings of the committee are conducted in which Safety Performance is reviewed, suggestions are given, and action plans are made for continual improvements. All accidents, near miss cases, unsafe conditions are reviewed every month. The committee is headed by unit heads, whereas CSO is the convenor. Other senior executives and workers are the members. Members of the safety committee are periodically sent to other industries to learn new developments in safety practices.



Injury Statistics

We monitor key aspects of safety performance i.e. the incidence of injuries under pre-defined categories, man days lost, severity rate and work-related fatalities. The incidents are analysed under the ISO 18001 System to undertake corrective actions to prevent recurrence. The details of the accidents, severity rate and fatalities are given below:

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	Nil	2,70,883	Nil	21,67,064	NIL	NIL	NIL
	Contractors ' Labour	Nil	6,68,828	Nil	53,50,624	NIL	NIL	NIL
Mines (Both Blocks combined)	Employees	Nil	1,26,432	Nil	10,11,456	NIL	NIL	NIL
	Contractors ' Labour	Nil	2,47,114	Nil	19,76,912	NIL	NIL	NIL
Port	Employees	NIL	13,558	Nil	1,08,464	NIL	NIL	NIL
	Contractors ' Labour	NIL	12,894	Nil	1,03,152	NIL	NIL	NIL
Refinery	Employees	NIL	3,82,978	276	30,63,824	0.0721	NIL	90.08
	Contractors ' Labour	01	4,71,358	6,000 *	37,70,864	0.127	0.265	1,591.15
Smelter	Employees	NIL	6,83,262.5	NIL	54,66,100	NIL	NIL	NIL
	Contractors ' Labour	1	14,01,582	6,000	112,12,656	0.428	0.089	5,35.11

* (As per Appendix A of IS:3786:1983)

Fatalities Statistics

Unit/Area	Employee	Contractors' Labour
Captive Power Plant, Angul	Nil	Nil
Bauxite Mines, Panchpatmali	Nil	Nil
Port facility, Visakhapatnam	Nil	Nil
Alumina Refinery, Damanjodi	Nil	1
Aluminium Smelter, Angul	Nil	1



Occupational Diseases

Occupational Health Centres with adequate facility are operating both at S&P Complex and M&R Complex to manage and prevent incidence of any occupational disease amongst workforce. The centres are well equipped and manned by qualified doctors, paramedics and technicians. They continuously track for outbreak of any occupational disease and take remedial measures for prevention of probable occupational diseases. Well-equipped hospital complexes at S&P complex and M&R

complex treat any ailment including occupational disease of our employees and their family members. If required, employees and their family members are referred to different Govt. and corporate hospitals depending on criticality.

Initiatives to improve the overall health of employees and their family members are



Training programmes on stress management, yoga and lifestyle are arranged regularly in our training centres at Units and Corporate office.



Talks by eminent experts on lifestyle diseases like diabetes, hypertension and cardiac diseases are arranged from time to time.



Signage boards are put up at conspicuous locations cautioning employees about smoking, tobacco and alcohol abuse and drug addiction.

We conduct PME of employees and contractual workers regularly. The PME statistics for reporting year are provided here. It has been determined that, there is no high risk of any specified occupational disease among the employees of NALCO, as per prevailing nature of work and work conditions.

Unit/Area	Employee	Contractors' Labour
Captive Power Plant, Angul	727	2336
Bauxite Mines, Panchpatmali	316	161
Port facility, Visakhapatnam	44	76
Alumina Refinery, Damanjodi	1242	1475
Aluminium Smelter, Angul	2082	3000

PME Statistics



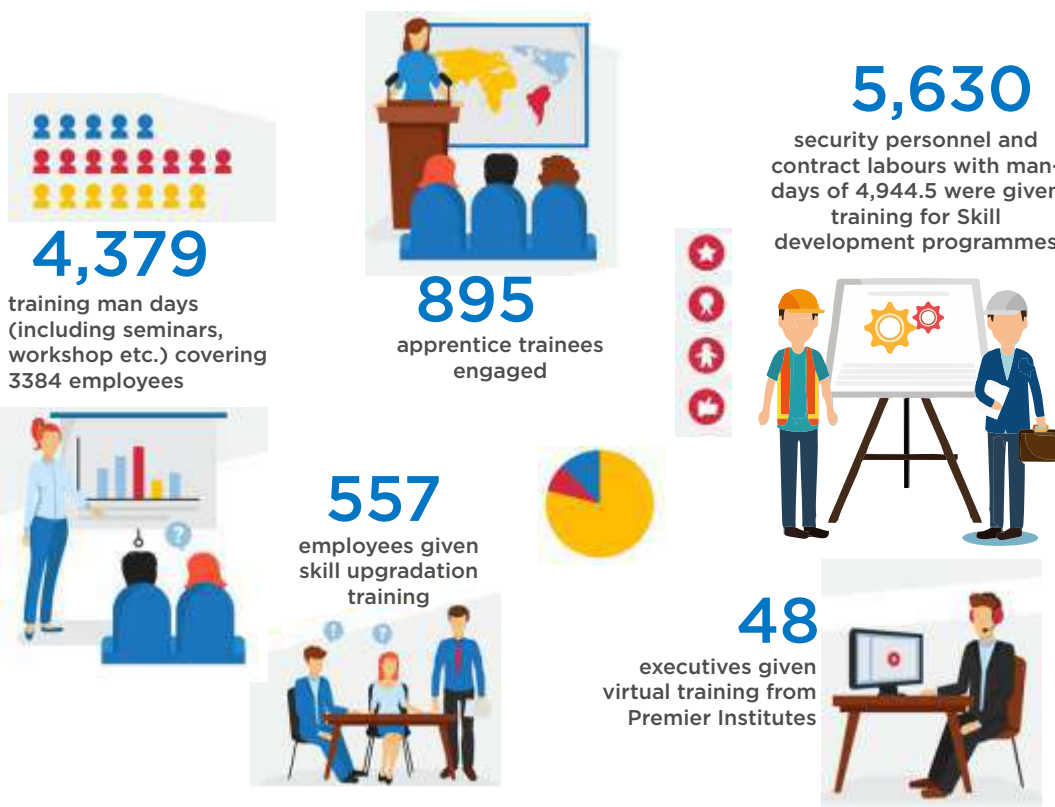
Training and Development

When knowledge is treated as a capital the need for training and retraining is paramount. Intangible value of an organisation, made up of its knowledge, techniques and unique technical procedures, need to be brushed up to make a difference. Accordingly, we have built a culture where learning, competency and talent are rewarded so that the organization builds its own capabilities to face the future challenges and the workforce realize their potential and in turn contribute to the organizational capability building. Classroom learning along with on-the-job training, coaching and mentoring enhances Competencies and Skills of Executives and Workmen which in turn result in improved performance. The training programs are custom designed to meet the training needs of the employees and the workers.

Centralised training facility at Corporate Office oversees the unit level training and organizes specific training programmes inviting participation from the entire organization. Training needs of individual employees are mapped along with the performance evaluation to identify the gap in competency level. Training needs of different departments are collected at the beginning of

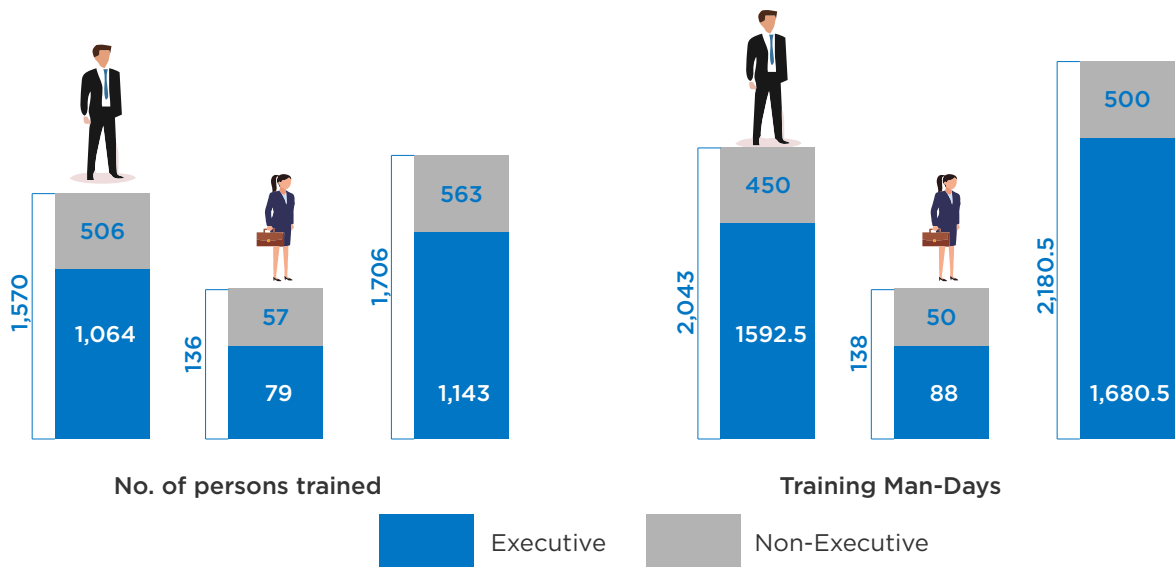
the year. Organisational needs, along with individual training needs are combined with compliance of Govt. directive to form the training programs. Based on the inputs a training calendar is prepared and people are trained by internal faculty or visiting experts at our training institutes. In order to enhance the functional and behavioural competency of employees and to align the individual need with the business objective of the organization towards increasing production and productivity as well as to improve business culture in the organization, there has been an unstinting effort by the Company to impart skill and behavioural training to its employees. We also sponsor employees to different professional bodies in India and abroad for trainings depending on requirement. Training on yoga, meditation, health care, stress relief and relaxation technique, lifestyle management etc., are also given to employees for their wellbeing. In its commitment for social accountability and good corporate governance, the company also imparts skill development training to contract workers, apprentices, students from managerial and technical institutes as well as local populations.

Training Performance Highlights 2020-21





Average hours of training per year per employee



Community Development



NALCO's community development endeavour has been a journey of inclusive growth by making a meaningful difference in the lives of our neighbouring community where we operate. Our community development efforts over the years are marked with responsibility and commitment. Since inception, we have been conscious of our utmost responsibility towards the community and extended a helping hand to improve health care and education even before introduction of Concept of Corporate Social Responsibility. We have a sense of pride that we have been able to add true value to Society, one of our most important stakeholders.

Driving Local Employment for Inclusive Growth

Employment generation in and around our operations is one of the most powerful instruments for transformation of an underprivileged and vulnerable population. We are aware that providing employment will transform their life through eradication of poverty which will translate to better accessibility to health and education. It will have a cascading effect on the development of the community. Keeping this fact in the organizational consciousness, we promote direct and indirect employment generation in our peripheral areas through capacity expansion, outsourcing, contractual engagement etc. Candidates registered with local employment agencies are considered based on their skill level and employability. We have also provided employment to local persons who have lost substantial amount of land during land acquisition for NALCO project. Further avenues of employment for locals are generated when different contractors i.e., transportation, security, maintenance, projects etc. recruit personnel for discharge of their contractual obligation. As on 31.3.2021, the total strength of employees in regular employment is 5805. Job Contractors working in areas like hospitality, maintenance, sanitation, conservancy and project activities etc. have engaged 11,255 contract labour to discharge their contractual obligations. Most of these persons are from Odisha, which leads to creation of livelihood opportunity for a sizable local population.



Corporate Social Responsibility

Our well defined and comprehensive CSR Policy aims to achieve inclusive growth of the underprivileged sections of the society through well-conceived interventions. The CSR Policy articulates in a holistic manner the various aspects of the CSR activities i.e., needs assessment, engagement with society, planning for the intervention, implementation, monitoring, impact assessment and review following a classical PDCA cycle. The insights and feedbacks obtained through community engagement help us to refine our people centric approaches with special focus on vulnerable and marginalised communities. Our community driven efforts are spread across various thematic areas such as education, healthcare, sanitation, women empowerment, skill development, promotion of livelihood, upgrading rural infrastructure, promoting and restoring cultural heritage, promoting sports etc.

Over the years, our CSR policy and objectives are assuming greater significance which is currently driven by the Board level CSR&SD Committee. The dedicated Board level subcommittee on CSR & Sustainable Development, headed by an Independent Director, meets regularly to review progress of the major CSR activities vis. a vis. the plans. CSR proposals are examined by the CSR and Sustainable Development Committee of Directors, and their recommendations are put up for approval of the Board. A separate Monitoring &

Evaluation framework has also been put in place to ensure timely completion of the planned interventions.

The CSR activities of the Company are structured and undertaken through RPDACs (Rehabilitation and Periphery Development Advisory Committees), NALCO Foundation and directly by NALCO. NALCO Foundation, the CSR arm of NALCO, which is registered under the India Trust Act, 1882 implements the CSR projects on behalf of the Company. The CSR projects are identified and implemented through community engagement process, thereby, establishing sustainable models at the grass root level.

Social interventions are designed, and specific activities are carried out based on the need assessment carried out directly by the CSR coordination cell, or based on the recommendations of Rehabilitation & Periphery Development Advisory Committee's (RPDAC), or feedbacks received 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 pertaining to health, education, infrastructure development and employment generation. Close follow up and monitoring of these projects is done to ensure execution as per plan to address the genuine needs of the communities.



Main areas of CSR Initiatives



CSR Expenditure

For the financial year 2020-21, a total amount ₹35 Crore has been spent for CSR activities against the mandated CSR obligation of ₹33.42 crore. NALCO has consistently exceeded the mandatory expenditure on CSR

Year	Mandatory CSR Expenditure (in INR crores)	Actual CSR Expenditure (in crores)
2018-19	27.38	30.35
2019-20	38.35	39.71
2020-21	33.42	35.00



CSR activities undertaken in 2020-21

Sanitation

- In line with the Swachha Bharat Mission & directives from IBM, NALCO had constructed total 1,025 IHHL units (Individual Household Latrines) in the remote villages of Damanjodi and Angul under Open Defecation Free (ODF) program out of which, 313 IHHL units are handed over to targeted beneficiaries in the reported year.
- Under the Swachh Vidyalaya Aviyan programme, NALCO has provisioned toilets in the government schools for health and hygiene of all students and convenience of girl students.

Health Care

- Around 70,000 patients in the periphery of the plant areas are treated through 8 MHUs.
- A specialist OPD at NALCO Township, provided free health consultation with free medicine to 13,133 nos. of patients



Education

- Sponsored residential education to poor, backward and tribal children from periphery villages since 2012-13 to residential under the fully funded residential education program "Indradhanush". This year, 100% students have successfully completed their matriculation.
- NALCO Ki Ladli scheme has been sponsoring the education of girl students from the periphery villages. Till date, a total of 734 girls are supported.
- NALCO established schools like Saraswati Vidya Mandir and Delhi Public School serves the educational requirement of the marginal communities.
- Infrastructural Support to educational Institutions in the form of construction of class rooms at Shri Ramakrishna Sishu Vidyamandir, Killar School, Chougan sevashram in Angul area and Ambagaon School, Rajiv Gandhi High School & Thuria School in Damanjodi area.



Safe Drinking water

- During summer, safe drinking water was supplied at the doorstep of people from 26 peripheral villages of S&P Complex through tankers in collaboration with local authority
- Pipe Water Supply to different villages are being undertaken, 25 tube wells have been installed in the periphery villages benefiting around 3000 house holds with the aid of district administration.

Covid Management

- More than 1 lakh face masks were distributed benefiting 7,500 families
- The periphery of the operations were sanitized by spraying disinfectant.
- At Bhubaneswar Municipal Corporation area, grocery distributed among the labours.
- Street plays were organized at various locations to create COVID awareness
- Refrigerated Truck for the COVID-19 Vaccination Programme, ventilator ambulance and digital X-Ray machines were given to the state administration.
- ₹5 crore was contributed to Prime Minister's Cares Fund
- A 200 bedded Covid hospital has been set up at Nabarangpur, Odisha in collaboration with Govt. of Odisha equipped with 10 bedded ICU and oximetry.
- Company has set up two 50 bedded Covid Care Centres (CCC) near its operational areas at Angul and Damanjodi for treatment of the patients of the localities.





Livelihood Promotion

- Empowering the tribal women and enabling them to improve their food security, income and overall quality of life has been the objective of the Company's CSR. Emphasis has been given to promote mushroom & vegetable cultivation in the periphery villages which will bring sustainability in farmer's income. Besides, the SHGs were given training on jack fruit & pumpkin chips making, packaging etc

Disaster Management

- Relief materials, 2,000 nos. of dry food packets and mineral water were distributed to the people of 5 flood affected villages in Tikrapada area of Angul.

Iconic City Projects

- NALCO, being one of the corporate partners of the Government of India in the Swacch Iconic Place development programme, has participated in the work of developing Puri, as a Swacch Iconic Place
- Repair, Restoration, Beautification and maintenance work at Gandhi Park were carried out along with the security during the shut down period
- The Battery Operated Vehicle has been plied between Shree Jagannath Temple and Jagannath Ballav Math of Puri adhering to the govt. guideline on covid from time to time
- Nalco has provided financial assistance to Shree Jagannath Temple Administration Puri towards the Renovation of Museum inside Shree Jagannath Temple
- NALCO has provided financial assistance to Shree Jagannath Temple Administration Puri towards the Renovation of Upabana inside Shree Jagannath Temple
- Nalco has ensured the 12 Nos of RO based clean water post in various places of Puri which would benefit lakhs of devotees coming to Puri across the year.

Stakeholder & Community Engagement Mechanism

The community engagement at NALCO is driven by a multipronged stakeholder engagement mechanism which has led to significant value addition to the surrounding community. At the basic level the engagement is undertaken at the grassroots level followed by engagement with the representatives of the community i.e., MLA, MP, district administration and state administration. Special attention is given to downtrodden and marginalized stakeholders. Their geographical location and level of vulnerability are considered while mapping the community expectation. Besides, need assessment surveys are carried out for the targeted stakeholders and projects are designed for them accordingly. The intensity of being impacted is also counted for the conception of projects. The community engagement processes supported by exchange of ideas and concerns has emerged as a great tool in the identification of stakeholders, their needs and expectations. The inputs and feedback obtained helps in developing the thrust and focus area to achieve desired outcomes. The CSR activities of the Company are undertaken through NALCO Foundation and directly by NALCO, Govt. Agencies, Registered Trusts and Non-Govt. Organisations (NGO)

Govt. of Odisha has constituted Rehabilitation & Periphery Development Advisory Committee (RPDAC) for Angul Sector and Damanjodi Sector under the Chairmanship of respective Revenue Divisional Commissioner. Other Members of the Committee includes District Collector, Local MLAs, MPs, People's representatives and representatives from NALCO. Upon receipt of the approved list of projects, the same are placed before CSR&SD committee and Board of Directors for detail deliberation and necessary action.

NALCO Foundation is focused on socio-economic development of the immediate villages located in the periphery of NALCO's operational areas and other aspirational areas of the state and country. NALCO Foundation has adopted a project-based accountability approach, through need-based selection and participation of the primary stakeholders at the grassroots level in the project management process. The Foundation further intervenes in capacity building of youths, women, PRI members & other stake holders. Some of the projects are also being executed by NALCO directly.

Monitoring and Impact Assessment

We understand that measuring the efficacy and effectiveness of the CSR projects is the key to achieve successful outcomes and thus Social Impact Assessment studies are carried out in a well-planned manner. This has resulted in successful implementation of the projects in terms of their impact and process of implementation. As per the CSR policy of the Company, Impact assessment studies are undertaken for the critical projects implemented for a period of three or above years. Some of the studies undertaken so far are given below:

- 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.
- 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.
- Social Impact Assessment of projects of NALCO Foundation was conducted by Central University of Odisha, Koraput during the year 2012.
- Social Impact Assessment (SIA) of the CSR projects valuing more than one Crore

implemented by NALCO were carried out by the premiere institute, Utkal University, Bhubaneswar in 2017.

- An Impact Assessment Study was made with the support of Madras School of Social Work (MSSW), Chennai in 2019.

NALCO will continue with the rich tradition of meaningful CSR initiatives and will expand the spread and the impact of its CSR programs. The systematic impact assessment of the CSR programs undertaken by expert bodies ensures the alignment of the CSR programs to the desired outcomes. NALCO will recalibrate its CSR program with the thrust areas as outlined by Government of India from time to time. Presently the Company has undertaken theme-based CSR activities on health and nutrition as per Department of Public Enterprises, Government of India. NALCO has shown how a company can grow sustainably by contributing to the nation's economic development on the one hand and improving the quality of life of local communities and society at large on the other.



Case Study

Mobile Health Service: A ray of Hope for Old People



"Mobile Healthcare Unit is a blessing for needy people like me. I pray to God for longevity and development of NALCO & NALCO Foundation so that needy people in the community can get healthcare services like me. This MHU has saved my life and money."



Mr. Purandar Dehury, aged about 65 years old, stays with his family in Ankula village under Angul Block, Angul district, Odisha. He has one son and five daughters, all are married. He has half acre of agriculture land. Purandar is a beneficiary under Old Age Pension scheme by Govt. of Odisha. He has little earning from agriculture, inadequate to meet the family expenses. He has no other source of income. Against this background, availing free healthcare services at his doorstep is vital for survival.

He has been suffering with Asthma, osteoarthritis and gastric for last 10 years. He did not have access to private medical treatment owing to lack of financial resources. However, he was taking some medicines from sources like government hospital but due to osteoarthritis travelling to hospital was a problem for him and the irregular nature of treatment did not improve his condition. On 12.01.2019 at Ankula MHU site, he availed the medical services extended by Mobile Health unit of NALCO. After availing free treatment services at doorstep regularly, his conditions improved drastically and now he is very happy since his health has improved through doorstep health services.

Name of the Beneficiary: Mr. Purandar Dehury
Age: 65 years, Male
Village: Ankula
Block: Angul, Dist: Angul



SIMIRAN SAHOO -Fighting all odds to pursue her dream

Simiran Sahoo is a 16-year girl of Pidhasahi, Kosala in Chhendipda block of Angul district. She is born to an extremely poor family. Her father Mr. Rasananda Sahoo is a marginal farmer and mother Bijaylaxmi Sahoo is a home maker. Being born in a poverty-stricken family, life was not quite easy for her. Her father struggles a lot to meet even basic needs of the family like food, clothes, quality education etc.

Yet all these hardships could not stop Simiran from dreaming big. Every day she gets ready, goes to school and put in the hard work she needed to. Her talents got noticed when she repeatedly came first or second in most of her class examinations. Seeing her talent, the Headmaster of Kosala High school recommended her name for Nalco ki Ladli Scholarship and in the year 2018-19 she got enrolled in the Nalco ki Ladli programme. The scholarship helped her in several ways. First, it lessened the pressure on her father's shoulder for her education. Simiran could take extra coaching classes, which further enhanced her conceptual and in-depth understanding of subject matters. Besides, she could also purchase additional study materials and learning aids. Along with the financial support, she also received mentoring and career counseling support time to time from NALCO Foundation.

With her persistent hard work and support from parents, teachers and NALCO, Simiran has secured 91% marks in last HSC Examination 2021 with A1 grade and has topped among all the Nalco ki Ladlis at S&P complex. She will pursue +2 Science. Simiran wants to be a teacher and help those students who come from economically weaker section. Simiran is no longer discouraged by her circumstances and aspires to fulfill the dream she has dared to have.

ED (S&P) and GM(H&A), NALCO, Angul have interacted with Simiran and two other Nalco Ki Ladlis along with their parents on 17th Sept 2021 and felicitated them with gifts and certificates for their remarkable achievement in HSC Examination 2021.

S&P Complex, NALCO: A warrior in battle against Covid-19 (A sample case study of our care & concern)

Outbreak of Covid-19 pandemic had made life extremely difficult for millions of the people all over the world. Angul district was no exception to it. In the critical pandemic situation, NALCO rose to the occasion and reacted promptly with due empathy through its CSR arm and Nalco Foundation. NALCO joined the war against Covid-19 and took efforts in collaboration with District Administration, Angul. Following steps were taken to contain the spread in peripheral villages of S&P Complex.

Mask Distribution:

In view of Covid-19, 50000 masks were procured for benefit and interest of peripheral villagers. Masks were handed over to District Administration and distributed among the front line warriors as well poor needy people.



Sanitization drive at Peripheral villagers:

The CSR Department of NALCO, along with CISF, Fire Wing and NALCO Foundation had started sanitization drive by spraying disinfectant in Peripheral Villages to prevent the spread of Corona Virus.



Supply of Ration Kits to Poor Needy People in Angul District in prevailing pandemic situation due to Covid-19

On request of District Administration, Angul, 1000 nos of Ration kits comprising of Chyawnprash, Refined oil, Mask, Sanitizer, Biscuit, Atta, Rice, Dal, Salt and Masalas were procured from NALCO Employees Multi-purpose Co-operative Society(NEMCS), NALCO Nagar, Angul and provided to District Administration. The items were distributed among poor needy people at the time of complete lock down and shut down in pandemic situation due to Covid-19. This support extended by NALCO and NALCO Foundation in pandemic was largely appreciated by people and public representative.





I might have died, if I would not have been hospitalized in this Covid hospital in right time. NALCO has saved my life and also life of many others like me by supporting this hospital in critical pandemic period.
-S. K. Sahu , a beneficiary stated



All these efforts saved life of thousands & thousands of people during pandemic and bagged overwhelming applause & appreciation for NALCO S&P Complex from mass public and all sections of society to combat Covid-19. District Admin., Angul appreciated all efforts like 150 bedded District Covid Hospital, provision of masks, sanitizers, dry food packets, relief materials, rapid antigen tests, sanitization drive etc. during pandemic to contain the spread of Covid-19. The efforts have also been lauded by Mr. Pralhad Joshi, Minister Mines which have encouraged all officials' and workers involved.

GRI Content Index



“For the GRI Content Index Service, GRI Services reviewed that the GRI content index is clearly presented and the references for all disclosures included align with the appropriate sections in the body of the report.”

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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 Afforestation 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
KPIs	Key Performance Indicators
LDO	Light Diesel Oil
LPG	Liquified Petroleum Gas
LME	London Metal Exchange
MoA	Memorandum of Agreement
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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