



9th Sustainable
Development Report
2019-20

Engaging Empathising Encompassing



VISION

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



MISSION

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



CORE VALUES

- B** Benefitting Stakeholders
- E** Excellence and Quality
- S** Sustainability
- T** Trust & Integrity



Content Index

04

About the Report

05

**Message from
CMD**

08

**Sustainability
Highlights**

09

**Organisation
Profile**

15

**Corporate
Governance**

24

**Key Impacts, Risks
and Opportunities**

29

**Stakeholder
Engagement
and Materiality
Analysis**

36

Economic

Economic Performance..... 37

Supply chain and procurement practices..... 42

44

Environmental Excellence

Material Consumption 48

Energy Consumption 49

Emissions 52

Water and Effluent Management 54

Waste Management..... 58

Biodiversity Management..... 62

65

Social Relationship

Employee Wellbeing..... 66

Training and Development..... 70

Occupational Health and Safety 72

Community Development..... 77

84

**Our Contribution
to SDGs**

86

**GRI Content
Index**

90

Abbreviations

About the Report

Reporting Period and Date of most Recent Report

National Aluminium Company Limited (NALCO) is a Navaratna Central Public Sector Enterprises (CPSE). We are proud to present our 9th Sustainability Report based on theme “Engaging, Empathising, Encompassing”. The report presented covers the reporting period for the financial year 2019-20 which is from April 1, 2019 to March 31, 2020. In this report, we are exhibiting the approach and initiatives towards various sustainability aspects including Environmental, Social, and Economic. The report demonstrates our vision and efforts towards building our business in a sustainable manner.

Reporting Framework

At NALCO we publish our sustainability report on an annual basis. This report has been prepared in accordance with the GRI Standards: Core option. In this report we have provided disclosures on GRI 2016 standards, except for GRI 303: Water and Effluents, GRI 403: Occupational Health and Safety for which 2018 standards, and GRI 306: Waste for which 2020 standards have been referred. Material issues and their relative importance has been described in the report. We have aligned our report on the guidelines provided by the Government of India’s National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business and the principles of the United Nations Global Compact (UNGC). We have included Technical Protocols and Indicator Protocols in this report. A detailed list of GRI disclosures has been provided at the end of this report.

Audience

The report showcases the sustainability strategy, performance on sustainability key performance indicators, and achievements during the reporting period for all of our stakeholders. The report also includes information on the material topics to our stakeholders. It further demonstrates our core strengths and provides a bird’s eye view on the expected opportunities and challenges.

Scope and Boundary

The report covers information and disclosures covering our production units such as Bauxite Mines and Alumina Refinery at Damanjodi in Koraput District of Odisha, Aluminum smelter and Captive Power Plant (CPP) at Angul, also in the state of Odisha and the Port facility at Vishakhapatnam. Our other business operations such as business partnerships, subsidiaries, joint ventures, etc. are excluded from the scope and outside of the boundary. The material topic boundary is detailed in the report.

Reporting Standards and Data

Management Systems implemented for Quality, Environment, Health and Safety, Energy and Social Accountability are audited regularly and diligently. By doing this data integrity is maintained and we keep abreast of new compliances requirements. We ensure that various management system performances are verified by accredited certification bodies. The data presented in this report has been thoroughly reviewed by our Board as it is extracted directly from our published Financial reports, Annual reports, etc. This eliminates the need for a third-party assurance. The estimation and quantification of the data is done with clear assumptions and globally accepted empirical formulas or protocols.

Restatement and Changes in Reporting

In this report, there are no changes in the material topics and boundaries and there are no re-statements as well.

Contact Point

Your suggestions and feedback on the report are valued by us. Kindly share your suggestions and feedback with Mr. Biswamaya Kar, DGM(TQM), NALCO Bhawan, P/1, Nyapalli, Bhubaneswar, Odisha – 751013. Email: sustainability@nalcoindia.co.in, website: <https://nalcoindia.com>

102-50 Reporting Period
102-51 Date of most recent report
102-52 Reporting cycle
102-54 Claims of reporting in accordance with the GRI Standards
102-46 Scope and Boundary
102-56 External Assurance
102-48 Restatements of information
102-49 Changes in reporting
102-53 Contact Point for questions regarding the report



Message from the CMD

Dear Stakeholders,

Sustainability has a time-honoured tradition and has been embedded in the way we, at NALCO operate. We are delighted to present the 9th edition of our Annual Sustainable Development Report, for the year 2019-20, prepared in accordance with the GRI Standards: Core Option. The report presents our economic, environmental and social performance in alignment with triple bottom line principles. We stick to the stakeholder-focussed approach and have defined clear objectives that underline our key challenges and achievements for holistic growth of our organisation.

Aluminium is viewed overwhelmingly as a 'green' and 'environmentally friendly' material, with a unique reputation amongst peer materials and with the potential to play a major role in established and emerging industries of the future. A recent report by CM Business Consulting Group concludes the 30-year outlook for aluminium demand to be strongly positive. The report forecast a global CAGR of 4.2% over the 30-year period to 2050, riding on global megatrends like rapid urbanisation and climate change. The enhanced use of aluminium in transport sector provides great opportunity for reduction in fuel/energy consumption. Being recyclable and with low recycling energy requirement aluminium metal once produced can be reused infinitely.

We have made a significant contribution to the country's journey of achieving self-reliance in Aluminium towards building a 'Atma-Nirbhar Bharat'. Export sales accounted for 41.7% of our turnover in FY 2019-20 which amply testifies to the global acceptance of our products. Our expansion and diversification plans result from this overarching ambition to be part of the Nations journey for self-reliance and economic prosperity. India accounts for around 7% of the world's bauxite production and has a fast-



Sustainability has now become a part of NALCO's key business processes. The year was a testimony to NALCO being a partner in progress in promoting inclusive growth as an industry leader and spreading happiness amongst people.

growing aluminium sector that leverages this. Demand in the domestic market is expected to rise by 8-10% in the next few years in line with overall growth in the economy during this period.

FY 2019-20 has been a year of mixed results for the company. In spite of an extremely challenging business environment, coupled with slump in prices and onset of COVID-19 pandemic in the last quarter of the year, we have made exemplary contribution in promoting and putting focus on *plant, production, productivity and people*. **Sustainability has now become a part of NALCO's key business processes. The year was a testimony to NALCO being a partner in progress in promoting inclusive growth as an industry leader and spreading happiness amongst people.**

Our diligent efforts towards sustainability and efficient business operations have translated into business profitability and global recognition. **It is a matter of great pride and satisfaction to us that the Company has consistently retained No. 1 position as the lowest cost producer of Alumina and as the lowest cost producer of Bauxite in the world as per Wood Mackenzie reports.** In FY 2019-20 our net sales stood at INR 8,425.75 Cr which included exports amounting to INR 3,510.92 Cr. We recorded an EBITDA of INR 761.81 Cr and profit after tax stood at INR 138.23 Cr for us. On the operational front, in FY 2019-20, we have achieved highest-since-inception bauxite transportation from Mines, lowest-ever DC Electrical Energy Consumption and Sp. Net Carbon Consumption at our Aluminium Smelter.

We believe that organisations like us have a crucial role to play in achievement of Sustainable Development Goals as defined by United Nations Development Programme, especially through their social and environmental performance. We take considerable efforts to reduce environmental footprint by proactively complying with our Environmental policy. During FY 2019-20, we planted a total



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.

of 127,524 trees and 15.10 hectares of reclaimed area was rehabilitated with plantation. Extensive measures were taken for water conservation including rooftop rainwater harvesting. We have generated 348.52 MU from wind power and 0.27 MU from roof-top solar panels making significant contribution towards environment by harvesting energy from renewable sources. As for emissions and waste management, we continue to upgrade our facilities and practices, leveraging on R&D and inducting new technology. **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.**

We believe that our workforce is a pivotal asset for our organisation. We strongly believe that nurturing a safe and healthy work environment is mandatory for ensuring employee well-being and following best practices in the



same uplifts the organisation's overall performance. To bolster the same, Safety Convergence Meet-2019 was organised on the theme "Best practices on Safety and Health" by Directorate of Factories and Boiler, Odisha with the support of the management of our Company for the first time at Refinery Unit. **We ensure strict adherence to safety norms and practices to achieve safe work environment. Training on Health and Safety aspects constituted 1,753 mandays out of a total of 10,940 training man days imparted to our employees in FY 2019-20.**

We believe that it is our responsibility to augment and foster strong relationships with the community. We are committed to conducting our operations in a socially responsible way through community involvement and optimum resource utilisation. **In our constant endeavour to achieve inclusive growth for the weaker sections of society, our CSR Philosophy "Always with the Community" has garnered great significance to us over the years. We have spent INR 3,971.35 lakh in FY 2019-20 on various CSR programs against the mandated CSR obligation of INR 3,835.00 lakhs.** We have invested in areas of education, healthcare, sanitation, environment sustainability, rural infrastructure development, protection of national heritage and development of iconic city, Puri. Some other exemplary initiatives we took are relief, restoration and rehabilitation activities post destruction by Fani cyclone. In view of our CSR achievements, we were felicitated with the National Award in the category of "Women Empowerment" for our flagship CSR Project, "Nalco Ki Ladli", in the National CSR Summit and Awards Ceremony. Our ongoing commitment to sustainability and CSR in the metal and mining sector continued to gain worldwide recognition in FY 2019-20.

The outbreak of COVID-19 pandemic led to a steep fall in metal prices globally, and only aluminium producers with low cost of production could survive. Although the demand for Aluminium in the domestic market wilted during March-May, 2020 after imposition of nationwide lockdown by the government, the restrictions were gradually lifted in phases from May-June onwards. The

pandemic also disrupted the supply and delivery chain during March,2020 to June, 2020. We, at Nalco however managed to maintain our production levels with agile moves astute planning and work-force co-operation.

We showed our strong commitment and stood in solidarity with the home state during COVID-19 pandemic which created a havoc in people's lives. **We have stood with the people of Odisha in the past during natural calamities. This time, the crisis was more challenging and of unprecedented scale, and we at Nalco reiterated our pledge to extend our wholehearted support in whatever ways we could.** Apart from funding, we also undertook activities like sanitisation of public places and plant areas, distribution of dry ration to District Administration and supply of sanitising materials to police stations in and around the plant areas. We contributed INR 5 crores and one-day salary of employees amounting to INR 2.60 crores to PM CARES Fund to fight COVID-19. **We also funded an exclusive 200 bedded COVID-19 hospital at Nabarangpur, Odisha.**

We are committed towards our sustainability objectives and achieving inclusive growth with utmost transparency in Governance upholding ethical and human rights principles. While we are proud of our progress, we are aware of the constraints along the journey. We have a long way to go and we are confident that adopting sustainability practices will enable us to address all challenges and harness better opportunities.

We encourage you to go through this 9th Sustainability Report to learn more about our efforts to advance sustainability for our organisation and aluminium sector as a whole. We also welcome your feedback and suggestions.

Shri Sridhar Patra
Chairman cum Managing Director
NALCO

Sustainability Highlights



EBIDTA
INR 761.81 Cr



Lowest cost
producer of Bauxite and
Alumina in the world



5-star
Energy conservation
awards (Highest star
achievement) for
large-scale categories
of Energy Conservation
Awards



Profit after Tax
INR 138.23 Cr



Achieved **zero liquid
discharge** for
industrial effluent, ash pond
overflow water and
STP treated water across
all operational
locations



5-star rating
of Panchpatmali
Bauxite Mines by IBM
for 2018-19



INR 39.71 Cr
spent on CSR

**First of its
kind Emerion
Nano Technology**
used to recycle 230 MLD
water recycled at Smelter
after de-fluoridation using
zero chemicals and
generating
negligible sludge



127,524
trees planted during
the year



Mobile Health
Units treating
149,000
patients



ORGANISATION PROFILE

Corporate Office at Bhubaneswar

Location and Portfolio

Headquartered at Bhubaneswar, National Aluminium Company Limited (NALCO) is a Navaratna Central Public Sector Enterprises (CPSE), set up on January 7, 1981. We operate in the non-ferrous metals and mining sector. We primarily deal with manufacturing and sale of Alumina and Aluminium products. Our operations are diversified with a value chain starting from bauxite mining; refining and smelting of Alumina and Aluminium respectively with one of the largest integrated bauxite, alumina, aluminium, and power venture in the country.

Our operations include Bauxite Mines of three blocks with combined capacity of 99.75 lakh TPA, Alumina

refinery with the capacity 22.75 lakh TPA, both located at Damanjodi in Koraput district of Odisha, Aluminium Smelter with a capacity of 4.60 lakh TPA and Captive Power Plant (CPP) of 1,200 MW, both located at Angul in Odisha. We have bulk shipment facilities at Vizag port, Visakhapatnam of Andhra Pradesh for export of Alumina/Aluminium and import of caustic soda. We also utilise the facilities at Kolkata Port, West Bengal, and Paradeep Port, Odisha. We have regional offices in Delhi, Kolkata, Mumbai, Chennai, and Bangalore and eight operating stockyards at various locations across the country to facilitate domestic sales. Besides, we also operate four Wind Power plants with total capacity 198.4 MW located in the states Andhra Pradesh, Rajasthan and Maharashtra.



Activities, Brands, Products, and Services

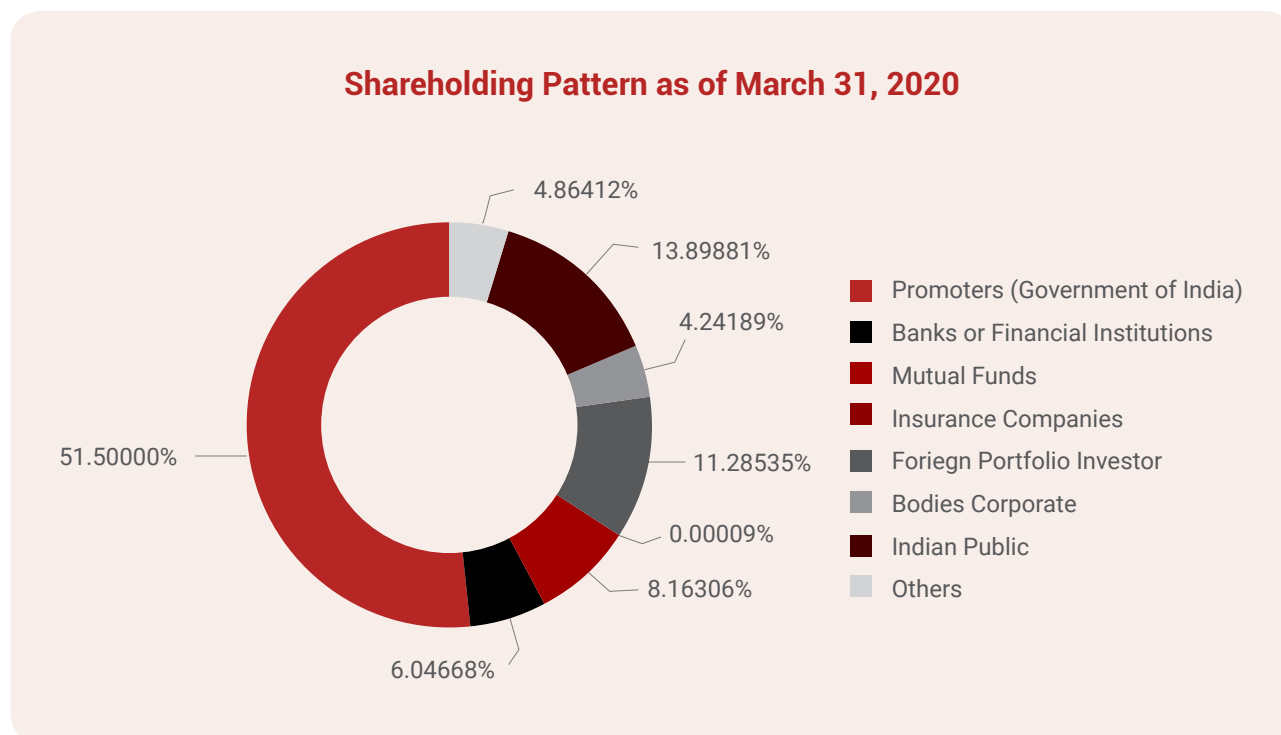
The detailed list of products and their applications has been listed below.

Key Products	Applications and Use
<p>Aluminium 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</p>	<ul style="list-style-type: none"> • Ingots are 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 the conductor and cable industries. • Rolled and Chequered Sheets are used in manufacturing industries and automobile industries.
<p>Alumina products Calcined Alumina, Alumina Hydrate, Specialty Alumina and Hydrate.</p>	<ul style="list-style-type: none"> • Calcined Alumina is used in Aluminium smelting, refractory, ceramics, and high alumina cement. • Alumina Hydrate is used in alum, poly Aluminium Chloride, and other specialty chemicals. • Specialty alumina has applications in refractory, ceramic, and abrasive industries. • Specialty hydrates are used as filler material in plastic, rubber, paper, Fire retardant chemicals, and manufacturing alumina chemicals.



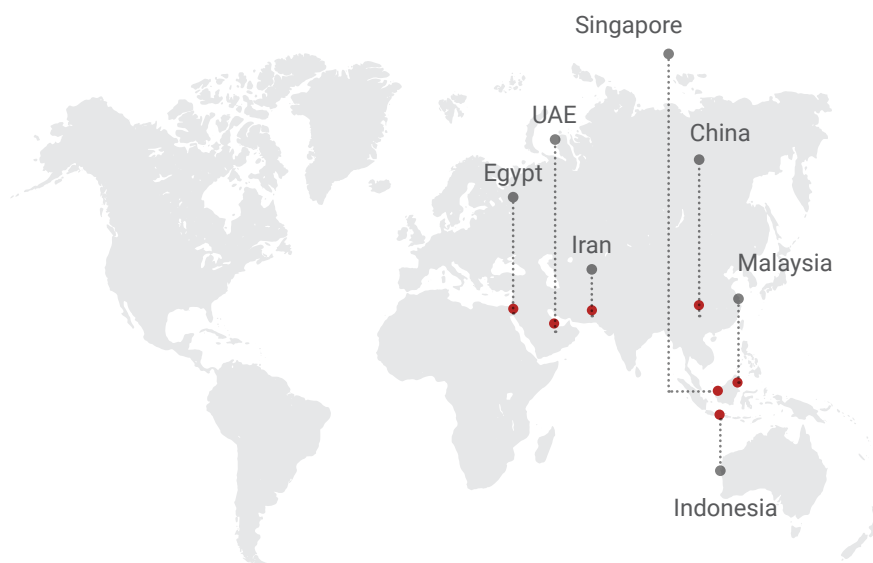
Ownership and Legal Form

The shareholding pattern of NALCO as of March 31, 2020, is given below. The Government of India holds 96,07,93,011 equity shares (51.50%).



Markets Served

We serve the domestic and the International markets for both Alumina and Aluminium. During FY 2019-20, we exported Calcined Alumina, produced in excess of our requirements, to the buyers in China, Egypt, UAE, Iran, Indonesia, Malaysia. For Aluminium products, apart from serving the buyers in India we catered to Aluminium markets of Malaysia and Singapore.



Alumina transport in wagons



Aluminium tee Ingots

Organisation Scale

The table listed below presents the overview of NALCO's Production, Export sales, and Domestic sales for FY 2019-20.

Sr.	Particulars	Unit	FY 2017-18	FY 2018-19	FY 2019-20
1	Production				
	Bauxite	MT	7,025,109	7,230,546	7,302,245
	Alumina Hydrate	MT	2,105,500	2,152,500	2,160,500
	Aluminium	MT	425,515	440,242	418,373
	Power (net)	MWh	6,547,000	6,256,000	6,067,000
	Wind Power	MWh	252,000	363,000	312,000
2	Export Sales				
	Alumina	MT	1,276,775	1,244,256	1,240,704
	Aluminium	MT	75,847	38,463	56,898
3	Domestic Sales				
	Alumina, Hydrate and Other Chemicals	MT	60,641	73,377	63,000
	Aluminium	MT	350,469	402,134	338,864

External Initiatives

At NALCO, we have adopted multiple policies and procedures which are in line with UN Global Compact, GRI Sustainability Reporting Standards, United Nations (UN) Sustainable Development Goals, The Universal Declaration of Human Rights, International Labour Organisation (ILO) Declaration on Fundamental Principles and Rights at Work, UN Guiding Principles for Business and Human Rights, National Guidelines on Responsible Business Conduct, International Organisation for Standardisation (ISO) 45001 for Health & safety, ISO 14001 for Environment, ISO 9001 for Quality, ISO 50001 for Energy and SA 8000 for Social Accountability.

As a mandatory requirement from Securities and Exchange Board of India (SEBI), Listing Obligation and Disclosure Requirements (LODR) 2015, our Business Responsibility Report (BRR) is based on the nine principles which describe the initiatives taken by the company from the Environment, Social and Governance perspectives. We annually publish our Business Responsibility (BR) Report, as a part of the Annual Report.

Regulatory inspections of the mines, approval of mining plans, and environment management plans ensure the minimum adverse impact on the environment. Ministry of Mines (MoM), Government of India (GoI) has set up the Indian Bureau of Mines (IBM) as a multidisciplinary government organisation for the promotion of systematic and sustainable development of mineral resources of the country. Our mines have been given a 5-star rating, the highest rating by IBM, on Sustainable Development Parameters during the year FY 2017-18 & 2018-19. The assessment for FY 2019-20 is in progress and we expect to continue the performance during the reporting period as well.

Precautionary Principle

Decisions related to our operations, activities and projects are thoroughly aligned with the precautionary principle, especially the decisions involving possible environmental or human impact. Our risk management principles support the needs of the precautionary principles and address the mitigation measures related to environmental, social, and economic risks. Our approach is defined and guided by the



international standards of ISO 9001, ISO 14001, ISO 50001, ISO 45001. Multiple policies manuals, guidelines and standards reinforce our precautionary approach. Before implementing any type of new project or new changes in our existing operations, we conduct multiple due diligence to understand the impact on the environment and social aspects. We make it a point that the addressed impacts are successfully mitigated as per precautionary principle.

Membership of Associations

As one of the largest aluminium producers in the country, we have been engaged in consultations for various public and regulatory policies. These policies guide us to make a robust action plan to become future-ready. Some of our major trade and chamber or association are listed below:

Aluminium Association of India	Standing Conference of Public Enterprise (SCOPE), New Delhi
Federation of Indian Mineral Industries (FIMI), New Delhi.	National Safety Council, Mumbai
Confederation of Indian Industry (CII), New Delhi	Utkal Chamber of Commerce and Industries, Bhubaneswar
Engineering Export Promotion Council, Kolkata	Federation of Indian Export Organisation, New Delhi
International Chamber of Commerce, Delhi	Chemical and Allied Products Export Promotion Council, Kolkata
National Institute of Personnel Management, Kolkata	

Awards and Accolades

Our core values are based on Benefitting Stakeholders, Excellence, and quality, Sustainability, Trust and Integrity (BEST) principles, which have helped us to provide value to our consumers and various other stakeholders. We believe that ethical business practice and focus on quality can help us to strengthen our present relationship with all our stakeholders. All these factors have helped us to walk the talk and led us to bag various awards and accolades. The details are as follows:

We have been conferred with the coveted '**Golden Peacock Environment Management Award**' for FY 2019-20 at a function held in Bangalore at the 21st World Congress on Environment Management and Climate Change.

Our Panchpatmali Bauxite Mines has bagged 6 prizes consisting of **1st prize in afforestation, 1st prize in reclamation and rehabilitation, 2nd prize in monitoring, 1st prize in sustainable development, 1st prize in overall performance,** and the Par Excellence Award at the closing ceremony of Mines Environment and Mineral Conservation Week FY 2018-19, organised by Indian Bureau of Mines.

In recognition of the stellar role played by us among the Public Sector Units (PSUs) in the Indian economy as well as in the wider socio-economic development, we have bagged the award for **Best Export Performance in the Dun and Bradstreet PSU Awards FY 2019-20.**

Our Data Centre, Corporate Office, and Disaster Recovery site have been certified for Information Security Management System and were **awarded ISO 27001:2013 Certification with Accreditation from International Accreditation Services, USA.** The certification audit was conducted by M/s. Intercert and we were successfully certified in August 2019.



We have been awarded the **"Times Business Excellence Award"** for CSR.



We have bagged the prestigious CSR National Award in the category of **"Women Empowerment"** for its flagship CSR Project, **"NALCO Ki Ladli"**, in the **National CSR Summit and Awards Ceremony** organised by First Step Foundation, New Delhi, and CSR Times.

We have received the **EEPC Eastern Region Export Award for the year FY 2016-17**, in a function held at Kolkata on August 31, 2019.

Our pavilion in the Mining Exploration Convention and Trade Show (Mining Mazma) held at Bengaluru from September 12 to 14, 2019, won the **1st prize in the PSU category**.

We have bagged the **'IIM Non-Ferrous Best Performance Award'** consecutively for the second year at the National Metallurgist Day and Annual Technical Meet (NMD-ATM 2019) held at Kovalam, Thiruvananthapuram, organised under the aegis of Ministry of Steel, Govt. of India.

Our Alumina Refinery unit has been awarded the **Platinum Award at the CII-EXIM Bank Award for Business Excellence**.

Our Alumina Refinery Plant and Captive Power Plant have been awarded **Kalinga Safety Excellence Award (Gold) and Kalinga Safety Excellence Award (Silver) respectively for the FY 2018-29** in the Odisha Safety Conclave held on November 23, 2019, at Bhubaneswar. Both the units have been awarded for the best safety practices implemented and maintained at the respective units.

Our Alumina Refinery received the **Bureau of Energy Efficiency Platinum Award** as a result of positive attributes from all corners.

Our Smelter Plant has received the **Energy Efficiency as well as Most Usable Presentation Award by CII**, at the 20th National Award for Excellence in Energy Management held from September 16 to 18, 2019 at Hyderabad.



CORPORATE GOVERNANCE

Our Conviction

Our approach towards corporate governance demonstrates our culture and practices dovetailed with our core values. Trust and Integrity are our core values and translate to transparency, accountability, commitment, financial discipline which are key drivers of our sustainability efforts. These values are integrated in all aspects of our business practices. Our philosophy is to create value for stakeholders which includes our employees, shareholders, customers, suppliers, creditors, regulatory authorities, government departments and society at large.

Governance Structure

Corporate governance is the backbone for any company. Various policies, procedures and guidelines help an organisation to operate in a structured disciplined way. Our well-balanced governance structure helps us develop robust practices ensuring long term value creation for our stakeholders. The balanced governance structure also helps us to ensure that timely and accurate material information is communicated to our stakeholders.

The Board of Directors (the Board) is an apex governing body and is responsible for our overall functioning and performance. Being a public sector organisation, directors are appointed by Government of India considering their capabilities, experience



Hon'ble Dr Subramanian Swamy lighting lamp on NALCO Foundation Day

and expertise in the sector. 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.

As on March 31, 2020, our Board was headed by the Chairman-Cum- Managing Director and assisted by five full time Functional Directors, two part-time official Directors and two part-time Non-official (Independent) 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 March 31, 2020

Sr. No.	Name of Director	Date of Appointment
Functional Directors		
1	Shri Sridhar Patra Chairman-cum-Managing Director	Dec 17, 2019
2	Shri V. Balasubramanyam Director (Production)& Director (Finance)-Addl. Charge	Jan 01, 2015
3	Shri Sanjib Kumar Roy Director (P&T)	Feb 03, 2017
4	Shri Pradip Kumar Mishra Director (Commercial)	Apr 23, 2018
5	Shri Radhashyam Mahapatro Director (HR)	Jan 01, 2020
Part-time Official Directors		
7	Dr. K. Rajeswara Rao	Feb 19, 2018
8	Shri Anil Kumar Nayak	Mar 27, 2018
Part-time Non-official (Independent) Directors		
9	Shri Nagendra Nath Sharma	Sep 06, 2017
10	Smt. Achla Sinha	Sep 08, 2017

Board Level Committees

Our board level committees consists of members who are expert in their respective field. We strongly believe a strong and capable leadership is the way forward to keep our business wheels running in any circumstances. We have a diverse mix of board members who continuously add value to every decision and process that takes place. Our board members strongly believe that our present capabilities will keep adding more and more value to our stakeholders in times ahead. We have instituted statutory and non-statutory committees. Both types of committees comprise of full-time and part-time Directors. Secretarial Standards relating to Board meeting are equally applicable to Committee meetings. The Terms of Reference of each Committee are approved by the Board.





CSR and Sustainability Development Committee

Sustainability is at the core of our business philosophy. We have formed a special committee and have empanelled board members who are expert in their own field. The CSR and sustainability development committee is as per the provisions under the Act and Regulation 34(2)(f) of the SEBI Regulations.

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.

The composition of the committee underwent changes in the reporting year as below.

Name	Category	Position	Important Remarks
Shri Nagendra Nath Sharma	Independent Director	Chairman	Appointed as Chairman of the committee w.e.f. February 03, 2020
Shri Sridhar Patra	Functional Director (Finance)	Member	Ceased to be the member of the committee upon being appointed as Chief Managing Director w.e.f. December 17, 2019
Smt. Achla Sinha	Independent Director	Member	Appointed as independent director w.e.f. January 10, 2020
Shri V. Balasubramanyam	Functional Director (Production)	Member	Appointed as director of finance in addition to director of production w.e.f. January 10, 2020
Shri Radhashyam Mahapatro	Functional Director (HR)	Member	Assumed charge on January 01, 2020
Smt K.G. Sinha, Director	Independent Director	Member	Appointed as chairperson w.e.f. December 31, 2019. Ceased to be the member of the committee w.e.f. February 02, 2020.
Shri D. Mahanta	Independent Director	Member	Ceased to be the member of the committee w.e.f. November 20, 2019
Shri S. Sankararaman	Independent Director	Member	Ceased to be the member of the committee w.e.f. November 20, 2019
Shri Maheswar Sahu	Independent Director	Member	Ceased to be the member of the committee w.e.f. November 20, 2019

As on March 31, 2020, the Committee consisted of Shri N. N. Sharma, Independent Director, Smt. Achla Sinha, Independent Director, Shri V. Balasubramanyam, Director (Production), Shri R. S. Mahapatro, Director (HR).



Board Meeting in progress

Policies and Manuals

We firmly believe that a robust work culture is the outcome of the philosophy and thought process behind the organisation. Our policies and manuals are a distillation of our philosophy and thought process. The policies and manuals are drafted focusing on the governmental norms and procedure. The table below lists down all the current policies and manuals:



Policies and Manuals	
Sl. No	Policies and Manuals
1	Code of Business Conduct and Ethics for Board Members and Senior Management https://nalcoindia.com/wp-content/uploads/2018/12/CodeofConduct.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 https://nalcoindia.com/wp-content/uploads/2019/03/PurchaseManualUpdated-upto-2017.pdf
8	Contracts Manual https://nalcoindia.com/wp-content/uploads/2020/03/CONTRACT-MANUAL-2013-updated-till-15-03-2019-dsc.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/2019/06/NALCO_Code-of-Conduct_new-25-06-2019-1.pdf
12	Risk Management Policy https://nalcoindia.com/wp-content/uploads/2019/01/Final-Nalco-Risk-Policy_Nalco-for-website-upload-1.pdf
13	HR Policy & Procedure https://nalcoindia.com/wp-content/uploads/2019/01/1.01-rp_exec-DSC.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/2018/12/SA_POLICY_Approved.pdf
16	Policy on related party transaction https://nalcoindia.com/wp-content/uploads/2018/12/NEW-RPT-NALCO.pdf

Code of Conduct

Code of conduct in any organisation is set of rules and standards that leaders of the organisation are expected to adhere to. Our robust code of conduct helps us to uphold transparency and fairness in business operations while remaining professional in terms of everyday dealings with

our stakeholders. Our code of conduct has been adopted from Model code of Business Conduct and Ethics and is applicable to all the board members, government nominees, independent directors and senior management. The code of conduct establishes guidelines for various organisational activities and ensures non-discrimination, human rights & dignity. Legal compliance, conflict of interest, ethics,



transparency, and accountability, compliance audits and protection of confidential information are all part of our code of conduct. We also ensure a disciplinary action of Board against violation of the code of conduct. Our code of conduct is available on NALCO website <http://nalcoindia.com> under Menu > Company > Policies & Documents

Investors Complaint

Feedback and constructive criticism help us to correct our course of action and emerge stronger every day. We address various complaints and grievances relating to share transfers, transmissions, demat/remat of shares, issue of duplicate shares certificates, payment of dividend etc. and have resolved them within prescribed time period.

Compliance

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 'Excellent' as per the self-appraisal report for the financial year 2019-20. The self-appraisal report for 2019-20 can be accessed on the website (https://nalcoindia.com/wp-content/uploads/2020/04/Self-Appraisal-Report_2019-20-Revised.pdf.)

The report on Corporate Governance is prepared in line with Regulation 34 read with Schedule-V of SEBI (LODR) Regulations, 2015 and DPE guidelines. The same is placed at Annexure-V to the Annual Report. 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 114 of the Annual Report 2019-20. (https://nalcoindia.com/wp-content/uploads/2020/09/NALCO_Annual-Report-2019-2020-1.pdf)

Mechanisms for Advice and Concerns about Ethics

To further ensure corporate governance and ethics, Integrity pact (IP) with Transparency International India (TII) has been signed by us. As per Integrity Pact signed by us, any form of violation or contravention in terms of contract conditions will attract attention of Independent External Monitor. The Comptroller and Auditor General (CAG) audit, corporate governance audit and secretarial



In the FY 2019-20; 1,378 complaints were received from the Investors and 10 complaints were received from SCORES-SEBI. All of them have been resolved satisfactorily.

audit reveal shortcomings regarding ethics related issues. The external audits also help us to strengthen our ethics by providing a timely and valuable feedback. Our Vigilance department performs routine checks and conducts preventive study and Chief Technical Examiner (CTE) type intensive examination.

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.

Anti-Corruption Corruption Risk Management Policy

Companies irrespective of their size and nature of business are always at the risk of corruption. Corruption risks exist at all levels ranging from board of directors to executive level. Corruption risks if not managed properly can lead to complex compliance issues which hampers the overall growth and productivity of the organisation affecting all related stakeholders. At NALCO, we are diligently vigilant against corruption. To help us identify potential corruption risk we have drafted Corruption Risk Management Policy. The key principles of this policy are aimed at prevention of corruption. By bringing out this policy, we have established transparency, honesty, integrity and our cultural identity.

102-17 Mechanisms for advice and concerns about ethics
103-1 Explanation of the material topic and its Boundary
103-2 The management approach and its components
103-3 Evaluation of the management approach

Integrity Pact

Trust and Integrity are our core values. Robust character traits, professional work ethics, sound judgement and loyalty are our defining parameters of Integrity. In order to tackle corruption, we have signed Integrity pact (IP) with Transparency International India (TII). 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.

Integrity Index Development

Our Company responded actively to Integrity Index Development initiated by CVC in 2017-18 by participating in the process in a time bound manner and bridging the gaps in the processes in many areas during submission. Performance, integrity perception, enabling systems, process management and compliance are the broad parameters with detailed questionnaire to bring out the level of probity, integrity, efficiency, transparency and compliance in the Organisation. Our Company has scored 79.47% by CVC-IIM (Ahmedabad) in Integrity Index Development project. The score is being assessed and examined by the management by collecting feedback from respective departments and several actions are being taken to improve the score.



Integrity pledge taken by senior officials

Whistle Blower Policy

Whistle blowing helps 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 also covers various malpractices that incur financial irregularities.

Fraud Prevention Policy

We have board approved Fraud Prevention Policy. The prime objective of this policy is to ensure fair dealings with the reported fraud. This policy is applicable to all the employees. We also ensure that this policy is strictly implemented and diligently followed in all our business practices. In the reporting year FY 2019-20, no fraud has been detected on behalf of the company or by its officers or employees. The details of the policy can be found on our website.

Vigilance

Vigilance is defined on the terms of alertness, watchfulness and caution. Vigilance is an integral function like any other function of management such as finance, operation, marketing, material, and contracts, etc. A good vigilance mechanism helps the organisation to ensure smooth functioning of day to day activities. Vigilance protects an organisation from external threats as well as strengthens the internal mechanism.

To tackle corruption, we have a vigilance department. Our Company 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 generally preventive, punitive, surveillance and detection.

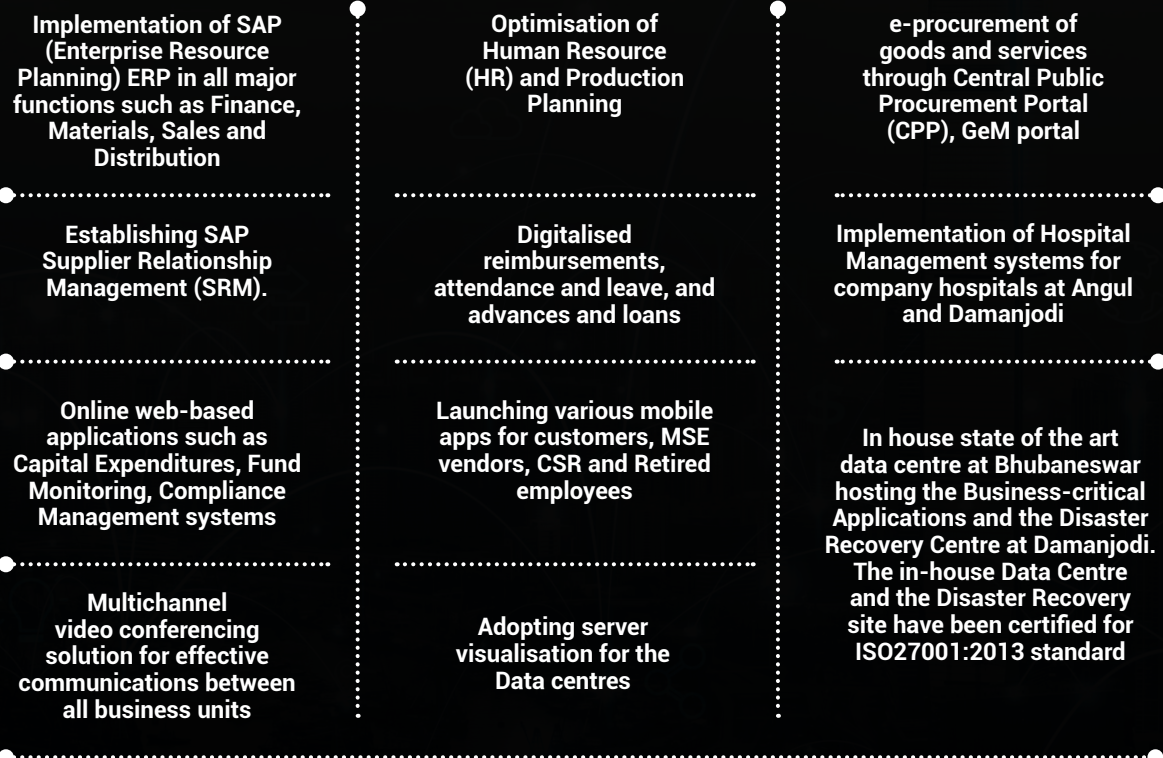


Highlights of Vigilance Functions



e-Governance

Digital transformation is responsible for bringing massive changes in the industry working pattern. By adapting to these new technologies and transformations we bring productivity and ease of business in our process. This has also helped us to grab opportunities to bring out changes and to stand out from our competition. The highlights of our e-Governance initiatives are given below.



For secure and ready access to digitised documents, the e-office Knowledge Management System is being implemented. This system enables a secure and controlled environment for sharing of documents

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 committee members are responsible for providing clarification demanded by our stakeholders. 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.



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.

The detail of the RTI applications and appeals during the reporting period is given below.

Category	Requests	First Appeals
Under Process as on 01.04.2019	16	01
Received during the year (including cases transferred from another Public Authority)	249	48
No. of cases transferred to other Public Authorities	01	0
Decisions where requests/ appeals rejected	91	08
Decisions where requests/ appeals accepted and settled	149	40
Under Process as on 31.03.2020	25	01

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. 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.

organisation and imparting organisational values. We provide regular training to our employees on vigilance and anti-corruption. Regular trainings 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

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

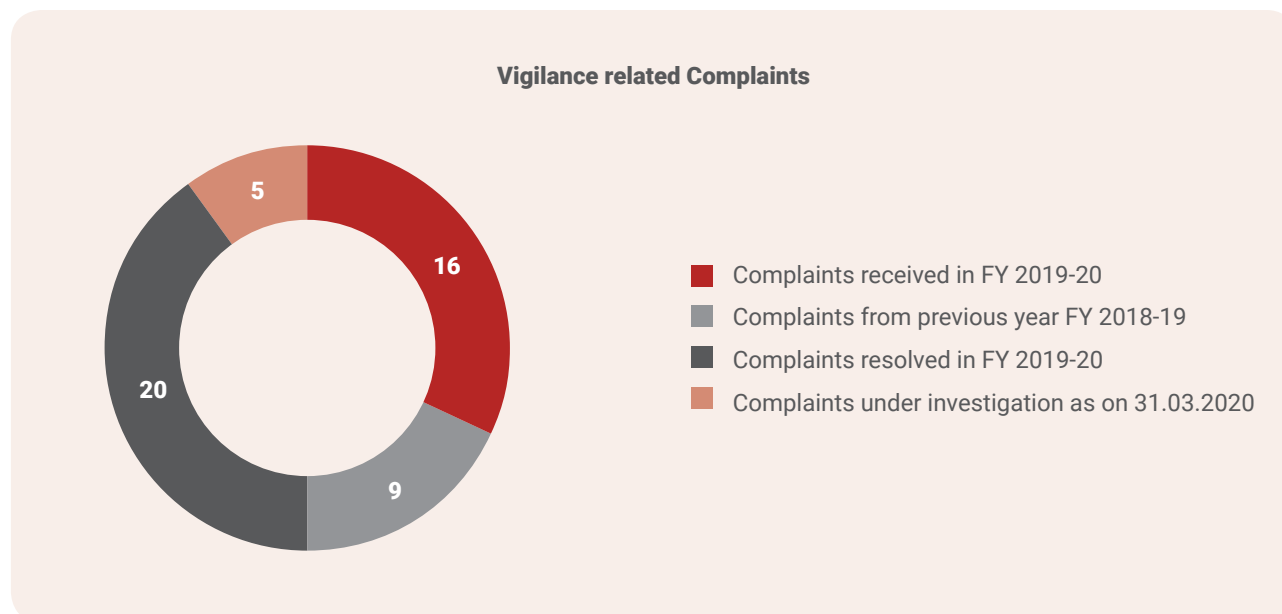
Apart from the trainings listed above we conduct various other trainings in which vigilance officers are given specialised training by CBI Institute to function effectively. Various talks, seminars and discussion on vigilance and anti-corruption forms a holistic aspect our training culture.



Training Details for Anti-corruption and Vigilance

Employee Category	No of Persons Trained			Training Man-days		
	Male	Female	Total	Male	Female	Total
Executives	86	4	90	94	4	98
Non-Executives	39	0	39	39	0	39
Total	125	4	129	133	4	137

Confirmed Incidents of Corruption and Actions taken



KEY IMPACTS RISKS AND OPPORTUNITIES

Enterprise Risk Management (ERM)

We have established a framework to assess, identify and prepare for any threats, hazards, and other potentials disasters that have the potential to impact with our operations and objectives. Our risk management system seeks to mitigate potential risks and promote sustainable operations and financial health in a dynamic and challenging environment.

Our risk management policy is articulated as per the guidelines issued by the government of India. Review of risk reports and advice on remedial measures are done by our risk management committee, which operates at the board level. We perform periodic review to identify new risk areas. Our nominated risk officers maintain risk registers in the prescribed format that is overviewed by our Internal Auditors and Senior Management.



Our Risk Statement

"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."



Opportunities and Challenges

Our Initiatives

Business Growth and Diversification

Growth of the global Aluminium market is driven by development in the transport industry and increase in usage of Aluminium in various industries such as building & construction, power transmission and foil & packaging. Mega spending on infrastructural projects by the Government will provide impetus to demand in the country.



Apart from capacity expansion projects we are venturing into multiple business initiatives such as Aluminium Park in JV with Odisha Industrial Infrastructure Development Corporation (IDCO), to setup a high-end Aluminium Alloy plant in JV with Mishra Dhatu Nigam (Ltd)

Raw Material Security

The current business challenge is to make sure that raw materials are available. on a sustainable basis for our current and future use.



We have extended the leases for the central, north, and south blocks of Panchpatmali Mines. Also, the Government of India has reserved Pattangi Bauxite Mines (75 Million Tons) for NALCO. We are also setting up a Caustic Soda Plant and plan to set up a Coal Tar Distillation Plant in Joint Venture (JV) with GACL and NINL respectively.

Fuel Security

Coal is sourced through various instruments like linkages, e-auction, and imports. Furthermore, depending on the instrument of obtaining coal, its volatile prices proving to be a major risk in the supply chain



We have long term Fuel Supply Agreements with Coal India subsidiaries. The mining lease of Utkal D and Utkal E coal mines has been assigned to us and mining will commence soon. Both coal mines have a combined reserve of 175 million tonnes.

Water Availability

Water availability has a significant impact on ensuring sustainable development. Reducing availability, increasing cost and stricter statutory controls are proving to be a major risk to the availability of water in a sustainable manner which is a key input to operations.



We have the necessary permissions to draw required quantity of water and have achieved zero discharge with respect to wastewater and sewerage water. Treating and recycling wastewater from the production process is taken up on a continual basis. We have also installed Rainwater harvesting in all the major areas to conserve rainwater

Emission Control

Increasing attention to atmospheric pollution and climate change and coordinated global response to same, has resulted in bringing up stringent emission norms. Any lapse in adhering to the updated environmental norms can impact us in a significant way.



At NALCO, we are cognizant of our impact and have taken significant measures to control emissions. Electrostatic Precipitators (ESPs) in Boilers and, Calciners for collection of dust generated are some of them. We diligently monitor consumption of fossil fuels and strive to reduce carbon foot-print by both operational control and technological interventions, to maintain within the norms.

Sustainability Policy and Strategy

A sustainable business strategy aims to positively shape the effect that companies have on the environment and society. We are serious about our impact and social footprint. In order to address the environmental and social challenges, we have drafted a sustainability strategy that is covered in our Sustainable Development Policy. We have aligned our strategy to address our sustainability and business needs. Our sustainability strategy is shaped by our vision, mission, and values that provides a robust framework on focused investment. We are continuously evolving our strategy in tune with stakeholders' expectations.

The thematic areas covered in the policy include the environment, social, and governance. Our sustainability policy guides our actions that create value and positively impact lives through multiple initiatives. We monitor our targets through our well defined Key Performance Indicators (KPIs) and perform an annual review of the same.

SUSTAINABLE DEVELOPMENT POLICY

Sustainable Development is an integral part of our business with specific focus on economic, social, environmental & energy related issues. We also dedicate ourselves to strive for continual improvements in our systems, processes, procedures and work ethos for enhancing satisfaction of all our stakeholders, guided by the following principles.

Guiding Principles

- Relentless pursuit of holistic advancements in Quality, Productivity, Safety, Occupational Health, Innovation & Technology including adoption of Green Technology with a view to enhancing value creation for all stakeholders.
- Embedding integrity, ethical 'Human Rights' practices, transparency, mutual trust & respect with commitment to social responsibility in all our operations for driving inclusive growth and harmonious socio-economic development of communities.
- Aligning our growth with preservation of natural resources; ecosystems & biodiversity; environmental excellence; waste utilisation; energy efficiency and reduction of Green House Gas emissions.

Commitment

We are committed to continually improve with focus on issues pertaining to economic, social, energy conservation and environmental protection to ensure a better planet for future generations.

Security of Raw Materials

In order to ensure the availability of raw material we have taken various initiatives such as extension of lease of bauxite mines, securing lease & developing new Pottangi bauxite mines, renewal of Fuel Supply Agreements (FSAs) for linkage Coal, participation in coal e-auctions, development of allotted Utkal D & Utkal E coal mines, setting up a Caustic Soda Plant in Joint Venture (JV) with Gujarat Alkalies and Chemicals Ltd. (GACL). We also plan to set up a Coal Tar Distillation Plant of 20,000 TPA capacity with M/s. Neelachal Ispat Nigam Ltd. (NINL) based on the Coal Tar generated in NINL's Coke Oven Plant. Details are available in our Annual Report 2019-20 https://nalcoindia.com/wp-content/uploads/2020/09/NALCO_-Annual-Report-2019-2020-1.pdf.

Environmental Strategy

Sustainability has become a key aspect for any organisation. We have adopted the highest standards of environmental excellence in our operations. We have a strong focus on our environmental footprint and have carried out our operations in such a way that it creates minimum environmental impact. Our prime focus is to control our processes, practise effective containment, install energy-efficient technologies and to increase generation of renewable energy, tree plantation, waste management and promote responsible consumption of natural resources. All our operating units are ISO 14001:2015 certified. We have ISO50001 certification for Smelter, Capacitive Power Plant (CPP), and Alumina Refinery. We have always aimed at 100% greener environment and beyond 100% compliance with all the statutory regulations pertaining to the environment.

Responsible Mining

The mining sector faces a lot of challenges with respect to the environmental, social, and governance requirements part. The mining sector plays an important part in national economy. We follow sustainable mining principles. Besides making use of the latest mining technologies and equipment, we completely avoid secondary blasting of strata and have designed our mining practice in such a way that it involves controlled blasting with proper measures for reducing air and noise pollution. Our mining equipment is best in class and well maintained, this adds another layer of prevention for air and noise pollution. Other practices include use of Rippers to avoid drilling & blasting wherever possible, wet drilling in dry seasons, suitable blast design to



avoid excess dust during blasting, blasting during mid-day and break hours, massive plantation, pressurised water sprinkling /dry fog system at vulnerable points of crushing & conveying , water sprinkling by auto sprinklers on haulage road and 100% re-use of top soil and overburden for back filling of mined out areas. Our responsible and sustainable mining practices have earned us 5-star rating from Indian Bureau of Mines (IBM).



Visit of Hon'ble Union Minister Shri Pralhad Joshi to Bauxite Mines



Water sprinkling in mines haul road

Social Strategy

Corporate Social Responsibility (CSR) is the way through which we can discharge our obligations to our community and society at large. Our CSR policy includes our commitment to diverse growth and development. The key purpose of our policy is to chart the area in which our Company shall move forward in terms of sustainability, define governance structure for CSR management and serve as a guiding document for identification, execution, and monitoring of the CSR projects. The Board-level CSR & SD committee monitors the execution of CSR projects in thematic areas

such as education, healthcare, women empowerment, livelihood, rural infrastructure, promoting and restoring cultural heritage, and promoting fitness through sports, etc.

In order to ensure smooth and effective execution of our CSR projects, we have formed NALCO Foundation. We at NALCO work on the grassroots level and make the maximum impact through a need-based approach. We also undertake various capacity building exercises for youths, women, PRI members, and other stakeholders. More details are available in the section on Community Development.

Performance on Business Parameters – Major MoU Parameters

We have signed a Memorandum of Understanding (MoU) with the Ministry of Mines. Targets for different financial, operational, and developmental parameters were set in this MoU. Due to the impact of COVID-19, the declaration of financial results for the financial year was delayed and the MoU score for FY 2019-20 is under process.




Hygiene kit distribution to girl students



CSR project- construction of road in periphery area

Sustainability Development KPIs

Sl. No.	Parameters	Unit	2018-19	2019-20	Change (%)
Economic					
1	Revenue from Operations	₹ Crores	11,499	8,471.84	26.32 ↓
2	Profit Before Tax	₹ Crores	2,740	226.24	91.74 ↓
3	Profit After Tax	₹ Crores	1,732	138.23	92.09 ↓
Environment					
1	Total Water withdrawal from sources	m ³	48,851,713	49,798,313	14.63 ↑
2	Specific Energy Intensity in Alumina Refinery	GJ/ MT of Alumina	12.51	13.20	5.52 ↑
3	Specific Energy Intensity in Aluminium Smelter	GJ/ MT of Aluminium	55.84	56.05	0.39 ↑
4	Specific Net Carbon Consumption in Smelter	Kg/MT	424	422.8	0.28 ↓
Social					
1	Training Man Days	Man Days/ Employee/Year	2.64	1.76	33.33 ↓
3	Spending on Micro and Small Enterprises in Odisha	Crores	361.17	360.84	0.09 ↓
4	Total CSR Spent	Crores	30.35	39.71	30.84 ↑



STAKEHOLDER ENGAGEMENT AND MATERIALITY ANALYSIS

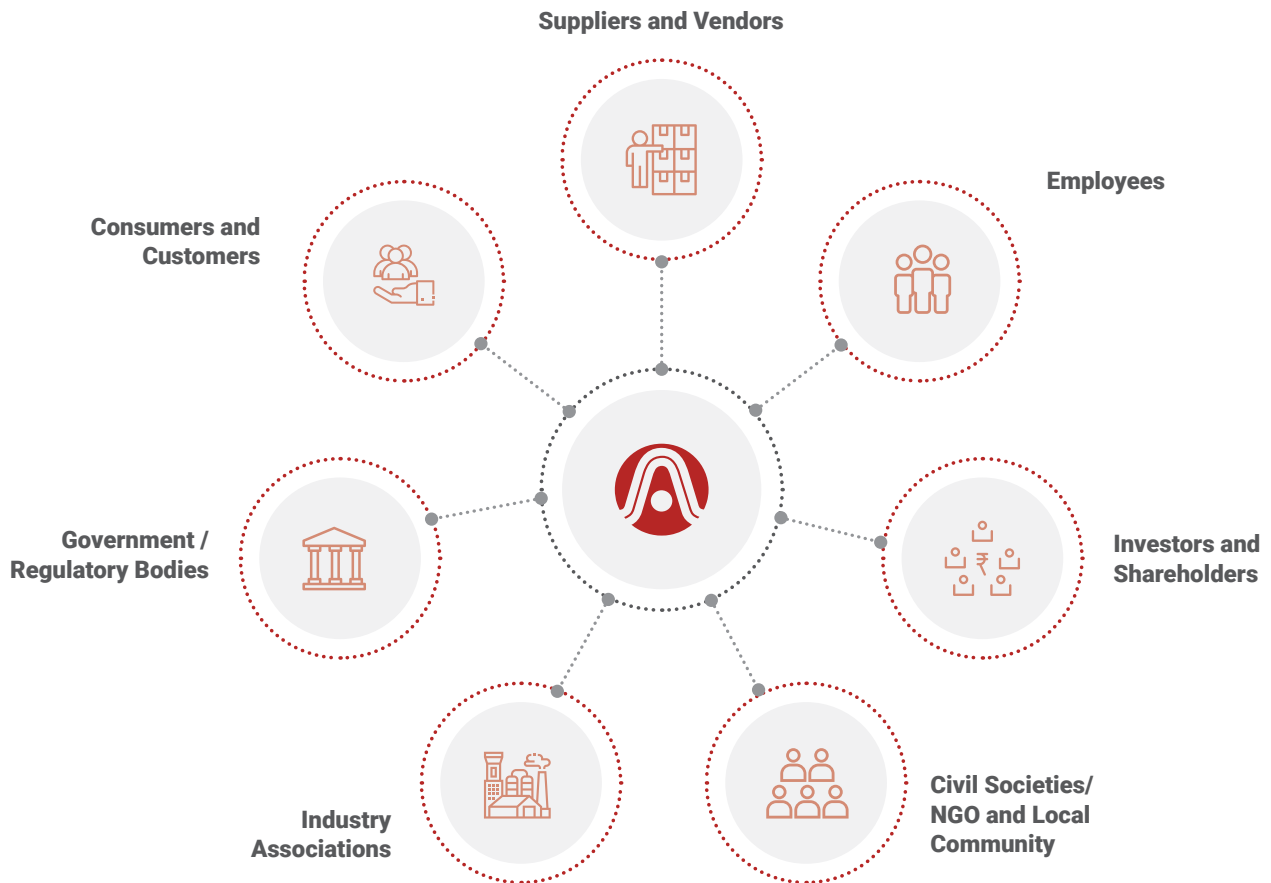
NALCO defines its stakeholders as those organisations and individuals who are affected and who have the ability to affect the company's business. Our stakeholders include our employees, our suppliers and dealers, customers, government regulators and local communities, etc. The same is illustrated in the figure below.

Our management works on the principle that societal needs are to be aligned with business objectives. We focus on gathering opinions, feedbacks and concerns of our stakeholders and reflect the same in the way we operate in order to build enduring relationships with our stakeholders. We ensure that the insights gained out of stakeholder interactions mould our strategy. Through a myriad of formal and informal channels and different ongoing activities, we strive to bond and connect with to our stakeholders. The formal channels of meeting our key stakeholders includes customer meet, annual surveys, suppliers annual meet, vendor meet, customer survey, etc.



We focus on gathering opinions, feedbacks and concerns of our stakeholders and reflect the same in the way we operate in order to build enduring relationships with our stakeholders.

Some of the informal mode of engaging our stakeholders include seminars, trade fair, press and media releases etc. The frequency of interaction with each stakeholder group varies from monthly to yearly communications.



NALCO's Approach to Stakeholder Engagement

Our stakeholders are our partners in creating value towards a better and sustainable world. To facilitate a deeper understanding of our shared goals with our stakeholders, we engage with all our stakeholders. The frequency of engagement varies in accordance to the extent to which the stakeholder group will influence our business. We hold constructive dialogue with our stakeholders and communicate our business goals and long-term vision of our company, the path pursued by us and how the current market trend is affecting our business. These activities help establish trust for the company among our stakeholders. We regularly review the progress we have made and how the inputs from

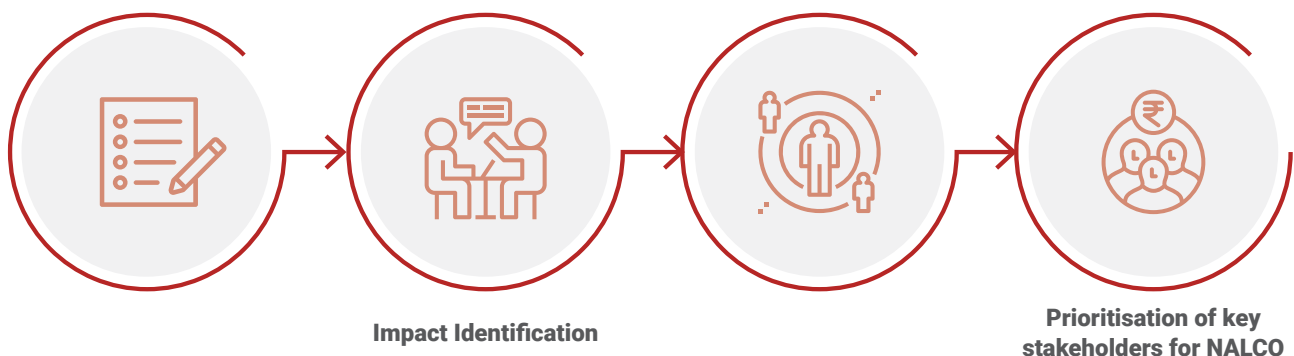
stakeholders have materialised into effective decision making. We have conducted our formal stakeholder engagement in FY 2017-18 for assessing the stakeholder expectations on the three aspects of sustainability i.e., environment, social and economic; and their inputs have been formalised into material topics for the Sustainability Report for FY 2019-20.

Identification of key stakeholders

The stakeholder groups are prioritised based on their relevance to our business and their ability to influence the decisions of NALCO. Our list of stakeholders also constitutes the vast diversity connected to our business which are both internal and external stakeholders.

Stakeholder Inventorisation

Impact on NALCO's decisions





Stakeholder Interaction

Category of Stakeholder Group	Type of stakeholder	Mode of engagement	Frequency of engagement	Key Concerns raised	NALCO's response
Government and regulators	External	<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 and compliances to statutory authorities. Email Communication 	<ul style="list-style-type: none"> Regular but variable 	<ul style="list-style-type: none"> Infrastructure development Capital expenditure Tax and Dividend Labour relation and Labour welfare Corporate Social Responsibilities. Compliance of various rules, acts, regulation and laws 	<ul style="list-style-type: none"> Compliance to government directive and policies Performance MoU with Ministry of Mines Filing of returns, ATRs, compliances and status reports
Shareholders and Investors	Internal	<ul style="list-style-type: none"> Annual General Meetings, Periodic financial and performance reports to shareholders and investors Reports, Memorandum and Press release of SEBI, CAG, Banks and Financial institutions Shareholder surveys and meets 	<ul style="list-style-type: none"> Regular but variable 	<ul style="list-style-type: none"> Profit and return on Investment Financial restructuring and disinvestment of Govt. shares. Share price and dividend Grievance resolution Foreign exchange and exchange rate 	<ul style="list-style-type: none"> Quarterly results, Annual Statements Analysts Briefing and Analysts meet Press release and websites updates Shareholder's grievance committee
Employees	Internal	<ul style="list-style-type: none"> Official communications like office order, notice, circular and hand-outs. E-newsletters, Intranet and web hosting Bipartite and tripartite meetings with labour unions, Collective bargaining Interaction with officers' associations Employee satisfaction surveys Grievance redressal forums 	<ul style="list-style-type: none"> Regular but variable 	<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 information sharing through internal corporate communications Trainings Performance feedback and succession planning Address by top management during office programs/ get-togethers

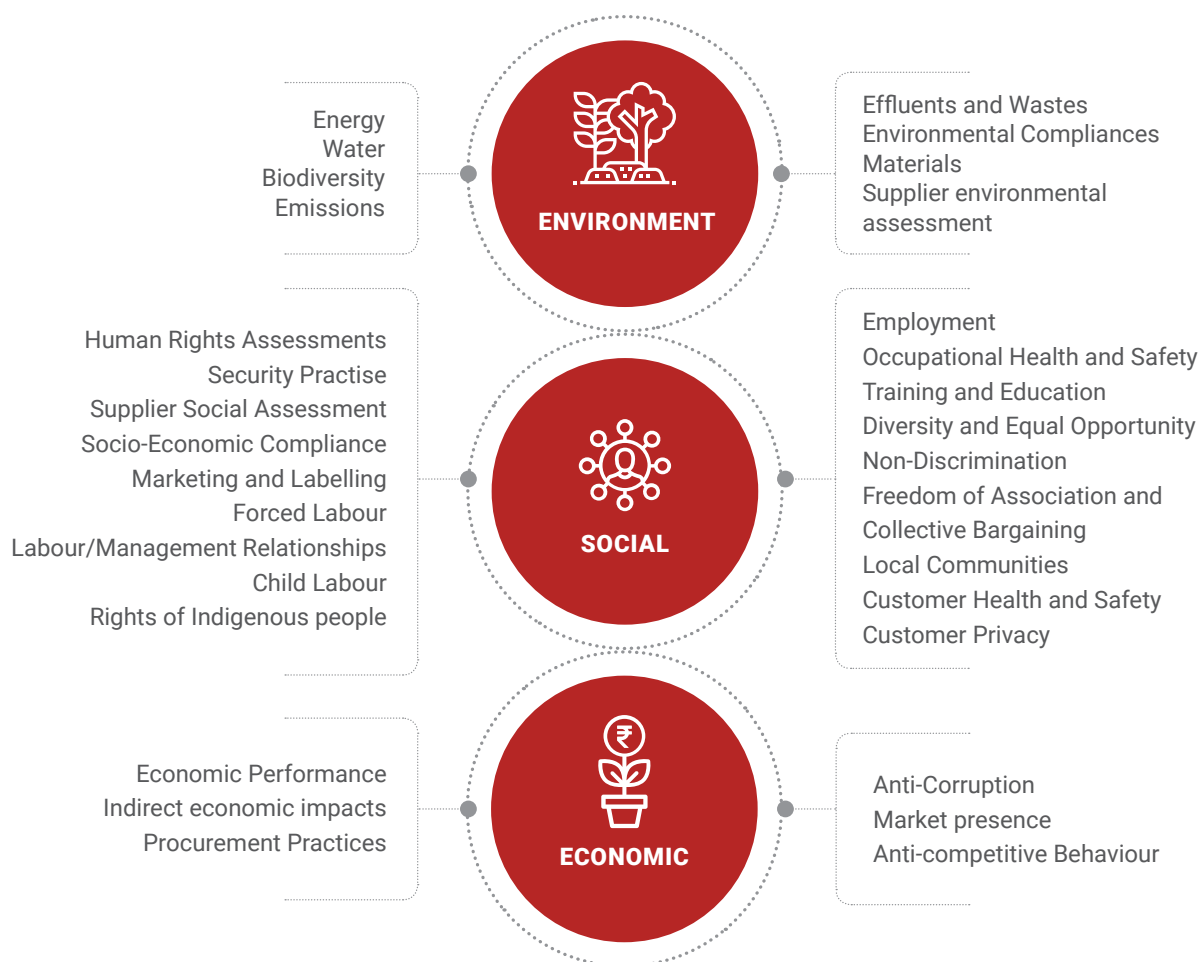
Category of Stakeholder Group	Type of stakeholder	Mode of engagement	Frequency of engagement	Key Concerns raised	NALCO's response
Customers and Consumers	External	<ul style="list-style-type: none"> Regional and national customer meets Customers' plant visits and management interactions Advertisements in print and audio-visual media. Feedback, satisfaction surveys and grievance resolution Product information and enquiries. 	<ul style="list-style-type: none"> Regular but variable 	<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 and Vendors	External	<ul style="list-style-type: none"> Tender and contract Periodic vendor and supplier meet Regional, National and International trade fairs Supplier relationship management 	<ul style="list-style-type: none"> Regular but variable 	<ul style="list-style-type: none"> Special privilege to MSE units Transparency and anticorruption practices Simplified procedure and timely payments. Terms and conditions of purchase Speedy liquidation of disputes and redressal of grievances. 	<ul style="list-style-type: none"> Vendor development and import substitution, E-Procurement and E- Payment Support including financial privilege to MSE units Plant level sub-committee meet at Angul and Damanjodi. Plant level advisory committee meeting at Bhubaneswar
Community/ Civil Society Organisations	External	<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"> Regular but variable 	<ul style="list-style-type: none"> Community needs on infrastructure, employment, education, health, sanitation 	<ul style="list-style-type: none"> Operating mobile health units and organising health camps in periphery villages Sponsoring children from periphery villages for formal education. Other CSR initiatives
Industry Associations	External	<ul style="list-style-type: none"> Conference, workshops and seminars. Trade Fair, exhibitions and industrial expo Membership in different industrial and professional association, confederation, etc. 	<ul style="list-style-type: none"> Regular but variable 	<ul style="list-style-type: none"> Policy issues Statutory regulations International and 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 and professional bodies.



Category of Stakeholder Group	Type of stakeholder	Mode of engagement	Frequency of engagement	Key Concerns raised	NALCO's response
Contractors/ Other Service Providers	External	<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"> Regular but variable 	<ul style="list-style-type: none"> Work culture and quality of supervision Statutory regulations and compliance Health and safety at workplace Welfare measures Working hours and overtime (wages) No Forced labor, child labour, or 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	External	<ul style="list-style-type: none"> Review of business Technology and feasibility 	<ul style="list-style-type: none"> Regular but variable 	<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

Key Concerns Identified

Based on the discussions with our key stakeholders, the following key concerns have been identified. Our materiality assessment has been carried out based on these key concerns.



Materiality Analysis

We conduct the materiality assessment to identify the pertinent issues that will affect the long-term sustainability of the organisation. Our materiality assessment was conducted for the year 2017-18 across all operating sites. The resultant material topics were identified in alignment to the Reporting Principle and guidance for defining content as per the requirements of GRI Standards . We have used a structured questionnaire to capture the perspectives of all stakeholders. The process involved a workshop at the corporate office, which included internal as well as external stakeholders whose views were captured through

informal verbal as well as formal survey questionnaires, and response to the questionnaire survey from different stakeholders at each site. The exercise culminated with the prioritisation of the material topics based on the current business requirements and market scenario. 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 topics were plotted on a materiality assessment matrix and selected based on its relevant importance to the business and the stakeholders. Twelve material topics have been identified from the matrix below. There are no significant changes in scope or topic boundary compared to previous year.

Materiality Matrix Material Topics





We have identified the following key topics in the process and their topic boundaries :

Material Topics		Topic Boundary
 Economic Performance	Inside	
 Procurement Practices	Inside	
 Anti-Corruption	Inside	
 Energy	Inside	
 Materials	Inside	
 Water	Inside	
 Emission	Inside	
 Effluents and Waste	Inside	
 Employment	Inside	
 Occupational Health and Safety	Inside	
 Training and Education	Inside	
 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/2020/09/NALCO_Annual-Report-2019-2020-1.pdf



ECONOMIC

Captive facilities at Vizag Port



Economic Performance

Economic performance is of paramount interest for us and for all our investors. Our economic performance reflects our efforts in any particular year. We believe that by following the triple bottom-line approach of business sustainability we can not only do business in much better way but also exceed the expectations of all our stakeholders. Nevertheless, our economic performance is strongly influenced by the prevalent market scenario in both the domestic and global context.

Bauxite is the raw material for Alumina. In 2019 Calendar Year, the world Bauxite production was 339.1 Million Tonnes (Mnt) higher by 3.7% as compared to previous year. Whereas, the global output of Metallurgical Grade Alumina (MGA) was 123.53 Mnt lesser by 1.1%. However, India registered a YoY growth of 2.1% in the production of Alumina. The total Alumina produced was 66.36 lakh ton out of which we contributed 20.9 lakh ton, which is about 31.5%. The year was marked by low price realisation for Alumina.

As for Aluminium, during 2019 Calendar Year, world production of Aluminium at 63.08 Mnt registered a fall of 1.3%. The overall consumption of Aluminium also registered a decline of 1.75%, 64.11 Mnt. Aluminium's price on London Metal Exchange (LME) averaged out to be around USD 1,749 per Mnt, which was 14.1% lower as compared to FY 2018-19. Global Aluminium stocks at the end of financial year 2019-20 stood at 13.00 Mill. Tonnes, registering a growth of 6.45% reflecting a depressed cycle.

Opportunities and Challenges

We are alert to the various opportunities and threats faced by Aluminium industry. The industry faces a significant challenge such as lack of enough downstream production, lack of scope for value addition in our own country, and dependence on coal for power generation for its production, etc. Volatility in LME prices, fluctuations in US Dollar exchange rates, fluctuation in global production of Aluminium metal, slowdown in the global economy and growing competition from secondary producers in the domestic market are the regular concerns.

OPPORTUNITIES



Most abundant metal in the earth's crust



Sixth most ductile and second most malleable metal present on the earth.



Exceptionally light weight and impervious to dust, possesses high degree of conductivity, and exhibits significant strength when alloyed.



Widely used in food & packaging and pharmaceutical industries, as it is non-toxic in nature, preserves food for prolonged times, inhibits growth of microorganisms.



Good electrical conductor and thus is used frequently in electrical transmission lines.



Used as primary propellant for solid rocket booster motor in space shuttle due to its high volumetric energy density.



Aluminium is corrosion resistant, highly reflective and higher recyclability.



Demand for Aluminium in the domestic market is expected to grow by 8 to 10%.

CHALLENGES



Ramping up production of downstream products.



Shoring up investment in R&D product can lead to the improvisation and development of world-class or niche products.



Tiding over Global economic slowdown.



Turning to alternatives of coal for power generation, which is neither environment friendly nor cost competitive.

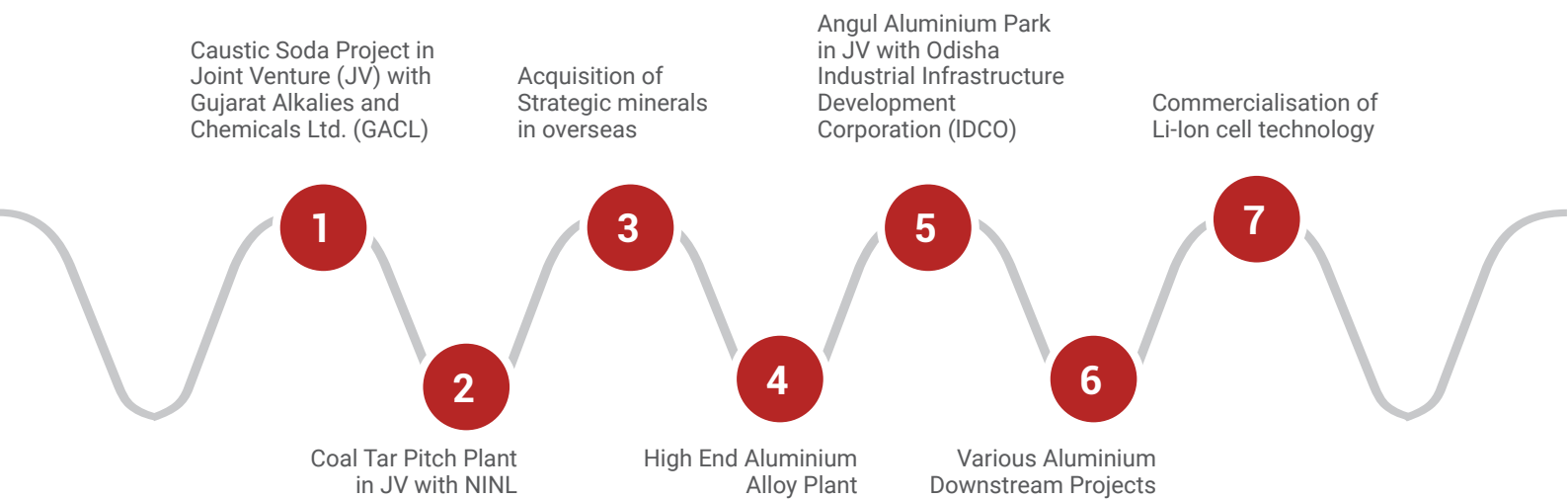


Countering the threat of cheap imports flooding the market. In absence of any safeguard measures or tariff barriers to restrict imports into India, possibilities of dumping surplus material in India by overseas countries appears to be more, which will affect the domestic primary metal producers.



Effectively minimising environmental hazards associated with discharge of effluents like red mud or air pollution.

The identified functional and business initiatives are under various stages of implementation.



In order to address opportunities and challenges as mentioned above, we have taken multiple measures. We have formulated a corporate plan which includes a 3-year action plan, 7-year strategy and 15 years vision to improve upon the top line and bottomline of our company. Our corporate plan helps us to obtain competitive edge in the market by identifying business and functional growth areas. Our vision and mission will help us to ensure steady growth in all dimensions of business. 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.



NALCO R&D centre NRTC at Gothapatna, Bhubaneswar



Research and Development (R&D) Projects

In continuation of our stellar R&D successes in past years highlights of the R&D projects in 2019-20 are given below. During the year, one in-house R&D project and four collaborative projects were completed. As on 31st March 2020, 05 in-house R&D projects and 22 collaborative R&D projects were in progress.



As on March 31st, 2020, 05 in-house R&D projects and 22 collaborative R&D projects were in progress.

1 Commercial production and billing of cookware sheets was completed on January 06, 2020.

2 With an objective to reduce specific energy consumption in smelter plant, we have signed an agreement with Rio Tinto Alcan (RTA) France, to develop a low energy cell technology.

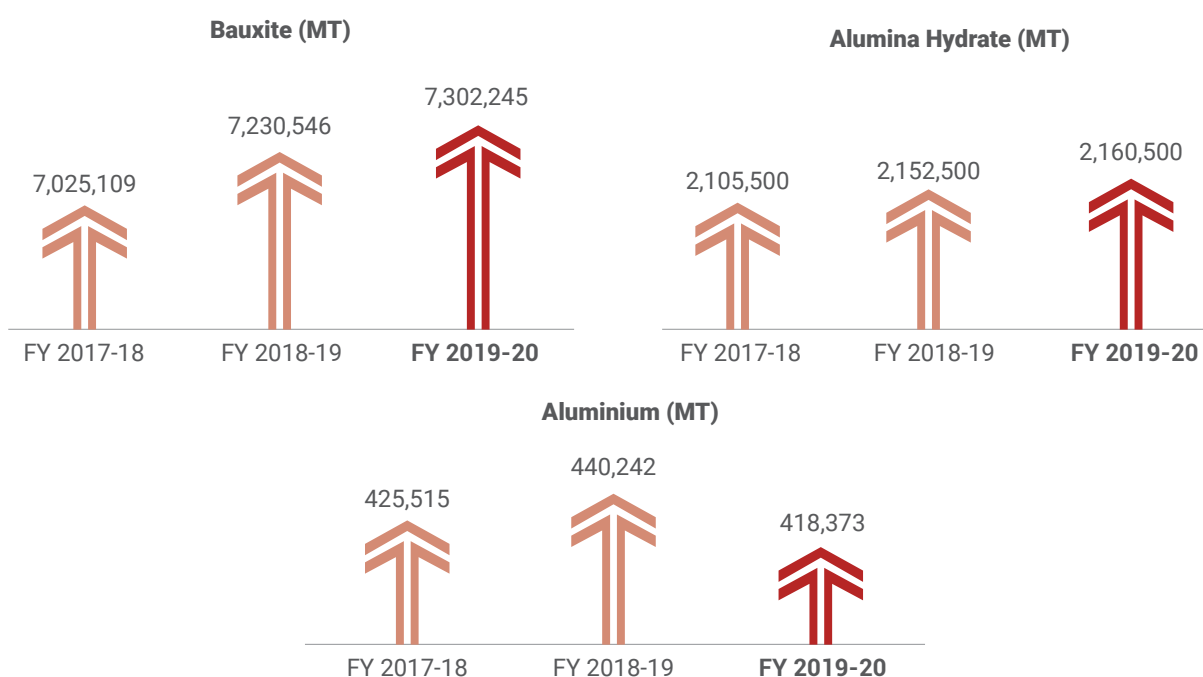
3 We are undertaking various R&D projects for Extraction of Gallium and other rare earth elements from Bayer Process liquor and Alumina waste and we are also conducting studies on the suitability of red mud for sacrificial core catcher material is in progress in association with BARC.

4 We have also undertaken various collaborative R&D projects such as Development of electronic material for device fabrication using NALCO red mud, New applications of Aluminium based material in solar light/ roof sheets and in battery having superior thermal and electronic properties, Atomic scale aluminium in interconnects in electronic device, Developing downstream applications of strip cast aluminium alloy.



Production Performance

In the FY 2019-20, we have registered export sales of INR 3,510.92 Crores and domestic sales of INR 4,914.83 Crores. More details about our financial performance can be found in our Annual Report FY 2019-20, page number 266.



Direct Economic Value Generated and Distributed

Sr. No.	Particulars	FY 2017-18	FY 2018-19	FY 2019-20
1	Direct Economic Value Generated (Values in Crores)			
a)	Revenue from operations	9,618.31	11,499.33	8,471.84
b)	Revenue from other sources	299.65	325.87	272.58
	Total	9,917.96	11,825.20	8,744.42
2	Economic Value Distributed (Values in Crores)			
a)	Operating expenses (Excluding employees' wages and benefits)	6,442	7,013	6,524.11
b)	Employee wages and benefits	2,261	2,072	1,994.07
c)	Payments to providers of capital	908.48	978.82	513.04
d)	Payments to government (Tax on PBT)			
	Corporate Tax	696.42	1024.65	151.40
	Dividend distribution Tax	184.94	212.3	105.46
	Total economic value distributed (a+b+c+d)	10,510.67	11,301.04	9,288.08
3	Economic Value Retained	-592.71	524.15	-543.66
4	Additional information on Expenditures included in operating expenses (Values in Crores)			
	Community investment			
a)	CSR expenses	29.01	30.35	39.71
	Total community expenses	29.01	30.35	39.71
5	Horticulture (Green belts within and vicinity of the plants)	9.3	10.22	11.64

Financial Implications and Other Risks and Opportunities due to Climate Change

We are aware about the impacts and challenges that climate change yields in our business. Extreme weather events like severe cyclones at our plant locations can disrupt movements and production and cause economic loss. We understand the fact that we are resource heavy industry and our operations are energy intensive. Climate action related risks give rise to abrupt increase in financial risks on a larger scale. These risks can alter the cost structure our products and render us un-competitive. In the supply chain the financial impacts may arise due to possible need to switch to the costlier imported sources that may arise due to closure of domestic supply sources as a result of climate action by Government. Similar

climate actions by Authorities may force us to switch over to alternative fuels e.g. gas or low sulphur fuel from furnace oil which poses significant financial impact. We are in the process of assessing the risks due to Climate change. We continuously monitor our energy performance in order to reduce emissions. All our operational units are ISO50001 certified and are a part of Perform, Achieve and Trade (PAT) cycle scheme of BEE (Bureau of Energy Efficiency), which provides the opportunity of trading our surplus Energy Saving Certificates. In addition, we have undertaken multiple initiatives such as wind projects, rooftop solar installation, tree plantation drives etc. We also reckon that, global action on climate change will drive the demand for Aluminium products which will have a positive impact on business performance.



Defined Benefit Plan Obligations and other Retirement Plans

Defined Benefit Plans

Defined benefit plan offers a guaranteed retirement benefit to our employees. We have several plans available to our employees post retirement. The details of the benefit plans are as below:

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

Post-retirement medical benefit: This 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 or government hospital or hospitals listed by our companies. Or employees can also avail treatment as outpatient subject to maximum ceiling of expenses fixed by the company.

Settling in benefit on retirement: This benefit is available to the employees who are superannuated, retired or terminated of their services. Under this scheme employees can avail a transfer in settlement.

NALCO benevolent fund scheme (NBFS): 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.

NALCO retirement welfare scheme (NRWS): 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.

Compensated absences: Under this scheme our employees are compensated for their remaining leave.

Long service rewards: Applicable to the employees who completes 25 years of service, they are rewarded one-month basic pay and DA.

NALCO employee's family financial assistance rehabilitation scheme (NEFFARS): Under this scheme, in the event of disablement or death of any of our employee, we deposit a prescribed amount as a monthly benefit to the employee or nominee.

Net liability arising from defined benefit obligation (Values in Crores)

Sl. No.	Particulars	As on March 31, 2020		
		Non-Current	Current	Total
1	Post-retirement medical benefits scheme (PRMBS)	135.39	5.03	140.42
2	Settling in benefit on retirement	17.27	3.32	20.59
3	NALCO benevolent fund scheme (NBFS)	2.41	0.58	2.99
4	NALCO retirement welfare scheme (NRWS)	12.07	0.45	12.52
5	Retirement gift	7.08	0.18	7.26
6	Compensated absences	383.08	44.49	427.57
7	Long service rewards	11.01	0.53	11.54
8	NALCO employee's family financial assistance rehabilitation scheme (NEFFARS)	25.94	6.15	32.09
9	Gratuity (Funded)	00.00	55.98	55.98

Supply Chain

Supply Chain at NALCO

We consider supply chain as a crucial part of our business. We have engaged Medium Small and enterprises (MSEs) and local supplier in our value chain. As of FY 2019-20 we have a a supplier base of 2,064 total number of suppliers. Our suppliers are primarily from India, but we also imported from 20 different countries. Our suppliers include raw material suppliers, plant and machinery suppliers, spare part and consumables suppliers, transporters and service providers. In FY 2019-20 we made a total payment of INR 3,904 Crores to our suppliers.

Procurement Practices

At NALCO, we are expecting our suppliers to be compliant of our policies and procedures. We have developed our own supplier code of conduct based on guidelines provided by Government of India. We conduct regular vendor audits to ensure maximum compliance.

We organise Buyer-Seller meet and support various supplier development programs for MSEs. As far as our raw material procurement is concerned, we source Bauxite from captive mines. Our coal supply is met through Fuel Supply Agreements with Coal India Limited (CIL), e-auction coal, or imported coal. For other raw materials

such as Caustic Soda, lime, Aluminium Fluoride, CP Coke, CT Pitch etc. we use multiple networks of procurement. As of now, there are no changes in our organisational supply chain practices.

Proportion of Spending on Local Suppliers

We are supportive of local vendors and make sure that they are given a fair chance to participate in the business. Our local vendors are situated all over Odisha, supplying various commodities and goods that are needed for our production activities. In the FY 2019-20 we have procured materials goods and services worth of INR 752.24 Crores on our local suppliers (Excluding Coal procured from Mahanadi coalfields of Coal India Limited) which is 19.27% of our total supply chain cost.



Vendor Development Program at Angul



Meeting and interaction with vendors at Bhubaneswar

- 102-9 Supply chain
- 102-10 Significant changes to organisation and its supply chain
- 103-1 Explanation of the material topic and its Boundary
- 103-2 The management approach and its components
- 103-3 Evaluation of the management approach
- 204-1 Proportion of spending on local suppliers



Ancillary Development

We also have also formulated an Ancillary development policy that promotes the development of local vendors. For broad circulation of services provided by Micro and Small Enterprises (MSEs) we have developed an app service called NALCO Micro and Small enterprise Yogayog Application (NAMASYA). We have initiated various vendor development programs to enhance technical aptitude of our local vendors. As a further move towards local vendor empowerment we have also waived off EMD fees

for tendering purposes for vendors based out of Odisha. 358 number of items are reserved for MSEs, including Ancillaries, as per Govt. Guidelines for procurements by NALCO. Some of the major items are hand gloves of all types, safety helmets, polythene film, bandage cloth, bags of all types etc. The procurement of products produced, and services rendered by MSEs (Micro and Small Enterprises) of Odisha including Ancillary Units for FY 2019-20 stands at Rs 360.84 Crore (as against Rs 361.17 Crore in previous FY). We organised 10 vendor meets (including MSEs & Ancillaries) in 2019-20.

Ancillary Development (Values in crores, unless stated)

Sl. No.	Purchase from Local Suppliers (INR)	FY 2018-19	FY 2019-20
1	Total annual procurement*	1,764.03	1,558.62
2	Total value of goods & services procured from MSEs	472.53	484.51
3	Total value of goods & services procured from only MSEs owned by SC/ST entrepreneurs	12.88	13.77
4	Total value of goods & services procured from only MSEs owned by women entrepreneurs	5.45	3.50
5	Percentage of procurement from MSEs (Including MSEs owned by SC/ST & women entrepreneurs) out of total procurement*	26.79	31.08
6	Percentage of procurement from only MSEs owned by SC/ST entrepreneurs out of total procurement*	0.73	0.88
7	Percentage of procurement from only MSEs owned by women entrepreneurs out of total procurement*	0.31	0.22
8	Total number of Vendor Development programmes for MSEs	11	10

*Excluding procurement of Coal, Fuel Oil, Caustic Soda, ALF3, Synthetic Flocculants, Steel, Cement, Bearings, Lubricants, Proprietary items, imported items and Contracts for professional services/consultancy services/major turnkey contracts/contracts linked to specific technology

A photograph of a lush green park. In the foreground, a dark, wet paved path curves through the scene, reflecting the surrounding greenery. The path is bordered by a low concrete curb. Beyond the path, a well-maintained green lawn slopes upwards. Several trees of varying heights and types are scattered across the lawn, including tall palm trees and leafy deciduous trees. The background shows more trees and a glimpse of a white building. The overall atmosphere is serene and natural.

***ENVIRONMENTAL
EXCELLENCE***



We have an Environment policy in place that encompasses all our business operations. All our sites have ISO 14000:2015 certified Environment Management Systems (EMS).

Environmental Responsibility is one of our key commitments. As a reputable Navratna CPSE, we are whole-heartedly aligned with India's commitment to environmental stewardship and emissions reduction across sectors. Through a diverse set of initiatives such as sustainable bauxite mining, consumption optimisation, recycling and reuse of waste and water, zero liquid discharge and energy conservation, we have consistently exhibited excellence in our environmental initiatives.

We have a efficient system in place to assess and incorporate the environmental threats, opportunities and challenges. Our top management is deeply involved in evaluating and ratifying the policies and decisions in environment-related aspects of the business. We have an Environment policy in place that encompasses all our business operations. All our sites have ISO 14000:2015 certified Environment Management Systems (EMS). We endeavour to manage our environmental footprint in the best possible manner. We have established regular energy audits and full-fledged energy management systems at our CPP, Smelter and alumina Refinery, which are certified to ISO 50001 standards. Environmental performance monitoring and strategies are initiated and implemented by our competent SHE and Energy Management teams.

Some of the key aspects of environment management managed by our teams include continuous monitoring and enhancement of our emission performance, rehabilitation of mined-out areas, fly ash utilisation, and various other environmental innovations.

Minimising the GHG and pollutant emissions from our operation is one of our key focus areas. We have adopted best-in-class pollution control technologies to ensure conformance to the present and upcoming norms. We have laid stress on deploying different energy-saving initiatives at all our sites, which have been effectively able to reduce our emissions. Holding testimony to our commitment to reduce our energy consumption and emission, NALCO's Captive Power Plant (CPP) was awarded Odisha State Best Performance Award 2019 (Topmost award) for energy conservation in the category of CPP- above 100 MW at the state level celebration of National Energy Conservation Day held on 14th December 2019.

Our environmental commitment goes far beyond compliance, to explore all aspects of the environment. We have been gradually progressing on reducing intake of freshwater, rainwater harvesting, recycle and reuse capacity, through various in-house and collaborative research and development. We have made significant progress in the rate of rehabilitation and bauxite residue storage rate. Below are the key environmental initiatives that have been adopted by us.



World Environment Day at M&R complex Damanjodi



Ozone layer prevention day with school children at Damanjodi



Plantation at Bhubaneswar on World Environment Day

Highlights of Environmental Initiatives taken in FY 2019-20



Smelter

- ✓ Online continuous laser-based monitoring system for fugitive fluoride installed at pot rooms G & H.
- ✓ Recycling Treated Water for STP of Township of S&P complex.
- ✓ 230 MLD of water recycled through defluorination treatment.
- ✓ Garlanding drain along with concreted sump & pump house around the Hazardous storage area.
- ✓ Construction of emulsion storage & processing tanks.



Captive Power Plant

- ✓ Tamper-proof real-time transmission of online monitoring data to the server of CPCB and SPCB with data logger facility.
- ✓ Organic waste converter (Food waste composting machine) has been installed at main canteen and the food waste is being converted to compost for use in horticulture purpose.
- ✓ Around 500,784 MT of dry ash has been supplied to Brick manufacturer. Around 401,545 MT of pond Ash has been supplied to NH for road construction.



Refinery

- ✓ STP-III Revamping was completed and same made compliant to revised discharge norm.
- ✓ Unit #2 Boiler ESP (Electrostatic Precipitator) revamping completed.
- ✓ Use of discarded Filter cloth (plastic waste) in CPCB authorised Cement plant.
- ✓ One Bio digester installed to convert organic wastes/food wastes of plant canteen into compost for plantation.



Mines




- ✓ Installation of a biogas plant at the Canteen of mines to treat the organic food waste material to generate biogas.
- ✓ Three nos. of continuous ambient air quality monitoring station were established at the South Block.
- ✓ 100,274 trees saplings planted in and around Mines.



Environmental Risk and Concerns at Business Units

All our business units undergo a bi-annual audit of ISO 14001 environmental management system which includes the process of identifying environmental aspects, impacts

and mitigation measures the concerns identified as high risk are prioritised and monitored to ensure business continuity. Our R&D has been instrumental in mitigating our concerns in the areas of waste management, water management and biodiversity. The key concerns raised by the business units in FY 2019-20 are detailed below.

Business Unit	Concern	Mitigation
 Alumina Refinery	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 ETP 2. Recycling of return water from ash pond is reused for ash slurry making. 3. 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 authorised recycler for making brick and other related products; balance disposed to redmud pond 2. Extraction of Iron concentrate and Gallium from Redmud is being explored. 3. Utilisation of fly ash for bricks, cement, road construction, etc
 Smelter	Air Pollution: Emissions from the FTP stacks, PFC emissions from smelting pots	<ol style="list-style-type: none"> 1. Monitoring through CEMS 2. The ALPSYS pot regulation system minimises 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
	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 concrete floor sheds. Small quantities of Carbon & a refractory portion of SPL are stored separately. 2. Dross is re-cycled and also sold to authorised recyclers 3. Shot blasting waste is disposed of in common Hazardous waste landfill
 Captive Power Plant	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's 2. Sprinklers and Dust extraction are facilitated at Coal and Ash Handling areas 3. Heat recovery from flue gas to reduce coal consumption
	Water Pollution: Effluent water, Sewage, Surface water runoff	<ol style="list-style-type: none"> 1. ETP present at sites 2. ETP to process effluent 3. Decanted water from ash pond used in make ash slurry 4. STP water is treated for horticultural use 5. Surface water runoff used as a hydrant in firefighting.
	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 authorised parties for reuse. 2. Ash utilised 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 authorised recyclers.



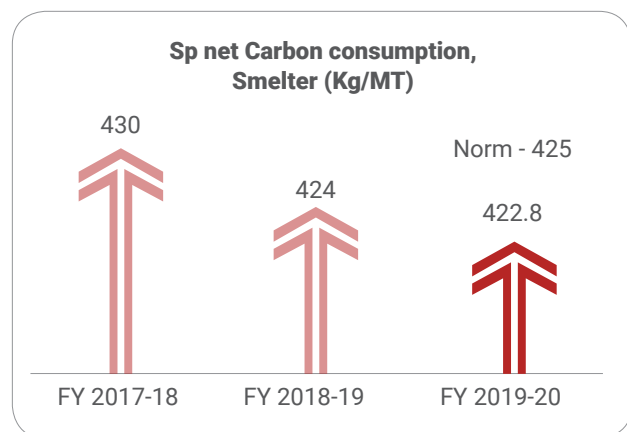
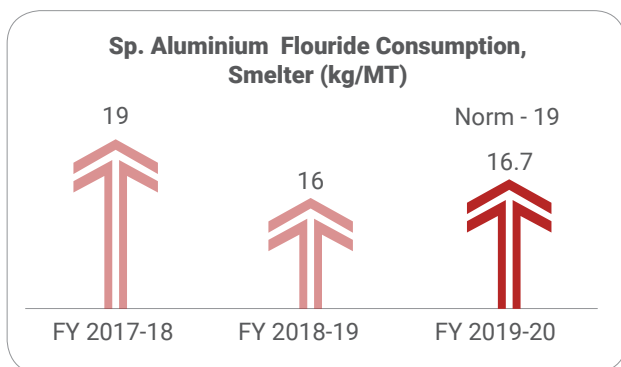
Mines

Air Pollution: Emissions due to movement of heavy vehicles, Emissions from conveyors and mining activities	<ol style="list-style-type: none"> 1. Regular maintenance of vehicles. 2. Spraying water on haul roads and stockpile area 3. Suitable blast design and delayed blasting using NONEL detonators to minimise dust generation. 4. Installation of dry fog system at Crusher and Conveyor to suppress dust and prevent dust generation 5. Adoption of vacuum suction/wet drilling in all drill machines 6. 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 areas 2. Collection of rainwater in the mining area in sumps for groundwater recharging 3. Treated water from canteen and vehicle wash area is completely reused for dust suppression and plantation
Sound Pollution: Noise due to mining operations like blasting	<ol style="list-style-type: none"> 1. Suitable blast design and delayed blasting using NONEL detonators to minimise noise 2. Plantation to reduce propagation by increasing the path of sound
Solid Waste Pollution: Overburden material from the excavation of minerals	<ol style="list-style-type: none"> 1. 100% reuse of topsoil and reuse of overburden for backfilling of mined-out areas
Soil Contamination: 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

Material Consumption

We attach due priority to responsible consumption of input raw materials as non-renewable natural resources. This helps us to focus on resource conservation while improving our efficiency. We continuously monitor and control our resource consumption with emphasis on following best practices and benchmarks scrutiny. and norms set by our Technology Committee

We continue to work towards resource conservation through adoption of new technologies, process redesign and eliminating wastage. We have achieved to reduce our specific net carbon consumption, an indicator of our consumption of CP Coke & CT Pitch, gradually over the past years. The trend for specific consumption of our key raw materials for the past three years can be seen below.





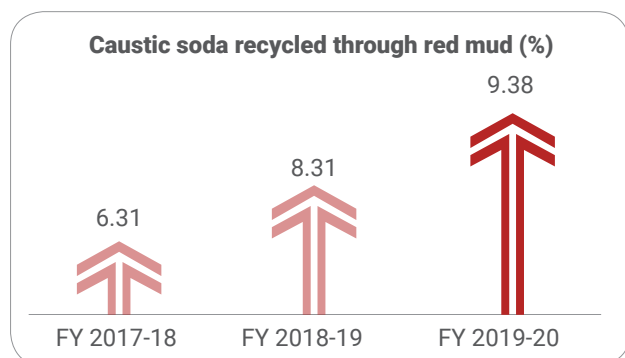
Given below is the list of materials that have been used in FY 2019-20

Materials consumed		Unit	Source	FY 2017-18	FY 2018-19	FY 2019-20
Raw Material	Alumina	MT	Internal Production	826,295	851,208	809,046
	CP Coke	MT	External Suppliers	163,634	185,593	166,472
	CT Pitch	MT	External Suppliers	38,127	42,168	38,182
	Bauxite	MT	Internal Production	6,918,511	7,230,546	7,544,704
	Caustic Soda	MT	External Suppliers	210,999	225,754	246,478
Associated	Aluminium Flouride	MT	External Suppliers	8,014	7,145	7,057
Process Material	Wheat Bran	MT	External Suppliers	1,480	-	-
	Lime	MT	External Suppliers	63,071	63,388	64,714
	Explosives	MT	External Suppliers	967.25	570.38	434.83
Packaging Material	VSI HDPE fabric	m ²	External Suppliers	240,462	679,500	577,750
	Wood in wooden pallets	m ³	External Suppliers	12,916	1,244	45,113
	Steel Straps	MT	External Suppliers	249	237	263
	Polyester Strap	MT	External Suppliers	74	75	75

Recycled Material Consumption

Aluminium is inherently useful and efficient for recycling. We have identified and developed various opportunities to utilise this property of Aluminium and have utilised approximately 3,991 MT of Aluminium Scrap as recycled input materials.

During the processing of bauxite into alumina, red mud is generated as a residue. We wash and thicken this red mud till the caustic liquor carried by it is minimised. It is then pumped and stored in a red mud pond. However, there is some caustic soda that is lost along with the red mud., In the red mud pond the solids settle down and water clarifies to the surface. This water contains approximately 2-3 Grams Per Litre (GPL) of caustic soda, and hence, pumped back to the plant, thus reclaiming the caustic from the red mud. The caustic is utilised to wash the red mud and for other miscellaneous purposes.



Energy Consumption

In our company great emphasis is laid on energy efficiency, energy conservation initiatives and innovations in line with our Energy Policy that guides us in enhancing energy performance.

We are part of National Mission on Enhanced Energy Efficiency by the Bureau of Energy Efficiency, Ministry of Power, which puts the onus on us to become energy efficient and contribute to the mitigation efforts towards climate change and adapting greener forms of energy. Also, as aluminium production is energy-intensive, these initiatives



We are part of National Mission on Enhanced Energy Efficiency by the Bureau of Energy Efficiency, Ministry of Power, which puts the onus on us to become energy efficient.

will hand us a competitive advantage by helping us cut the total cost of production. Therefore, we commit wholeheartedly to energy conservation efforts and achieve the targets and objectives in line with our energy policy. In 2019-20, Aluminium Smelter has achieved lowest ever specific DC electrical energy consumption. Our Smelter & Power complex has achieved Perform-Achieve-Trade (PAT) cycle-II (2016-17 to 2018-19) target with Specific Energy Consumption (SEC) reduction by 20.08% exceeding the target of 6.39%. Similarly, our Alumina Refinery has achieved PAT cycle-II (2016-17 to 2018-19) target with Specific Energy Consumption (SEC) reduction by 13.38% exceeding the target of 5.83%.

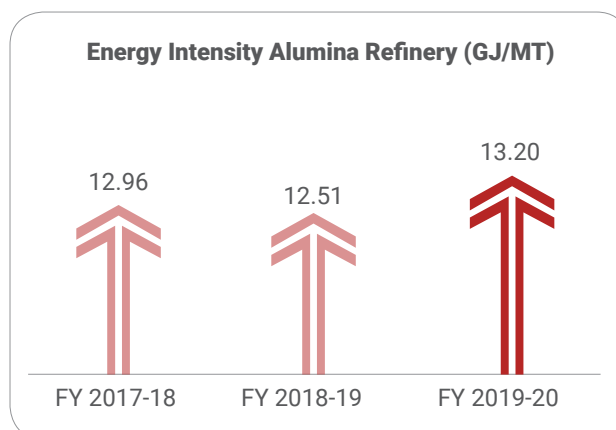
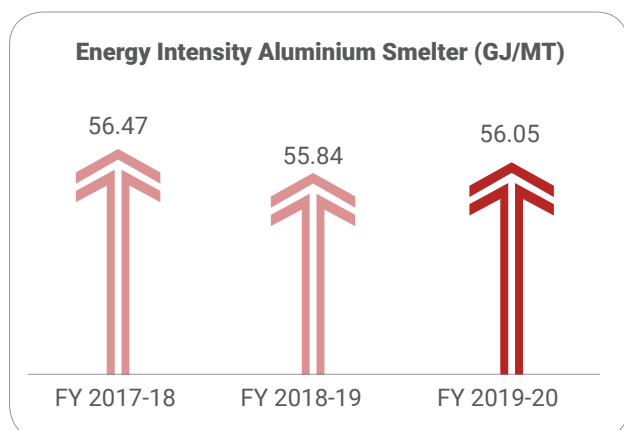
We are constantly monitoring our energy performance. We strongly discourage unnecessary or wasteful energy consumption. The total energy consumption for the current reporting year is 106,531,030 GJ. This includes the usage of fuel and energy consumption due to the use of electricity imported.

Energy Intensity

We are in constant approach to reduce the energy intensity at an organisational level. We are taking initiatives to reduce our overall impact and confident that we will be able to reduce our overall impact in coming years.

Fuel	Unit	Energy Consumed 2019-20
HFO	GJ	8,008,708
LDO	GJ	165,913
Coal	GJ	97,040,734
Diesel	GJ	275,682
LPG	GJ	925
Electricity from Grid	GJ	1,108,177
Electricity exported to Grid	GJ	(-) 69,109
Total	GJ	106,531,030

For Aluminium smelter plant, the primary source of energy consumption includes HFO, LDO, HSD, LPG, and electricity and for Aluminium refinery plant the primary source of energy consumption includes HFO, LDO, coal, and electricity Energy ratio being considered for the quantification is total energy consumed to total production in MT. All the energy consumption sources are well within the organisation.



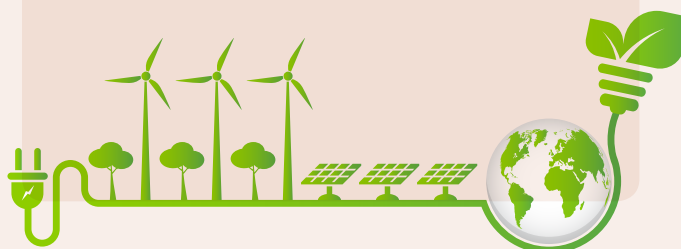


Energy-Saving Initiatives

Some of the key initiatives taken by our company in the current reporting period:

- ✔ Graphitisation of 95 potshells in pot line was carried out so as to reduce the power consumption in Smelter pot lines.
- ✔ Chemical cleaning of condensers in CPP Unit #4 and Unit #9 were carried out. Improvement in condenser vacuum near to design value has been achieved, thereby resulting in saving of coal.
- ✔ Replacement of seven old reciprocating air Compressors was carried out in CPP with new energy efficient Screw Compressors. This has helped in reduction in Auxiliary Power Consumption.
- ✔ At Refinery, use of dewatering aid for reduction in moisture of feed hydrate to Calciners and Use of Thermol (Fuel oil additive) to reduce fuel requirement in Calciner for reducing in Fuel oil consumption.
- ✔ Panchpatmali Bauxite Mines unit has modified the control logics to optimise the operation & minimise idle operation of 4 x 13 TR precision air conditioners. Also replaced the refrigerant along with piping, condenser coils & compressors of the 4 x 13 TR air conditioners which has led to improvement in the energy efficiency.
- ✔ At Smelter, installation of Anode Slot Cutting Machine at Rodding Shop-II was under implementation so as to reduce in specific D.C. energy consumption in Pots and to improve process stability.
- ✔ Smelter took up a pilot project i.e. "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 NALCO. Fifteen pots in pot line #3 were under trial now.
- ✔ Computational Fluid Dynamics (CFD) analysis of flue gas ducts (Economiser outlet to ESP inlet) of Unit-4 of CPP was carried out. After implementation of analysis result it will reduce the flow imbalance and duct leakages which will help in reduction of auxiliary power consumption.

In all Units, replacement of conventional lamps/light fittings with LED lights carried out on a major scale



Alternative Renewable Sources of Energy

During the year, we have generated 348.52 MU from wind power and 0.278 MU from Solar power (roof-top panels). The following plants were operated for generating solar and wind energy.

- 50.4 MW Wind Power Plant at Gandikota, Kadap, Andhra Pradesh.
- 47.6 MW Wind Power Plant at Ludarva, Jaisalmer, Rajasthan.
- 50 MW Wind Power Plant at Devikot, Jaisalmer, Rajasthan.
- 50.4 MW Wind Power Plant at Jath, Sangli, Maharashtra.
- 310 KWp Rooftop Solar Power Plant at NALCO Bhawan, NALCO Nagar and NRTC Buildings



Roof-top solar panels - Corporate Office

In addition, 10 solar lamps of 30 W have been installed at Mines road.

Also, procurement of an on-grid rooftop solar system at Mines with an aggregate capacity of 130 KWp is finalised.

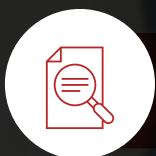
Emissions

We are conscious of the emissions our processes generate and how it can impact the environment if not controlled effectively. We have taken several measures to identify, monitor and reduce our GHG and Non-GHG emissions and have adopted technologies to reduce our carbon footprint and ensure cleaner and greener environment. Continuous Emission Monitoring Systems (CEMS) and Ambient Air Quality Monitoring Systems (AAQMS) installed at our sites with real-time data transmission serve to maintain control on emissions. Installation of laser-based online system for fugitive fluoride emission from potrooms has provided further fillip to this effort.

We have put into place measures to reduce GHG emissions. We account for the emissions from our entire supply chain include emission from process, inbound and outbound logistics into our reporting boundary. The tables provided below provide an estimate of the GHG emissions or Carbon footprint of our operations in the reporting year calculated as per international protocols including Aluminium Sector GHG Protocol.

Besides the emission of GHG and Non-GHG emission, our operations also use a small quantity of refrigerants which are ozone-depleting substances, which when used in large quantities are a major cause of global warming. We also track the number of perfluorocarbons produced in the smelters. The following are the emissions and amount of ODS and PFC's generated in 2019-20.

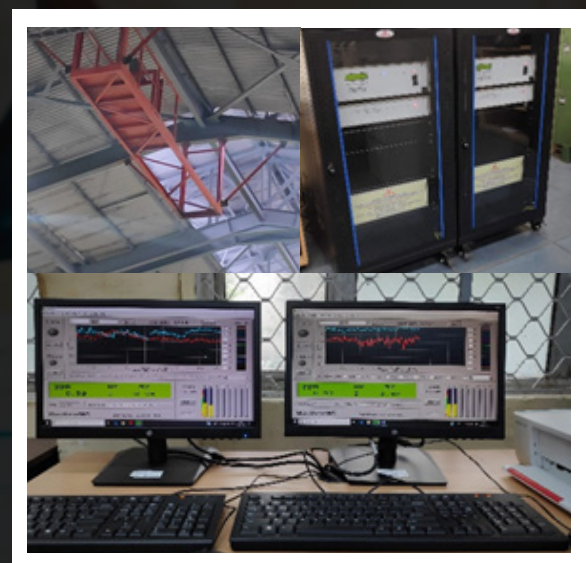
Sites	Units	Pollutant	Unit	Norm	2017-18	2018-19	2019-20
CPP	Emission from ESP	PM	Mg/nm ³	100	63.53	54.36	64.58
Smelter	Emission from Pot line FTP Stack	PM	Mg/nm ³	100	23.25	18.87	15.41
		Fluoride	Kg/t	0.3	0.17	0.21	0.16
	Emission from Bake Oven	PM	Mg/nm ³	100	24.34	18.54	22.19
		Fluoride	Kg/t	0.1	0.0096	0.0076	0.0088
Alumina Refinery	Emission from Boiler Stack	PM	Mg/Nm ³	150	132.94	116.8	102.7
	Emission from Calciner stack	PM	Mg/Nm ³	50	33.41	29.37	26.18



Case Study

Online Continuous Laser-based monitoring system for Fugitive Fluoride at Smelter

To monitor gaseous fugitive Fluoride emission from the rooftop of Potrooms, we have installed an "Online Continuous Laser-based Monitoring System". The monitoring system continuously monitors the fluoride levels that are emitted through the roofs and indicates the operators whenever there is any change in the normal fluoride emission level. This helps is to prevent unwanted emission and protect our ecosystem.





Fuel	Unit	GHG Emissions 2019-20
HFO (Scope 1)	tCO ₂ e	619,874
LDO (Scope 1)	tCO ₂ e	12,294
Coal (Scope 1)	tCO ₂ e	9,325,614
Diesel (Scope 1)	tCO ₂ e	20,428
LPG (Scope 1)	tCO ₂ e	58
Electricity from Grid (Scope 2)	tCO ₂ e	252,418
Emission from PFC (Scope 1)	tCO ₂ e	87,902
Process carbon Emission from electrolysis in pots (Scope 1)	tCO ₂ e	6,38,005
Process carbon Emission from anode baking (Scope 1)	tCO ₂ e	60,707
Total Scope 1+ Scope 2 GHG Emissions	tCO ₂ e	11,017,300
Scope 3 emissions (Estimated considering transportation of major raw materials, fuels and products in-bound & out-bound inside the country)	tCO ₂ e	27,363

Particular	R-22 in kgs	R-124 in kgs	R-134a in kgs
CPP	610	Nil	Nil
Refinery	Nil	Nil	Nil
Smelter	671	650	62
Mines	Nil	Nil	Nil

Particular	Unit	Value	Emission (Tonnes CO ₂)
CF ₄	kg/t of Al	0.0261	72,931.7
C ₂ F ₆	kg/t of Al	0.0032	14,970.5
Total	tonnes CO ₂	-	87,902

Water and Effluents

Water Management

We are conscious of our dependence on water for our day to day operations, importance of conserving water as a shared resource and global concerns related to water. We source water primarily from rivers and streams, which are classified as surface water. On top of our primary water withdrawal sources, we have also developed Rain-water Harvesting facilities at our operational sites. We have factored-in the water-related risks and to mitigate those risks we have adopted a strategic plan and approach that includes water conservation measures, effluent water handling systems, Waste water recycling systems, waste-water management systems, sewage water treatment systems, etc.

Water-related concerns and risks are escalating rapidly at the national and international level, to address those risks, we have formulated an environmental policy and have deployed a qualified team of engineers and executives

who closely monitor all water-related challenges and come up with innovative solutions to mitigate them. The team carries out regular assessments to monitor and measure the water-related challenges. With the help of our team, we have achieved Zero Discharge for industrial effluent, ash pond overflow water and Sewage Treatment Plant (STP) treated water.

Water Withdrawal

In the FY 2019-20, we have withdrawn a total of 49,798.313 Megaliters (ML) of water for our Captive Power Plant (CPP), Mines, Alumina Refinery and Smelter including our township settlements. Our primary sources are Brahmani river, Kerandi river and Jholaguda stream. We take care that the water sources that we use to withdraw water are least impacted. We undertake various recycling and re-use initiatives at our facilities to minimise the freshwater demand. The total water withdrawal breakup is given below.

Water withdrawal break-up

Water Source	Source	Operations	Unit	FY 2017-18	FY 2018-19	FY 2019-20
Surface Water	Brahmani River	Smelter and CPP	ML	40,089.37	39,320.46	40,064.147
	Kerandi River	Alumina Refinery	ML	8,757.69	8,910.92	9,031.89
	Jholaguda Stream	Bauxite Mines	ML	692.83	620.35	702.27
Total Water Withdrawn (ML)				49,539.89	48,851.73	49,798.313

Water Discharge

Our operations lead to the generation of waste-water. To deal with waste-water, we have installed zero discharge mechanism, ETP mechanism and STP mechanism at our facilities. We were able to achieve zero liquid discharge for industrial effluent, ash pond overflow water and Sewage Treatment Plant (STP) treated water. We have

become successful in the recycling of ash pond and red mud pond water. We have also installed rooftop rain-water harvesting, surface runoff rain-water harvesting and groundwater recharge systems to ensure recycling and reuse of waste-water. In the FY 2019-20, 18,172.66 ML water from CPP ash pond; 7,290.033 ML water from Refinery ash pond and 3,245.773 ML water from Refinery Red Mud Pond was recycled.



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Detailed bifurcation of our water recycled is given below.

FY 2019-20				
Source	Unit	Wastewater Generated	Wastewater Recycled	Water Discharged
Mines	ML	76.65	76.65	0
Refinery	ML	11,085.31	11,085.31	0
Smelter	ML	637.75	637.75	0
CPP	ML	22,626.35	22,626.35	0

Recycling of Water

Source	Unit	FY 2017-18	FY 2018-19	FY 2019-20
Mines				
ETP and STP	ML	76.65	76.65	76.650
Water Recycled/Reused as proportion of water intake	%	11.06	12.36	10.92
Refinery				
STP	ML	544.50	556.40	549.50
Ash Pond	ML	8,601.72	8,140.66	7,290.03
RMP	ML	2,953.81	3,132.85	3,245.77
Water Recycled/Reused as proportion of water intake	%	138	135	122.7
Smelter				
STP	ML	Included in ETP	Included in ETP	Included in ETP
ETP, Subsoil Water and Others	ML	357.43	532.21	637.75
Water Recycled/Reused as proportion of water intake	%	17	28.50	36.30
CPP				
STP	ML	65	65	50
ETP	ML	3,033.34	3,313.21	4,403.69
Ash Pond	ML	15,246.63	17,017.96	18,172.66
Water Recycled/Reused as proportion of water intake	%	60.50	68.80	74.88

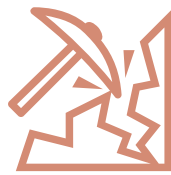
Water Consumption

As our water discharge for FY 2019-20 is zero, total water consumed is equivalent to total water withdrawal for FY 2019-20. Thus, total water consumed by us in the current year is 49,798.313 ML.

Water Conservation Initiatives

To conserve water, we have taken various initiatives such as the implementation of rainwater harvesting system, use of patented Emiron Nanotechnology for recycling purpose, installation of STPs and ETPs at our production units, installation of seepage water recycle system to achieve zero discharge, etc. The detailed initiatives are listed below.

MINES

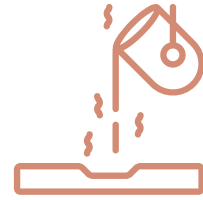


- ✓ Implementation of rooftop rain-water harvesting in the administration building and mine manager building.
- ✓ Construction of rain-water harvesting pond of 10 ML capacity, inside mines.
- ✓ Biological treatment unit for the treatment of waste-water from the canteen.
- ✓ The oil-water separator uses wash water from vehicle washing stations and provides clean water.
- ✓ Construction of a zero-water discharge system for waste-water treatment. The water after treatment is being used for sprinkling on the road for dust suppression and plantation.



Nano-technology DF plant at Smelter

SMELTER



- ✓ The surface runoff of Pot lines & Carbon area is collected in 3 holding pools and subsequently recycled in plant after treating through De-fluorination Plants.
- ✓ The surface runoff of remaining area of Smelter is collected in Zero discharge sump, which is pumped for horticulture use in Smelter, Administrative Building & CISF colony.
- ✓ The rainwater accumulated at the subsoil of pot lines are collected in wells through perforated network of pipeline at sub surface which is used in makeup of cooling tower of rolling plant and fire water reservoir.
- ✓ Re-routing of drain of RP area to channelise a portion of surface runoff previously flowing outside, to holding pool for plant use after treatment.
- ✓ Construction of garlanding drain with containment facility completed and the accumulated water pumped to holding pool through dedicated pipelines.
- ✓ A dam has been constructed near Watch Tower 23 for conservation & reuse of non – plant water flowing through culvert. Consultant has been appointed to utilise this water in plant.
- ✓ The effluent water of Hazardous Waste incinerator is recycled in to the scrubbing system after filtration which minimise the water requirement in running the equipment.



Re-charge well of roof-top rain-water harvesting at Refinery



Rainwater reservoir at CPP



REFINERY



- ✓ Installation of 2,340 m² rooftop for rain-water harvesting at the administration building, training centre and Executive Directorate (ED's) bungalow.
- ✓ 2,002 m² of the rooftop for rain-water harvesting for 2 schools and transit house is in progress.
- ✓ The waste-water treatment, recycling and reuse are carried out for Ash pond overflow water and Red Mud Pond (RMP) over-flow water.
- ✓ Renovation of STP carried out during the year.

CAPTIVE POWER PLANT



- ✓ Zero discharge has been achieved with respect to industrial effluent, ash pond overflow water and Sewage Treatment Plant (STP) treated water. Industrial water was recycled after treatment and used in ash handling system. Capacity of three of Industrial drain water recycling pumps has been enhanced.
- ✓ Rain-water harvesting and recycling of capacity 50 ML. The recycled water is used as makeup to Fire Hydrant Forebay of RCPH-1. During the year, 2,432.944 ML of rain water was harvested by rain water harvesting system.
- ✓ Construction of 3,500 m² rooftop rain-water harvesting system. Sewage Treatment Plant is provided for treatment of Sewage waste-water. The sewage waste-water after treatment is reused for horticulture and plantation purposes.

Waste

Waste Management

Our production units and townships produce various types of waste which are categorised into hazardous, non-hazardous and organic food wastes. We are aware of the impacts on land, water, habitation that are caused by mismanagement of waste. Thus, to deal with the impact, we have implemented sound practices following waste management principles, and we ensure that these practices are diligently adhered to through audit of our environmental management systems. Our team continuously review our waste management practices and keep a close watch on our changing regulatory guidelines. Our waste management practices are monitored by regulatory agencies such as the State Pollution Control Board, and the Ministry of Environment, Forest and Climate Change (MoEF & CC).

We follow 3R principles for waste management i.e. Reduce, Recycle and Reuse. We follow a systematic approach in the disposal of the waste that is generated during our production activity. To make our efforts fruitful, we conduct regular training of our employees to teach them techniques of waste disposal and waste segregation. Our

R&D establishment provides excellent support to tackle waste management challenges.

Mitigation and Impact of Waste

We carry out operations such as mining, refining, smelting, and energy generation. We are aware of the impact that is created by waste generated from our activities and have taken various initiatives to mitigate those impacts. Our waste is primarily composed of fly ash, red mud, spent oil, discarded asbestos, empty containers, biodegradable and non-biodegradable waste, etc. These wastes can lead to a severe impact on the surrounding ecosystem if not managed properly.

We believe in minimising our waste generation and maximising waste utilisation. To ensure that, we have adopted several measures and undertaken multiple initiatives. Initiatives such as recycling of process waste, metal reject and waste products, effluent & industrial drain water, decanted water from Ash pond and Red mud Pond, the overburden of mines etc. are taken at our end. We have also constructed shed for storage of hazardous waste.

NALCO R&D Patent Application Filed During Financial Year 2019-20

A method for utilisation of spent pot-lining carbon material in anode making in aluminium electrolysis process.



Fabrication of pervious concrete from fly ash.

Development of electronic material useful for application in filter circuit from industrial waste red mud.

- 103-1 Explanation of the material topic and its Boundary
- 103-2 The management approach and its components
- 103-3 Evaluation of the management approach
- 306-1 Waste generation and significant waste-related impacts
- 306-2 Management of significant waste-related impacts



A detailed list of activities has been given below.

INITIATIVES

SMELTER

- ✔ Garlanding drain along with concrete sump and pump house around the Hazardous storage area to prevent land contamination by surface runoff.
- ✔ Construction of covered shed at Municipal solid waste management area for segregation of biodegradable and non-biodegradable waste.
- ✔ Emulsion storage and processing tank under construction to handle waste emulsion. It is a fully automatic process and doesn't require any human intervention.
- ✔ Around 2,800 MT of legacy stock of Aluminium dross is sold to authorised recycler.

CAPTIVE POWER PLANT (CPP)

- ✔ Installation of the organic waste converter at the main canteen. The waste converter converts food waste into compost which is used in horticulture activities.
- ✔ INR 150 per MT of fly ash was given to brick manufacturers as incentive. In the year FY 2019-20, we have supplied 500,784 MT of dry ash to brick manufacturers out of which 491,809.70 MT of fly ash were given under incentive scheme.
- ✔ We have supplied around 401,545 MT of pond ash to National Highway for road construction.

MINES

- ✔ Installation of a biogas plant in the canteen to treat organic food waste to generate biogas, which is utilised for cooking purpose in the canteen. The biogas plant has a working capacity of 5m³ per day and it consumes around 70 to 80 Kg of food waste per day.

REFINERY

- ✔ R&D for Red mud utilisation for extraction of Iron concentrate and Gallium from Red mud.
- ✔ Utilisation of fly ash in manufacturing of fly ash bricks, cement, road construction, dyke making, filling up low lying areas, etc.



A mini Case Study

Use of discarded Filter cloth from Refinery in Cement Plant

In our Alumina refinery plant we use various types of filter cloth to process slurry. Once the life of filter clothes expires, they are discarded and treated as a waste. To prevent them from getting into the landfill we have diverted this waste to authorised cement plants where the cloth is co-processed. By doing this we ensure that the unauthorised burning and unwanted pollution is prevented.



Transport of discarded filter cloth to cement plant

Waste Generation and Disposal

At our facility, Hazardous and Non-Hazardous wastes are segregated into a different category and are kept for disposal and reuse. The process implemented and procedures followed for the waste management are listed below.

Hazardous Wastes

Particular	Waste Type	Unit	FY 2019-20	Disposal Technique
Alumina Refinery	Spent Resin	MT	16.96	Disposed in the landfill.
	Used Oil	KL	125.22	Sold to the authorised recycler.
	Discarded Asbestos	m ³	150.80	Dumped in the specified pits
	Empty Container	Nos.	2,555	Sold to the authorised recycler .
Smelter	Aluminium Dross	MT	7,059	Majority portion of Aluminium dross is recycled in the process. Legacy stock of dross is sold to authorised recycler.
	Spent Anode	MT	60,772	Recycled in anode making.
	Cathode Residue including pot lining	MT	5,500	Carbon portion disposed to authorised recycler for energy recovery. Trial is on the way for disposal of refractory portion to common landfill.
	Rejected Filter Bags	MT	10.55	Incinerated in the pots.
	Rejected AlF ₃ Bags	Nos.	32,964 small bags and 6,295 large bags	Small bags are incinerated in the pots and large bags are disposed in the HW incinerator.
	Used Oils	KL	51	Sold to the authorised recycler.
CPP	Spent Resin	KL	8	Disposed in landfill.
	Used Oils	KL	53.59	Sold to the authorised recycler
Mines	Used Oils	KL	86.824	Sold to the authorised recycler

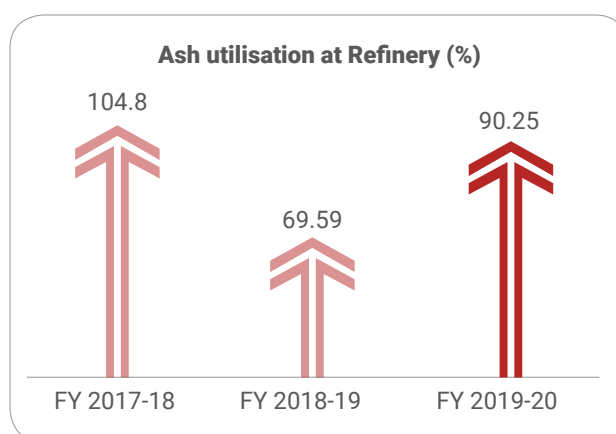
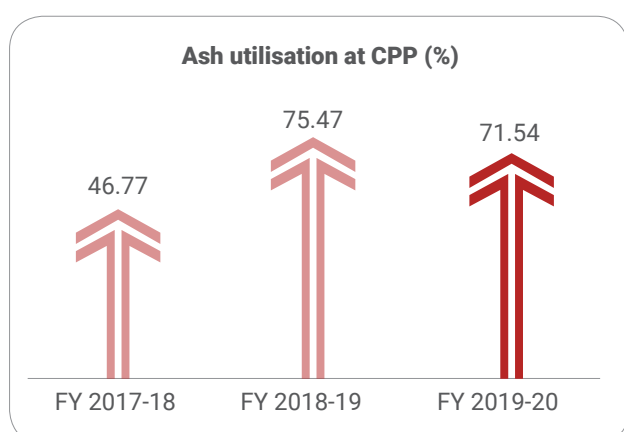
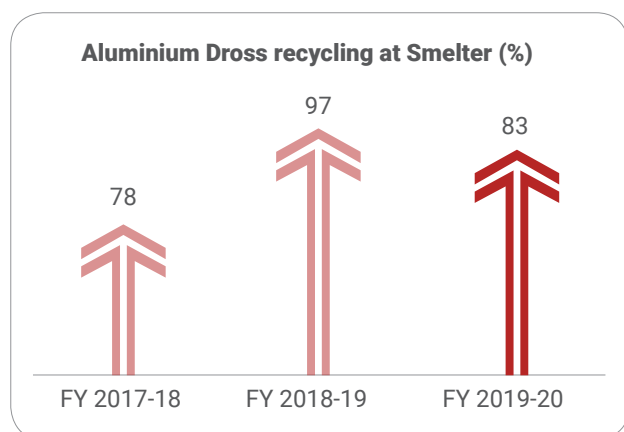


Non-Hazardous Wastes

Particular	Waste Type	Unit	FY 2019-20	Disposal Technique
Alumina Refinery	Lime Grit	MT	28,829.69	Sold to the authorised recycler for making brick and other related products. The rest is disposed to red mud pond
	Fly Ash	MT	590,245	Used for cement and brick making. Excess ash is dumped in ash pond.
	Red Mud	MT	3,351,021	Disposed to Red Mud pond.
Smelter	Ferrous Scrap	MT	3,459.98	Sold to the authorised recycler.
	Non-Ferrous Scrap	MT	623.08	Sold to the authorised recycler.
	Refractory Bricks	MT	4,692	Used for hard surfacing and making roads, inside plant
CPP	Fly Ash	MT	2,486,199	Used for cement and brick making. Excess ash is dumped in the ash pond.
Mines	Overburden	MT	804,640	Reused in backfilling of mined-out area.

Recycling and Reuse

To increase the usage of the waste generated we undertake recycling at our facility. Our recycling initiatives have substantially mitigated impact of bulk generated waste such as fly ash and aluminium dross.



Overburden Management

Stripped overburden and topsoil are stacked and same are used in reclamation. Topsoil is spread on the overburden to make the reclaimed land suitable for plantation, with adequate provision for benches and terraces. The reclaimed area is being used for plantation and creation of water basins at strategic points for ensuring proper drainage. Selected indigenous foliage and fruit-bearing species are used to reforest the backfilled areas. We are taking extreme care for the preservation of the natural topography of the virgin area and prevention of soil erosion. During 2019-20, 804,640 Tons of overburden has been generated which has been completely reused.

Year	Unit	Mined out area rehabilitated during the year	Cumulative Area Rehabilitated since Inception
FY 2018-19	Ha	16.23	330.60
FY 2019-20	Ha	15.1	345.70

Biodiversity

Biodiversity Management

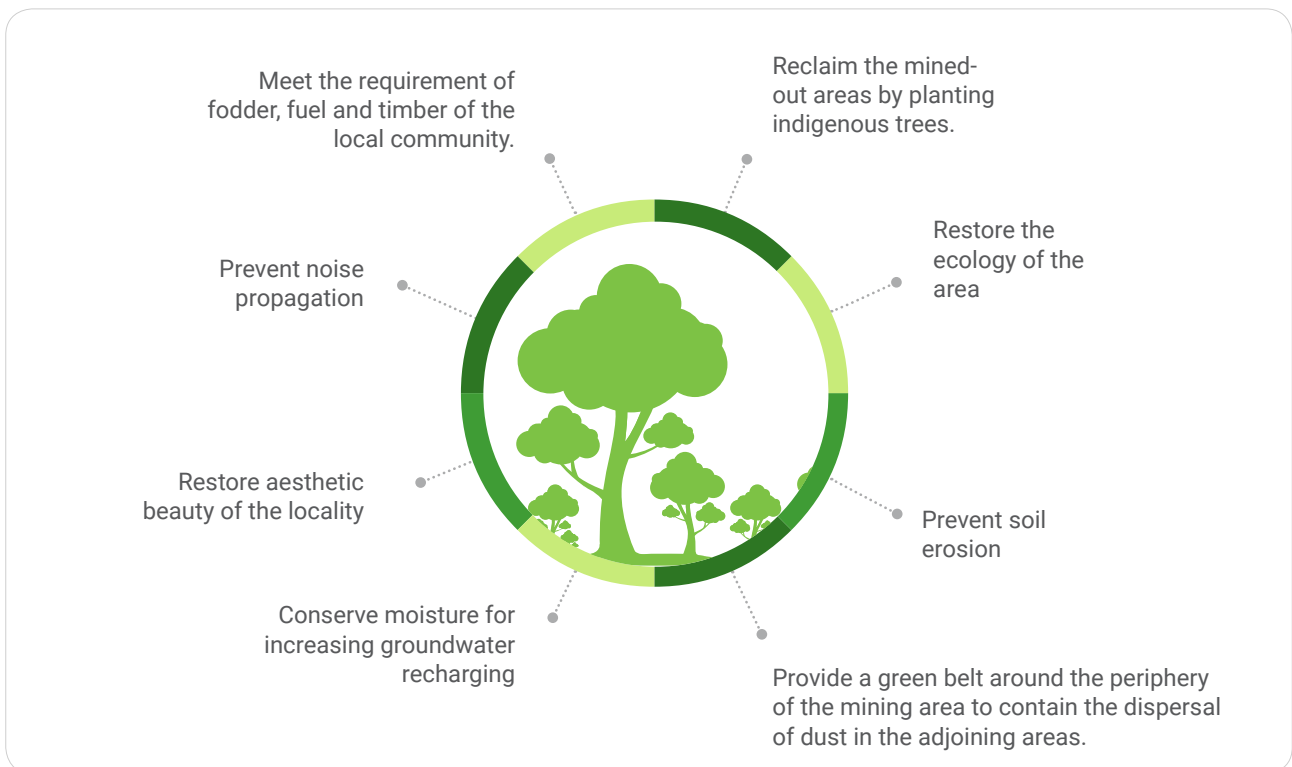
Biodiversity is the co-existence of living species. It ensures stability of the life systems and the healthiness of ecosystem. Reasonable consumption and conservation of our biological resources are fundamental to us. We are continuously striving to make our planet a better place for all kind of species. Our commitment is reflected in our sustainability policy. Our efforts for ecosystem and biodiversity is aligned with UN's SDG 15 - "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss".

We strive to minimise the impact on bio-diversity through the effective management of land and development of the green belt around our operations. Our mines or production sites does not operate inside or in the vicinity of any biological sensitive areas/hotspots or any monuments of world importance/heritage sites. Our Bauxite Mine is beyond 10 km of International Union for Conservation of Nature (IUCN) protected areas or ecosystem precluding any threat to IUCN Red List Species.

We have duly carried out the study on biodiversity in and around Panchpatmali Bauxite Mine. Our bauxite mines are in hilly areas, but the possibility of damage from mining is minimum as bauxite bearing hilltops are barren with only sparse bushes. Extensive plantation activities have improved the greenery on the hilltops.

Green activities and Wildlife development

Resistance to climate change, constant supply of forests products, prevention of soil erosion, better air quality, improved watershed, protection of wildlife, and provision of employment and economic activities are some of the many rewards from afforestation. We have prepared our afforestation plan to unlock the rewards from afforestation and address the challenges that are likely to occur because of mining in the nearby area. Our efforts for afforestation have populated the nearby area with trees and also help to maintain the ecological balance. We have set up our afforestation plan to achieve the following objective:





Green Belt Development

We carry out an annual plantation drive at our facilities. Our high altitude nursery at Mines spread over an area of 3 acres helps in the development of indigenous species of plant suited to local climate and condition. The

nursery at Mines significantly contributes to the crucial afforestation activities of the backfilled mined out areas to preserve the natural topography. During this year, 15.1 hectares of reclaimed area was rehabilitated with plantation. Following are the highlights of our efforts in the development of the green belt.



In our Panchpatmali Mines, we have planted **100,274 saplings** to rehabilitate the mined-out area and augmented afforestation drive and distributed **5,500 seedlings** of indigenous fruit-bearing species to peripheral villagers.

In Alumina Refinery, we have planted **17,239 trees** and distributed **5,000 seedlings**.



We have planted **10,011 saplings** in different areas of Smelter and CPP complex at Angul and distributed **12,390 seedlings** to villagers & institutions to improve green cover in the area.

Plantation Details

Sr. no.	Year	Total Saplings Planted
1	FY 2017-18	133,226
2	FY 2018-19	130,709
3	FY 2019-10	127,524

Biodiversity Study at Our Units

The mining lease area has Dry Deciduous Forest (5/DS1) and Dry Deciduous Savannah (5/DS2). The plant association is Phoenix acaulis, Pogostemon – Indigofera – Sida – Lantana with grasses. Since the mining operations are continued in the mine lease area from the year 1984, most of the mine lease area is already broken up for mining and plantation is carried out on greenbelt, surface dumps, around infrastructure facilities, etc. Variety of flora species has been planted by the mine management in the mine lease area. Due to active mining operations and presence of human habitations nearby the mine lease area, faunal movement in the mine lease area is negligible. However, some small animals like small mongoose, hare, rat, jungle cat, squirrel and snakes, etc. are seen in the plantations and undisturbed parts in the mine lease area.



Due to active mining operations and presence of human habitations nearby the mine lease area, faunal movement in the mine lease area is negligible.

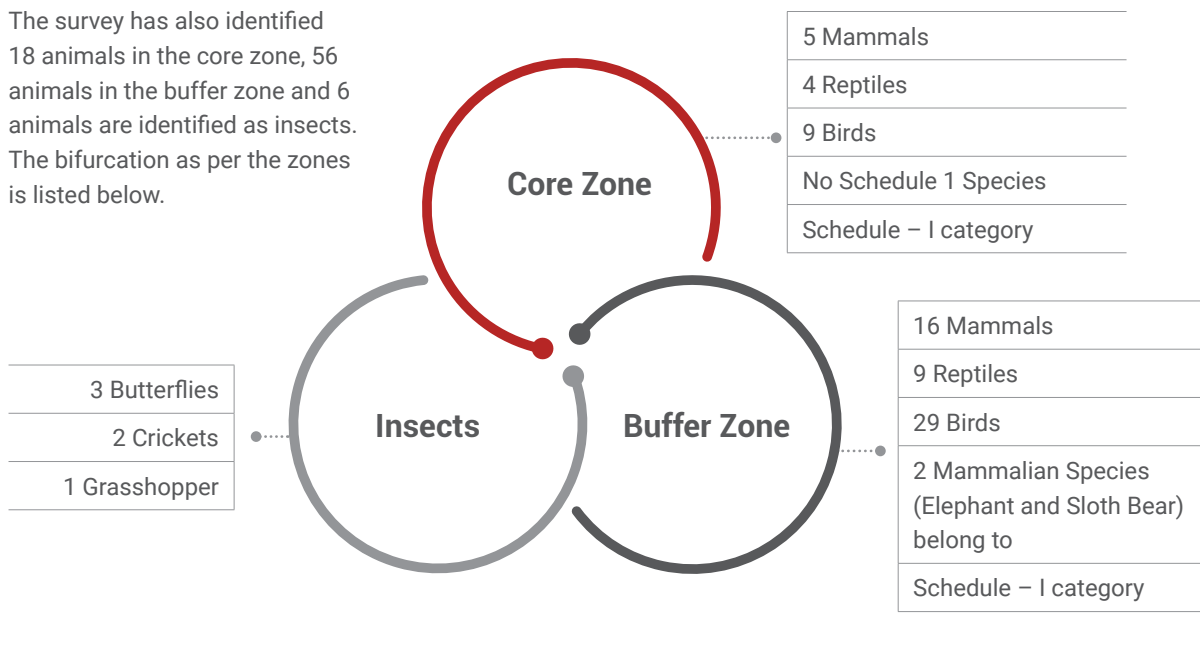
We conducted a biodiversity assessment at our Bauxite mines to identify IUCN listed species and develop biodiversity management plans. The assessment resulted out in the identification of the following impact:

- 1 Fragmentation of habitat due to the conveyor belt, service road and HT power line.
- 2 Dust in the 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.
- 3 Lights from mining area during night disturb the wild animals.
- 4 The mines lease area (core area) is devoid of tree growth, the vegetation consists of scrub, which supports only a few small animals.



14.6 km long single flight belt conveyor from Mines to Refinery

The survey has also identified 18 animals in the core zone, 56 animals in the buffer zone and 6 animals are identified as insects. The bifurcation as per the zones is listed below.



We have implemented major suggestions of the Wildlife Management Plan. We have adopted concurrent reclamation and rehabilitation for the ecological restoration of the mined-out area. The laterites are excavated and filled in the mined out area followed by levelling and spreading of the topsoil over the laterite. We are also carrying out Phase wise plantation over the levelled topsoil of the backfilled area. Through continuous afforestation programme, the mined out area is being converted to a good forest.



After mining and restoration activities



**SOCIAL
RELATIONSHIP**

Our business is built on the supporting network of stakeholders, who play an enduring part in our growth narrative. Our business is committed to creating value for our stakeholders. Driven by our sustainability policy, we undertake a multitude of initiatives for our stakeholders with a holistic vision to strengthen them and boost our stakeholder relationships and shared value creation. Some of the key areas involves CSR activities, employee wellbeing, health and safety, customer satisfaction, etc.

Our growth bears testimony to the dedicated and excellent work that are put in by our employees. They are our pillars of strength and we have been consistent in providing an environment conducive for all-round development of our employees. We ensure diversity at work, compensate well, incentivise & reward performance of employees and upgrade their skills with a open learning environment.

With respect to our employees, we are committed to providing them a host of opportunities and an enabling environment that would motivate them to achieve their maximum potential. We are committed to embed continuous learning and development into our corporate culture and create a dynamic working environment for our employees where their health and safety is our top priority.

Forever responsive and caring to the needs, concerns, aspirations, well-being of the surrounding local communities, we have laid-out and fine-tuned our peripheral development and CSR initiatives that have built enduring trust and brought smiles.

Our commitment to be a responsible business also encompasses our customers and consumers. The growing trust among our customers is driven by our constant endeavor to ensure customer satisfaction and manufacturing products in a manner that is adaptive to market needs, reliable to use and consistent in setting benchmarks.



We believe in creating a work environment for our employees that is zestful, inspiring, action driven, and committed to excellence.

Employee Well-Being

We believe in creating a work environment for our employees that is zestful, inspiring, action driven, and committed to excellence. Our different employee related initiatives and policies ensures that our employees stay motivated at work, realise their potential for career growth and keep growing in tandem with the company's growth. We are an equal opportunity employer and we do not discriminate in terms of gender, caste, creed or colour. We are constantly aiming to improve our employee experience in terms of their onboarding, career progression through training and development, performance-based incentives and a host of employee engagement activities round the year so that working with us remains a fulfilling and enriching experience.

Employee Diversity

We believe that our diverse workforce brings together fresh perspectives that can together create new values while meeting the constantly evolving stakeholder requirements. Our excellence drive is backed by our extremely talented employee pool. We believe in selecting the right talent for the right work. During the reporting year, our Board of directors consisted of 19 members including 2 female independent directors. The representation of females in executive and Non-executive categories stood at 4.86% and 6.09%. We are consistently trying to improve our diversity of employees. There are no contractual employees at NALCO. We recruit 100% of our employees from within India and there are no employees on our payroll having any other nationality.

Total Employees	2019-20		
	Male	Female	Total
Executives	1,643	84	1,727
Non-Executives			
Supervisory	493	41	534
Highly skilled /skilled	3,261	144	3,405
Semi-skilled /Unskilled	449	88	537
Total	5,846	357	6,203

102-8 Information on employees and other workers
 103-1 Explanation of the material topic and its Boundary
 103-2 The management approach and its components
 103-3 Evaluation of the management approach



New Employee Hires and Separation

Our recruitments are in line with the Government of India's guidelines and enables representation from across regions, ethnicities, religions and different social strata.

The hires and Separation for the reporting period is as given below:

New Hires				
Males	Females	Age Groups (years)		
		Below 30	30-50	50-60
58	9	27	36	4

Employee Separation in 2019-20				
Males	Females	Age Groups (years)		
		Below 30	30-50	50-60
351	9	11	14	335

Employee Benefits

We provide the following benefits to our full-time employees

- ✓ 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

Besides these direct benefits, a host of other benefits have been laid-out to ensure our employees have a seamless living experience. This includes comprehensive medical facilities, multipurpose co-operative society, 24-hour security in township, community bus service, guest house facilities and transit house at different locations. We have developed full-fledged townships at the plant locations along with premier schools, shopping complexes, clubs, parks, gymnasium, stadiums etc. During the reporting

period, INR 1,994.07 Crore was spent towards employee benefits expenses including salary as compared to INR 2,072.8 Crore spent during FY 2018-19.

We also consider the welfare of workers engaged full-time by our contracted service providers. Some of the benefits that such workers can avail include provident fund, medical insurance (Employee State Insurance) etc.

Parental Leave

Our schemes ensure that our permanent employees are entitled to parental leave as per the guidelines from the Ministry of Labor and Employment. The table below gives the data for the number of males and females who have taken parental leave:

Particulars	No. of Employees who availed Parental leave in 2019-20	No. of Employees returned to work after parental leave in 2019-20	No. of Employees who returned to work after parental leave in 2018-19 and stayed on for next 12 months
Maternity Leave	5	5	7
Paternity Leave	106	106	124

Collective bargaining and Equal Opportunity

We recognise the right of our workers to form associations and unions or be a part of different worker unions. There is a 4-level system i.e. unit level, complex level, corporate level and apex level in place to enable deliberations with the different trade unions recognised by our organisation. There are worker unions in all our operating locations, and 100% of our non-executive employees are covered under the trade unions which form 72.15% of total employees. To foster commensurate growth, all our worker welfare initiatives are undertaken in consultation with our recognised trade unions. As on March 31, 2020, following percentage of employees in different units were members of recognised trade unions- Smelter 44.83%, CPP 52.69%, Refinery 47.995%, Mines 57.86%. We conform to all the prevalent national and state level laws in communication and dealing with the labour unions. No significant risk of violation of right to collective bargaining was identified throughout our operations during the reporting period.

We have a Policy on prevention, prohibition and redressal of sexual harassment of women at workplace in line with the requirements of the Sexual Harassment of Women at Workplace (Prevention, Prohibition & Redressal) Act, 2013. In the current reporting year, one case under Sexual harassment was registered at S&P Complex, Angul. Action has been taken against the person concerned and the case has been resolved.

Through a set of policies, SOP's and rules, we have established a culture of providing equal opportunity to all our employees. No form of discrimination among of employees is entertained. Our recruitment process is aligned to Government Guidelines related to reservation for SC, ST, and OBC candidates. Differently able persons are also considered for recruitment under the provision of Persons with the Disabilities Act, 1995. Liaison officers appointed by the company look over the recruitments of

SC, ST, OBCs as well as PWD candidates. There were no recorded cases of discriminations in the current reporting year during the recruitment process nor any grievance w.r.t reservation policies.

Human Rights and Forced Labour

All individuals are entitled to their basic rights and its violation is a heinous crime. At NALCO, we endorse human rights prescribed by different international and national rules, standards and guidelines. Our company's policies, manuals and regulations have strictly forbidden forced labour and child labour at our sites. All our operational units are certified to SA8000:2014 Social Accountability Standard which testimonies our credentials on human rights. Our Human Rights Policy reinforces our commitment and guides our consequent actions. No cases of Human rights encroachment or child labor has been reported in any of the operational sites.

Our Ethics and transparency in operation have been the keystones in us being a Navratna CPSE organisation. We respect the individuals working for our company and are committed to upholding their human rights and dignity of labour. We are an equal opportunity employer, and we keep no stones unturned to bolster an environment of equality and no discrimination.

We also screen our suppliers on the criteria of human rights and forced labour. All our suppliers and contractors need to abide by the national statutes on labour welfare. In the current reporting year, no cases on violation of human rights codes or incidences of forced labour were reported.

103-1 Explanation of the material topic and its Boundary

103-2 The management approach and its components

103-3 Evaluation of the management approach

102-41 Collective bargaining agreements

401-3 Parental Leave

407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk

406-1 Incidents of discrimination and corrective actions taken

408-1 Operations and suppliers at significant risk for incidents of child labor

409-1 Operations and suppliers at significant risk for incidents of forced labor



Grievance redressal mechanism

We have a formal systematic grievance redressal procedure in place for our employees, customers, vendors and shareholders to report their grievances. For an unbiased settling of grievances, separate grievance handling mechanisms are formalised within the organisation for executive and non-executive employees.

An aggrieved employee can intimate verbally to their superior officer about the problem and if not satisfied with his decision, he/she may submit a written request to their respective HODs. If the grievance persists, grievance committee may be approached. The grievance committee for non-executives' employees consists of representatives of the recognised Union, Management and representative from concerned departments Any grievance application received from any employee is scrutinised by the committee and action is taken to resolve the grievance within the framework of the company policy. In case any grievance is not resolved due to ambiguity, the employee is counselled with reason of non-action. Likewise, an executive can take advantage of three tier arrangement of HOD, Unit Head and Functional Director for redressal of his grievances.

All cases are dealt with due priority and efforts towards quick resolution of grievances are taken. In the current reporting year, the grievances reported are as given below:

Sl. No.	Category	No. of complaints pending as on 31st March, 2019	No. of complaints filed during the F.Y. 2019-20	No. of complaints pending as on end of the FY 2019-20
1	Child labour/ forced labour/ involuntary labour	Nil	Nil	Nil
2	Sexual harassment	-	01	Nil
3	Discriminatory employment	Nil	Nil	Nil

Employee Engagement

Keeping our employees motivated and up to date with the ongoing development within the company is of high importance to the company. We use various modes of engagement to enlighten our employees with the developments within the company as well as the market trends that may be relevant to our company's business interests.

Mass communication campaigns are conducted by senior officers that involves 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 employee's belongingness to the company.

Performance feedbacks and feedbacks from the employees are other channels by which we assess the level of satisfaction among our employees. The regular emails and press releases in our websites through our corporate communications helps keep our employees updated with the ongoing developments within the company.

In the current reporting year, we have conducted a host of employee engagement activities in the form of



various competitions', celebrations and volunteering that involves participation of employees. In addition, we have a host of schemes like the Sarjana suggestion scheme, Quality Circles, Kaizen small-group-activity that serve to unlock the potential of employees to come up with innovative ideas & solutions, that while pushing up our operational performance, creates a enriching and harmonious work culture.

Training and Development

We realise that management of talent is both crucial and imperative to modern business. The talents nurtured in this competitive space are going to be the future leaders of the organisation and encouraging them is our prime responsibility. Our training and development programmes are well integrated with our long-term business objectives resulting in enhanced leadership capability and overall well-being. Our executives and workforce are supported to upgrade their skills and competencies. We impart technical learning on the job as well as provide classroom trainings to develop capabilities of our employees. These trainings help to build leadership acumen and soft skills giving them edge over others supporting their career growth.

The training requirements of different functional departments is collected at the start of year. The trainings are mapped along with the competence evaluation of the employees. A training calendar is prepared on the basis of such inputs and considering the organisational needs. Employees are trained by internal faculty or visiting experts at our training institutes. We also send high potential employees to premier institutes like IIM, IIT, XLRI, ASCI to advance their skills. The skill trainings and behavioural competency programs at all levels cater to the key competencies that are required to realise individual as well as organisational aspirations.

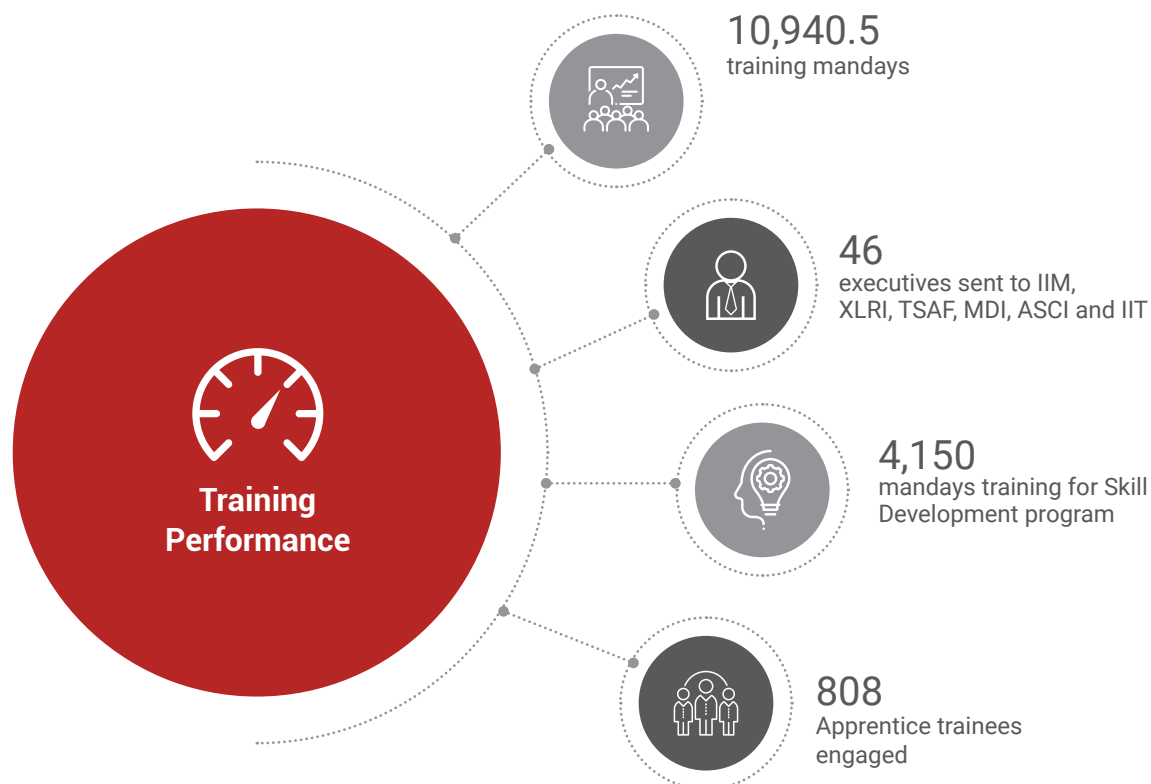
In order to nurture our employee talent, we also sponsor them for abroad trainings and training by professional bodies. Employees are provided with trainings on yoga, meditation, health care, stress relief, relaxation techniques, lifestyle management, etc. for their physical and mental well-being. These customised training interventions are not only limited to our employees but are also provided to workers of contractors, students, apprentices from managerial and technical institutes as well as local populations. We are proud to contribute towards the overall development of our valuable human resources.

TRAINING CATEGORIES





Training Performance Highlights 2019-20



Average hours of training per year per employee

For FY 2019-20, the average training man-days per employee was 1.76.

The break-up of training provided to employees for the selected training themes i.e skill upgradation, safety and fire-prevention, anti-corruption and vigilance, human rights, first-aid, health & well-being, pre-retirement is produced below.

Average hours of training by gender

Year	Male	Female
FY 2019-20	8.21	7.54

Total hours of training per employee by employee category

Year	Executives	Non-Executives
FY 2019-20	15.79	5.23

Employee Category	No. Of persons trained			Training Man-Days		
	Male	Female	Total	Male	Female	Total
Executives	1,815	71	1,886	3,259.50	151	3,410.50
Non- Executives	1,997	125	2,122	2,743	185.50	2,928.50
Total	3,812	196	4,008	6,002.51	336.50	6,339

Note – The total training man-days and average hours of training by gender/category mentioned in the table above excludes many other types of trainings like communication skills, leadership development, RTI act, grievance handling etc



Training on Women Empowerment



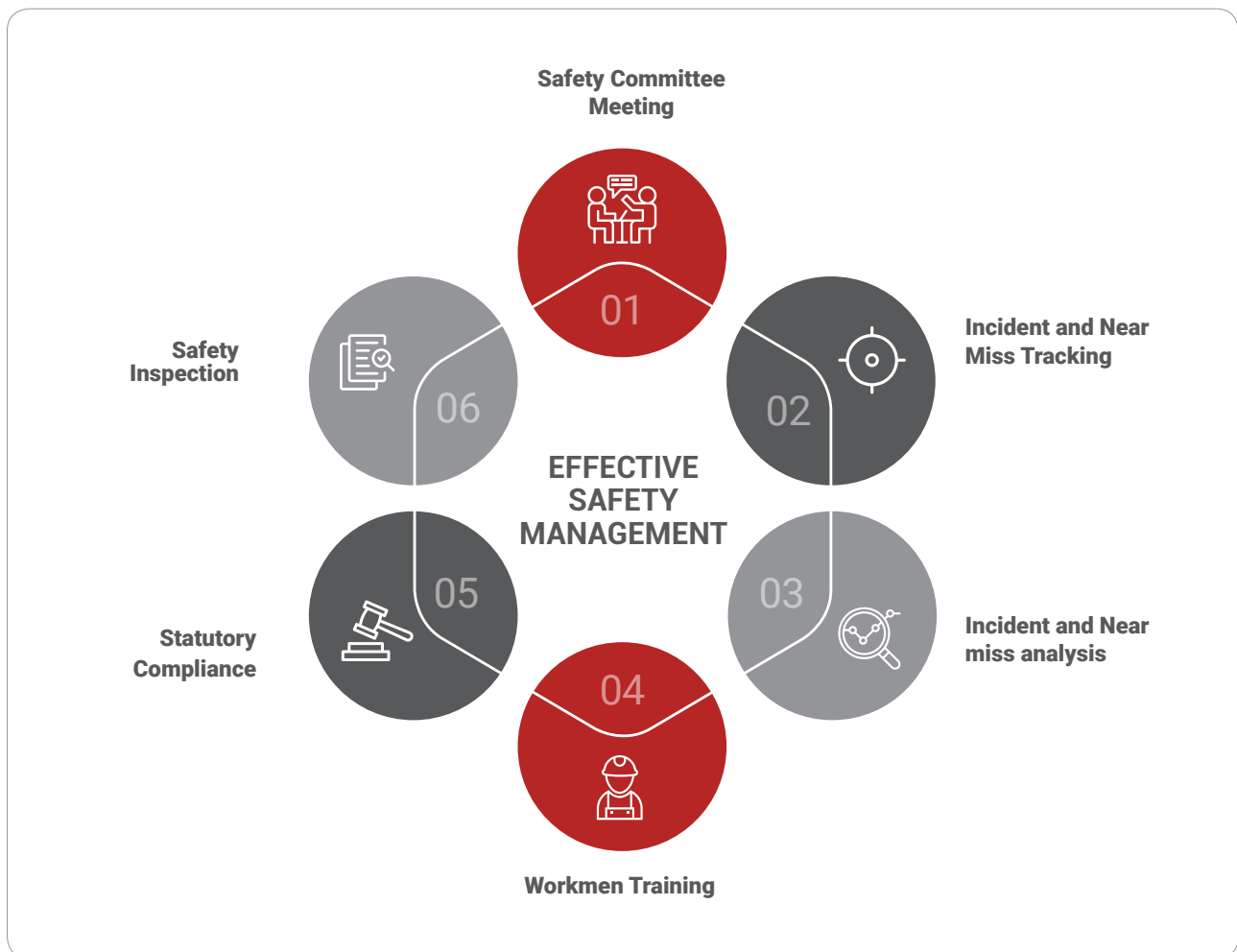
Training on Leadership Development

Occupational Health and Safety

We acknowledge the fact that a safe and healthy work environment is a basic requirement for ensuring employee well-being and that best practices in occupational health and safety enhance the organisation's overall performance. Our safety efforts encompass zero-tolerance policy towards unsafe work environment and non-conformance to safety norms in all our operations. Therefore, developing a safe operating culture for our employees has always been one of our top priorities. We further ensure that appropriate control measures are in place for preventing occupational diseases. All our employees undergo periodic trainings on Occupational Health and Safety. We are proud that all our operational facilities have been certified with OHSAS18001 and upgraded to ISO 45001:2018. Periodic audits are conducted by certifying agency to ensure the effectiveness of systems. A robust health and safety management framework is embedded in our safety culture. Our safety efforts also contribute towards the UN Sustainable Development Goal (SDG) of Decent Work and Economic Growth.

Our Occupational Health and Safety policy approved by CMD lays down the guiding principles to ensure safe working conditions for employees. Compliance with statutory norms and guidelines is essential to prevent safety risks in operations and maintenance. The health and safety performance of employees is also taken into account during their career.

While we were exposed to a very challenging situation of COVID-19 at the later part of the reporting year, we re-jigged our operations and followed all norms laid by government to ensure safety for our employees. At this time, our staff ensured strict adherence to required safety norms like social distancing, compulsory usage of masks. All our production sites and offices were being sanitised on a regular basis. There are widespread campaigns across the sites to follow SOP as well as medical facilities were geared up during the period. Further, work from home was stipulated to 50% employees for partially critical activities and 100% for non-critical activities, minimising exposure to the infection.





Safety and Health training for year 2019-20

Employee Category	No. Of persons trained			Training Man-Days		
	Male	Female	Total	Male	Female	Total
Executives	389	17	406	691	17.50	708.50
Non- Executives	575	67	642	942	102.50	1,044.50
Total	964	84	1,048	1,633	120	1,753
Contractors' Workers			5,417			4,786
Total			6,465			6,539

The above include trainings on Safety & Fire Prevention, First-aid, Health & well-being.

The safety management system is applicable to all our employees, workers of our contractors and service providers, security personnel, visitors and people living in the nearby areas. Our hazard identification and safety management systems are comprehensive and reflect our compliance to health and safety regulations. We ensure quality of our health services for elimination of hazards and minimisation of risks .

We organise regular safety audits and inspections by external agencies. Any deviations in the safety practices is taken into account and corrective actions are taken immediately to ensure effectiveness of the processes. The approach involves systematic root-cause analysis to aid the corrective actions. Behaviour-based safety is the application of behavioural psychology to promote safe behaviour in the workplace using employee involvement. Behaviour based safety measures also mitigate safety risks and builds a culture of better safety performance of employees.

With our concerted efforts in order to improve personnel safety, our employees are subjected to regular health check-ups and no incidences of occupational diseases/ illness have been reported. Our Safety Committee in all units having representatives from management and workers helps in identification of unsafe areas and practices.

As per Mines Vocational Training Rules 1966, Refresher Trainings are being imparted (once in 5 years) to workers (except supervisors and executives). Initial trainings are being imparted to every new entrants as per the rule. In addition, First Aid Training, Fire Fighting Training, Training on emergency preparedness, Awareness training on IMS, Orientation training for safety committee members and OEM training at Mines Site as well as at OEMs Site are provided.



Safety day week at CPP

403-1 Occupational health and safety management system
403-2 Hazard identification, risk assessment, and incident investigation
403-6 Promotion of worker health
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships

We have built a strong culture where learning, competency and talent are rewarded so that the organisation builds its own capabilities to face the future challenges. We help our workforce to realise their potential and in turn contribute to the organisational capability building. Induction training on OH&S, 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 culture of learning is a great enabler to make the organisation relevant, agile and keep it ahead in the competition. The training programs are custom designed to meet the training needs of the employees and the workers.

We are acutely conscious of the safety related risks in our operations and therefore we cover key training topics like accident prevention, Factories Act, safe use of equipment and accessories, workplace safety, safe crane operation and material handling, behaviour based safety, handling of hazardous material, firefighting, electrical safety in our safety trainings .

In order to raise awareness about our safety steps and prevent H&S risks, ample number of safety signage and fire extinguisher usage instructions are provided at important locations. Safety campaigns are implemented by distribution of handouts and safety badges, playing of skits and use of audio-visual medium of communication. We strictly insist upon usage of personal protective equipment



We help our workforce to realise their potential and in turn contribute to the organisational capability building. Induction training on OH&S, 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.

like helmets, safety shoes, gloves, safety goggles, safety belt etc. depending on nature of work. All necessary workplace safety regulations are to be followed even for out-sourced work. The adherence to safety norms is a contract condition before joining and in case of any breach, necessary actions like imposition of penalty, issue of warning, termination of contract etc. is resorted to depending on gravity of breach. Records of accidents and near miss cases are duly maintained and analysed, and adequate corrective actions are implemented on priority basis.



Safety Pledge at Smelter



All our workers get representation in the safety committee meetings that are conducted regularly in order to review the safety performance at the premises.

Safety Officers (CSOs) act as conveners. The members of the safety committee are sent to other industries periodically to learn updated developments in safety practices. All incidents, accidents, near miss cases are discussed and remedial measures are reviewed. The stock of the PPEs, progress of previous meeting points, PME status etc are also reviewed by the committee. The agenda and minutes of meeting is circulated to all. Mines safety committee meeting is conducted once every month and also in case of any emergency occurrence. GGM (Mines) chairs the meeting.

Worker health and safety committees

Safety Committee Meetings are conducted in each of the units comprising of senior management and worker union representatives in which safety performance is reviewed, feedback is given, and action plans are made for continuous improvements. All our workers get representation in the safety committee meetings that are conducted regularly in order to review the safety performance at the premises. The accidents, near miss cases and unsafe conditions are discussed and reviewed every month. Committees are headed by the respective Heads of Units while the Chief

Injury Statistics

Our standardised practices and processes include monitoring 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 and occupational diseases are analysed under the OHSAS18001/ISO45001 System to undertake corrective actions to prevent recurrence. The details of the accidents, severity rate and fatalities are given below for the year 2019-20.

Unit	Category	Reportable Accidents (includes fatal accidents) (1)	Man-days worked (2)	Man-days lost (3)	Man-hours Worked (4) (2)x8	Lost days Rate (5) (3)/(2) x100	Rate of Injury (6) (1)/(4) x10 ⁶	Absentee Rate (7) (3)/(4) x10 ⁶
Refinery	Employees	0	419,359	4	3,354,872	0.0009538	0	1.1922
	Contractors' Labour	1	969,022	41	7,752,176	0.004231	0.129	5.2888
CPP	Employees	0	304,430.5	0	2,435,444	0	0	0
	Contractors' Labour	1	647,519	113	5,180,152	0.002	0.193	21.81
Smelter	Employees	1*	744,738.5	119	5,957,908	0.016	0.167	19.97
	Contractors' Labour	1*	1,384,588	6,000	11,076,704	0.433	0.090	541.67
Mines (C&N Block and South Block)	Employees	1	124,625	6,000	997,000	4.814	1.003	6,018.054
	Contractors' Labour	0	281,824	0	2,254,592	0	0	0
Port	Employees	0	12,351	0	98,808	0	0	0
	Contractors' Labour	0	12,894	0	103,152	0	0	0

Fatalities	2019-20	
	Employees	Contractors' Labour
Alumina Refinery, Damanjodi	Nil	Nil
Aluminium Smelter, Angul	Nil	1*
Bauxite Mines, Panchpatmali	1	Nil
Captive Power Plant, Angul	Nil	Nil
Port facility, Visakhapatnam	Nil	Nil

* Indicates one incident of electrical flash over which occurred on July 23, 2019 involving one injury (employee), two fatalities (one contract labour and one apprentice trainee).

PME Statistics

We conduct PME of employees and contractors regularly.
The PME statistics for reporting year is given below:

PME Done	2019-20	
	Employee	Contractors' Labour
Alumina Refinery, Damanjodi	1,518	408
Aluminium Smelter, Angul	2,980	3,479
Bauxite Mines, Panchpatmali	398	271
Captive Power Plant, Angul	1,040	2,202
Port facility, Visakhapatnam	45	91





Community Development

Being a responsible corporate citizen, it is our duty to foster strong relationships with the society we operate in, therefore we are committed to conduct our operations in a socially responsible manner. Our CSR Policy aims to achieve inclusive growth of the underprivileged sections of the society through well-conceived interventions. Our core values of the philosophy “BEST” captures our commitment towards the development and wellbeing of the society.

We actively engage with our local communities and have been working relentlessly to bring positive impacts in the lives of neighbouring communities with a multifaceted approach. Our CSR Policy defines the objectives and acts as a preamble to inclusive growth and equitable development. The insights and feedbacks help us to devise different people centric interventions with special focus on vulnerable and marginalised communities. We focus on projects /programmes, which lead to enhanced capabilities, empowerment and well-being of such sections of the society. 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 objectives have garnered great significance and is currently driven by the Board level CSR&SD Committee. The CSR proposals are examined, before putting the recommendations for approval to the Board. A separate Monitoring and Evaluation framework has also been put in place to ensure timely completion of the key programmes.

The strategic CSR interventions are a result of Need Assessment Surveys (NASs) and inputs from various stakeholders like Rehabilitation and Peripheral Development Advisory Committee (RPDAC), CSR arm i.e. NALCO Foundation, District Administration, opinion leaders and local bodies. The expectations of the community residing in the local areas are gathered through participatory approach. The developmental views are then incorporated into initiatives.



We have been enriching our communities by providing them with employment support. Supporting our generation of tomorrow is important to our business and the sustainability of our communities.

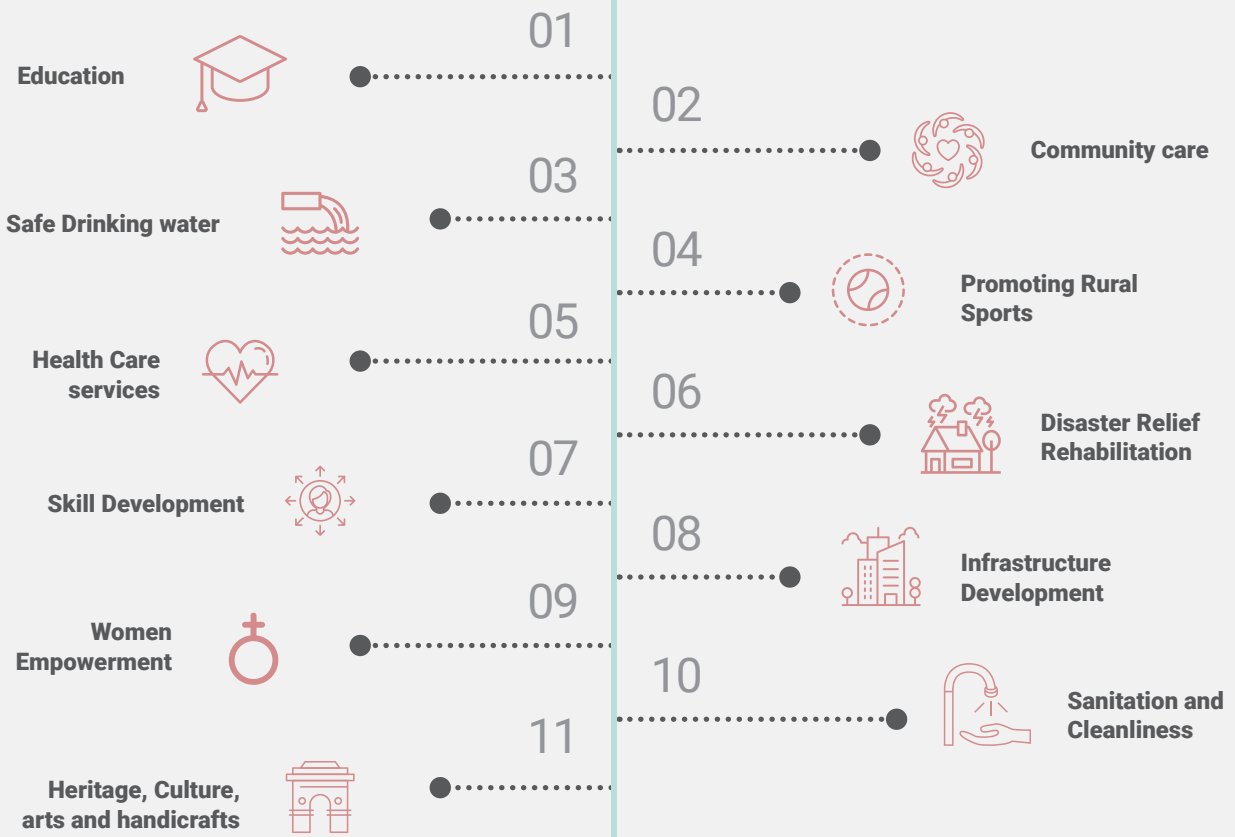
The CSR projects of strategic importance are undertaken through NALCO directly and all other approved projects/programmes are undertaken through NALCO Foundation, Trusts, Government Agencies, Semi Government Organisations, and Section 8 Companies. To be eligible for handling NALCO CSR Projects, NGOs, Trusts and Section 8 Companies must have an established track record of 3 years in undertaking projects or programmes of similar kind.

Local Employment Opportunities

We have been enriching our communities by providing them with employment support. Supporting our generation of tomorrow is important to our business and the sustainability of our communities. We promote direct and indirect employment interventions in our surrounding areas through capacity expansion, subsidiaries, joint ventures and downstream industries. We also extend employment opportunities to local persons who have lost considerable amount of land during land acquisition for our project. The candidates from land losers and oustees are sponsored for skill development training and other similar trainings for generating livelihood. Local persons are extensively engaged by different contractors in transportation, security, maintenance, projects etc. As on March 31, 2020, the total strength of employees in regular employment is 6,203. Job Contractors working in areas like hospitality, maintenance, sanitation, conservancy and project activities etc. have engaged 10,999 contract labour to discharge their contractual obligations. Thus, we provide livelihood opportunities for a sizable local population.

Corporate Social Responsibility

Main areas of CSR Initiatives



Health camp at Pottangi



Branded Rajdhani train inaugurated by Hon'ble Union Minister Shri Dharmendra Pradhan



Relief for Phani cyclone affected





Operations with local community engagement, impact assessments, and development programs

We engage with our communities at a deeper level in order to gain insights and undertake extensive community consultation for our developmental projects and CSR interventions. The communities can prioritise their needs through the application of Participatory Rural Appraisal (PRA) tools. The involvement of the community from the initial stages generates greater ownership over the assets created as well as make the intervention community driven. Further, the Community-Based Organisations (CBOs) like Self Help Groups (SHGs), Village Development Committee (VDC), Youth clubs, farmer’s group etc. are being formulated and strengthened through capacity building programs who work as the change agent and ensure positive transformation at the ground level.

NALCO Foundation has adopted project-based accountability through need-based approach ensuring participation of the primary stakeholders at the grassroots level in the project management process. The Foundation further intervened in capacity building of youths, women, Panchayati Raj Institutions (PRI) members and other stakeholders. Some of the projects are also being executed by us directly.

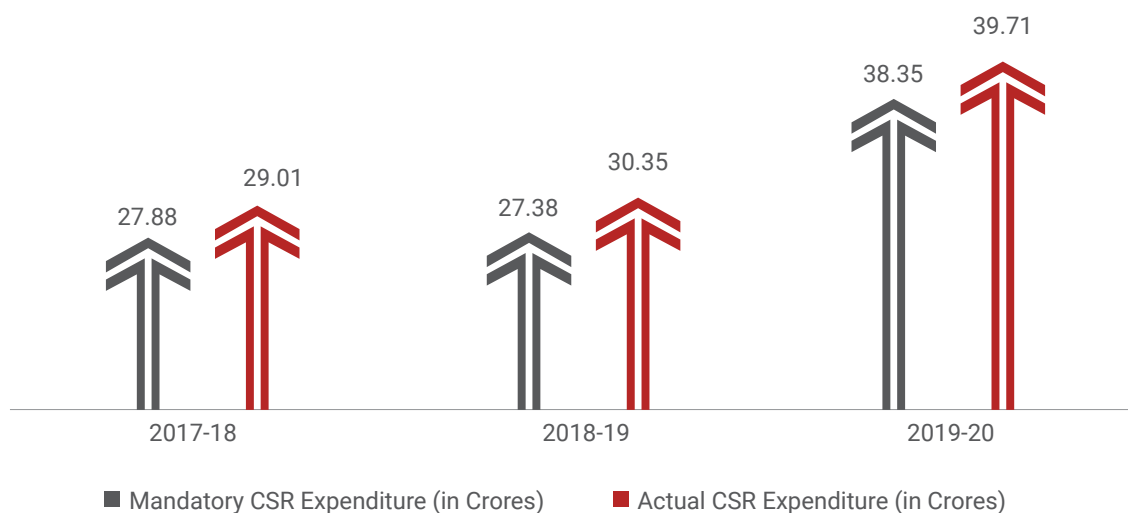


NALCO Foundation has adopted project-based accountability through need-based approach and ensuring participation of the primary stakeholders at the grassroots level in the project management process.

Monitoring and Impact Assessment

We conduct Monitoring and Evaluation of our projects which help us in checking the effectiveness of critical projects. Social impact Assessment of projects of NALCO Foundation was conducted by Central University of Odisha, Koraput during the year 2012 and of the CSR projects implemented by NALCO by Utkal University, Bhubaneswar in 2017. Another Impact Assessment Study was undertaken with the support of Madras School of Social Work (MSSW), Chennai in 2019.

CSR Expenditure (in Crores)



CSR Expenditure

For the FY 2019-20, we spent INR 39.71 Crores for CSR activities. Few of our flagship CSR initiatives are illustrated below

Indradhanush

- Residential education to tribal students, since 2012
- In collaboration with reputed schools at Koraput and Bhubaneswar
- Total students sponsored – 1,003

Safe Drinking water

- Safe drinking water through tankers supplied at the doorstep of people in 27 water scarce periphery villages of S&P Complex, Angul.
- At Angul, pipe water supply to different villages are being provided in collaboration with Rural Water Supply and Sanitation (RWS&S).
- In peak summer, 25 tube wells in the periphery villages of Damanjodi and Pottangi were provided.

NALCO ki Ladli

- Financial Assistance for pursuing education to meritorious girl children
- Total beneficiaries – 603

MHU Services and OPD services

- 8 Mobile Health Units (MHUs) at Angul, Damanjodi and Pottangi
- OPD Services at NALCO Township, Angul
- 1.49 lakh patients benefitted from MHU and 15,713 from specialist OPD

Women Empowerment through SHGs

- Employment generation schemes among tribal women
- 14 SHGs of 8 villages are engaged in mushroom production earning up to INR 90,000/

Sanitation

- 24,000 hygienic kits were distributed among adolescent girls in 155 schools of seven districts.
- In line with the Swachha Bharat Mission NALCO had taken up construction of Individual. House Hold Latrines (IHHL) in five villages of S&P Complex, Angul



Special OPD at Angul



Open Defecation Free village



NALCO ki Ladli annual sports



Hygiene kit distribution among girl students



CSR Project wise Expenditure

The CSR expenditure under different heads against the plan is given in the Annual Report section of CSR. The below table activity wise implementation agency for the sectors.

Year	Mandatory CSR Expenditure (in crores)	Actual CSR Expenditure (in crores)
FY 2017-18	27.88	29.01
FY 2018-19	27.38	30.35
FY 2019-20	38.35	39.71

Sr. No.	CSR Project/ Activities	Sector	Direct or through implementing Agency
1	Health outreach Program: (a) Operation of Mobile Health Units & awareness building through Information, Education, Communication (IEC) activities. (b) Operation of OPD.	Preventive health care	NALCO Foundation & directly by the Company
2	Sanitation: (a) Construction of Toilets under Swachh Vidyalaya Abhiyan (b) Construction of Individual House-Hold Toilets under ODF initiative (c) Provision of water supply to toilets constructed under Swachh Vidyalaya Abhiyan.	Preventive health care and sanitation	NALCO Foundation & directly by the Company
3	Sanitation: (d) Swachh Iconic City Project - Puri	Preventive health care and sanitation	NALCO Foundation & directly by the Company
4	Providing safe drinking water to periphery villages of plants and during Rath Yatra at Puri	Safe drinking water	NALCO Foundation & directly by the Company
5	Promoting education: a) Supporting formal education of tribal children in reputed residential schools b) Supporting NALCO ki Ladli c) Quality education to students of periphery area at Saraswati Vidya Mandir, Angul & Damanjodi	Education including special education	NALCO Foundation
6	Providing employment enhancing training to unemployed youth	Employment Enhancing vocational skill	Directly by the Company
7	Empowering women / Hostels for Orphans	Employment women	NALCO Foundation
8	Ensuring environmental sustainability, ecological balance through plantation	Environmental Sustainability and ecological balance	NALCO Foundation & directly by the Company
9	Contribution towards protection of national heritage and culture and development of traditional arts and handicrafts.	Protection of national heritage, art & culture	Directly by the Company
10	Promotion of Rural Sports	Sports	NALCO Foundation & directly by the Company
11	Rural development activities in periphery villages and other area	Rural development projects	NALCO Foundation & directly by the Company
12	Disaster Management including relief, rehabilitation and reconstruction activities	-	NALCO Foundation & directly by the Company
13	Administrative Expenditure for carrying various CSR Projects/Programme	-	NALCO Foundation

We continue to impact our communities through our strategic CSR interventions as we touch upon the lives of marginalised and deprived sections of society. The impact assessment studies further reflect and redefine our policies and strategies of CSR.



Case Studies

Water is Substance of Life

Background

We are mobilising the CSR activities in the periphery areas by addressing the community expectations and needs with due consultation with all stakeholders. NALCO Foundation, the CSR arm of NALCO, involves community participation for implementation in form of labour and local resources, towards the physical construction of the village assets. By understanding and analysing the interest area of the community and availability of local resources, NALCO Foundation has taken up different entry point activities like gravity based drinking water supply, improved agricultural practices, women empowerment and strengthening of CBOs, promotion of rural sports among tribal youth etc. with contribution of community as a result of which the community took the ownership of the project and ensure best utilisation of available resources. One of such success story of Pottangi area makes us acquainted with the harsh reality of women and girls who walk for miles to fetch water for their family. The plight of women of Nuaguda village coming under Semiliguda Block is not different from the above-said story. A village of 30 households containing 200 people. The scarcity of water at the village forces women and girls to cover a long distance for collecting a bucket of water from stagnant water pool called Chua, a unhygienic source of water responsible for spreading different diseases like Malaria, Diarrhoea, Typhoid, Cholera etc.

Implementation Methodology

During the SHG meeting, the women of the village raised this issue and requested NALCO Foundation for providing financial support to construct spring-based water supply system to address the water scarcity. After getting the request from the villagers, the NALCO Foundation officials and villagers of Nuaguda had a village meeting to finalise the modalities and responsibility of both parties to channelise the water from a stream which is situated nearly 4 km away

from the village. It was decided to implement this project through labour contribution of villagers and gather material support and technical guidance from NALCO Foundation.

After kickstarting the project, the villagers faced lots of challenges to complete the project as per the promised modalities because the village lacks skilled mason workers to carry out the construction activities.

Outcomes

To address this issue, the villagers arranged an urgent meeting with the masons from neighboring village to assist and guide the villagers in the construction process. After getting the request from the villagers, both the masons extended their support without charging a single penny from the villagers. With their assistance, the work was completed in time for which they were honored by the GM (H&A) of NALCO during the inauguration of the project.



Mushrooming Tribal Women Entrepreneurs

Background

In the recent decades, more focus is being laid on empowerment of women through self-employment. Taking the cue NALCO foundation facilitated the villagers in the formation of Community Based Organisations (CBOs) like Self Help Groups (SHGs) and Village Development Committee (VDCs). After formation of the CBOs, the members have been trained and linked with organisation like Krishi Vigyan Kendra (KVK), Sunabeda and Indian Council of Agricultural Research (ICAR), Sunabeda for promotion of sustainable agricultural practices under the technical guidance for their livelihood generation and financial empowerment. Kitchen garden and mushroom cultivation is especially being promoted among the local women. The activities have helped SHG women with an alternative source of income and also raise their nutritional status. In order to promote organic farming in Pottangi and Damanjodi areas, our foundation also visited MS Swaminathan Foundation, Jeypore to make them partner to execute such projects.

Implementation Methodology

Mushroom cultivation is easily adoptable by anyone with limited resources. Fifty women SHGs were institutionalised, strengthened through training, technical guidance and continuous handholding was provided, support in establishing linkages and mobilisation of resources to initiate mushroom cultivation as well as any alternative income generating program (IGP) was also provided. In some cases, the foundation also provided the materials along with training and technical guidance to cultivate mushroom.

Outcomes

The continuous engagement resulted in successful adoption of mushroom cultivation by 14 SHGs from 8 villages by the end of FY 2019-20. From them, SHGs of Kasuguda village have generated revenue of more than INR 75,000 by selling the mushroom. SHGs of Gelaguda village also generated a revenue of INR 90,000. This intervention gained much popularity among villagers. With such achievement,

we are planning to replicate and expand these kind of activities in other villages.

In 2019-20, some other new ventures have already been initiated to enable other SHGs in generating income. Their resources were being mapped and linkages were established with financial institutes and other government departments towards the cause. Forty women were trained in making Jack Fruit chips after which two SHGs started chips making business. Recently, they have sold 300 Kgs of chips in the local market. Discussions were held with Odisha Rural Development and Marketing Society (ORMAS) for standardisation, packaging and exploring ways to sell product beyond the local markets in future.

A pond has been renovated under CSR initiative of the Company to enable them do fish cultivation in Kasuguda village. Official from Fishery Dept. were invited who gave them training and technical guidance for fish cultivation. Four number of SHGs have started fish cultivation in the pond recently. Similarly, some SHGs are motivated to do kitchen gardening, millet cultivation etc. With their success our goal is getting stronger day by day to adopt more such initiatives.



Our Contribution to SDGs

SDG Goal	Elements of SDGs Mapped to GRI Standards	NALCO Contribution
 <p>1 NO POVERTY</p>	<ul style="list-style-type: none"> Indirect Economic Impacts to local communities (GRI 203-2) Community Development Programs (GRI 413-1) 	<ul style="list-style-type: none"> We have transformed the local economy through indirect impacts We undertake local community development programs based on local communities' needs
 <p>3 GOOD HEALTH AND WELL-BEING</p>	<ul style="list-style-type: none"> Access to medicines, part of community development programs (GRI 413-1) Air Quality (GRI 305-1, 305-2, 305-3, 305-6) Occupational health and safety (GRI 403-1, GRI 403-2 & 403-3, GRI 403-4 & GRI 403-5) Water and effluents (GRI-303-1, 303-2, 303-3, 303-4, 303-5) 	<ul style="list-style-type: none"> Healthcare facility to periphery villagers inclusive of basic medicines through Mobile Health Unit (MHU) and OPD centers Well-equipped Occupational Health Centres and Medical facilities to prevent spread of occupational disease Continual monitoring of emission and effluent parameters Minimising the adverse impact on water bodies following zero discharge to outside
 <p>4 QUALITY EDUCATION</p>	<ul style="list-style-type: none"> Education for sustainable development, part of community development programs (GRI 413-1) 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 through CSR During the year 10,940.5 training man days for regular employees
 <p>5 GENDER EQUALITY</p>	<ul style="list-style-type: none"> Gender Equality (GRI 404-1) 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.
 <p>6 CLEAN WATER AND SANITATION</p>	<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, waste water recycling for internal use, Rainwater Harvesting Proper storage, handling and disposal of waste Provision of drinking water facility in peripheral villages through CSR. Swacch Vidyalaya and ODF villages towards cleanliness, hygiene through CSR
 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	<ul style="list-style-type: none"> Energy consumption and efficiency (GRI 302-1, 302-4) 	<ul style="list-style-type: none"> Wind power plants, Roof-top solar panels PAT participation, Energy saving measures, LED lighting in plants Solar street lights and solar home solutions are installed in the inaccessible tribal dominated periphery through CSR
 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<ul style="list-style-type: none"> Infrastructure investments (GRI 203-1) Employment (GRI 401-2) 	<ul style="list-style-type: none"> CSR projects towards construction of roads, culverts, drains, shelter home, renovation and revamping of community centres and water bodies etc in periphery villages 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 Skill development programme to enhance employability of the local unemployed youth through CSR Promotion of alternative sources of livelihood to the tribal women from the periphery villages through CSR



	<ul style="list-style-type: none"> • Infrastructure investments (GRI 201-1) 	<ul style="list-style-type: none"> • Significant amount of economic value is distributed • Infrastructure development initiatives for communities • Investments in R&D and technology collaborations
	<ul style="list-style-type: none"> • Equal remuneration for women and men (GRI 405-2) • No discrimination based on caste, creed, religion etc, part of community development programs (GRI 413-1) 	<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 • Equal treatment for all employees irrespective of their caste, religion, domicile status etc
	<ul style="list-style-type: none"> • Community Investments (GRI 413-1) • Waste Management (GRI 306-2) 	<ul style="list-style-type: none"> • Wind and solar power, energy reduction technologies and equipments, LED lighting • Emission control through better combustion, fume treatment plants, ESPs • Ambient air-quality monitoring • Minimising the adverse impact on water bodies following zero discharge to outside
	<ul style="list-style-type: none"> • Energy efficiency (GRI 302-1, 302-4) • Materials efficiency/recycling (GRI 301-1, 301-2) • Procurement practices (GRI 204-1) • Sustainable Mining (GRI 306-3) • Spills (GRI 306-3) • Water efficiency (GRI 303-3) • Water quality (GRI 303-1) 	<ul style="list-style-type: none"> • Energy reduction, adoption of green technologies, pollution control and environmental protection, Ambient air quality monitoring, emission monitoring and control, Increased use of green energy, resource optimisation recycling and reuse of wastes, prevention of ground water and surface water contamination • Sustainable mining • Reduce, recycle & reuse is our basic ideology of waste management. • Spending on local suppliers and MSEs • Anti-corruption practices
	<ul style="list-style-type: none"> • Energy efficiency (GRI 302) • Environmental investments (GRI 305, 306) • GHG emissions (GRI 305-1, 305-2, 305-3, 305-6) • 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 Target
	<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 304-4) 	<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 the State Forest Department • Wildlife Management Plan approved by PCCF (Wildlife), Odisha.
	<ul style="list-style-type: none"> • Anti-corruption (GRI 205-1) • 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 and 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

GRI Content Index



CONTENT INDEX SERVICE

2021

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.

Disclosure Number	Disclosure Title	Page Number	Omissions
GRI 101: Foundation 2016			
GRI 102: General Disclosures 2016			
102-1	Name of the organization	9	-
102-2	Activities, brands, products, and services	10	-
102-3	Location of headquarters	9	-
102-4	Location of operations	10	-
102-5	Ownership and legal form	11	-
102-6	Markets served	11	-
102-7	Scale of the organization	12	-
102-8	Information on employees and other workers	66	-
102-9	Supply chain	42	-
102-10	Significant changes to organization and its supply chain	42	-
102-11	Precautionary Principle or approach	12	-
102-12	External Initiatives	12	-
102-13	Membership of associations	13	-
102-14	Statement from senior decision-maker	5	-
102-15	Key impacts, risks, and opportunities	25	-
102-16	Values, principles, standards, and norms of behaviour	15	-
102-17	Mechanisms for advice and concerns about ethics	19	-
102-18	Governance Structure	15	-
102-40	List of Stakeholder Groups	29	-
102-41	Collective bargaining agreements	68	-
102-42	Identifying and selecting stakeholders	30	-
102-43	Approach to stakeholder engagement	30	-
102-44	Key topics and concerns raised	31	-
102-45	Entities included in the consolidated financial statements	35	-
102-46	Defining report content and topic Boundaries	34	-
102-47	List of material topics	35	-
102-48	Restatements of information	4	-
102-49	Changes in reporting	4	-
102-50	Reporting Period	4	-
102-51	Date of most recent report	4	-
102-52	Reporting cycle	4	-
102-53	Contact point for questions regarding the report	4	-
102-54	Claims of reporting in accordance with the GRI Standards	4	-
102-55	GRI Content Index	86	-
102-56	External Assurance	4	-
200 Series (Economic Topics)			
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	37	-



103-2	The management approach and its components	37	-
103-3	Evaluation of the management approach	37	-
GRI 201: Economic Performance 2016			
201-1	Direct economic value generated and distributed	40	-
201-2	Financial implications and other risks and opportunities due to climate change	40	-
201-3	Defined benefit plan obligations and other retirement plans	41	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	77	-
103-2	The management approach and its components	77	-
103-3	Evaluation of the management approach	77	-
GRI 203: Indirect Economic Impacts 2016			
203-2	Significant indirect economic impacts	77	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	42	-
103-2	The management approach and its components	42	-
103-3	Evaluation of the management approach	42	-
GRI 204: Procurement Practices 2016			
204-1	Proportion of spending on local suppliers	42	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	19	-
103-2	The management approach and its components	19	-
103-3	Evaluation of the management approach	19	-
GRI 205: Anti Corruption 2016			
205-1	Operations Assessed for Risks related to Corruption	22	-
205-2	Communication and training about anti-corruption policies and procedures	22	-
205-3	Confirmed Incidents of Corruption and Actions taken	23	-
300 Series (Environmental Topics)			
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	45	-
103-2	The management approach and its components	45	-
103-3	Evaluation of the management approach	45	-
GRI 301: Materials 2016			
301-1	Materials used by weight or volume	48	-
301-2	Recycled input materials used	49	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	45	-
103-2	The management approach and its components	45	-
103-3	Evaluation of the management approach	45	-
GRI 302: Energy 2016			
302-1	Energy Consumption within the organization	49	-
302-3	Energy intensity	50	-
302-4	Reduction in energy consumption	51	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	45	-
103-2	The management approach and its components	45	-
103-3	Evaluation of the management approach	45	-

GRI 303: Water and Effluents 2018			
303-1	Interactions with water as a shared resource	54	-
303-2	Management of water discharge-related impacts	56	-
303-3	Water Withdrawal	54	-
303-4	Water Discharge	54	-
303-5	Water consumption	56	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	62	-
103-2	The management approach and its components	62	-
103-3	Evaluation of the management approach	62	-
GRI 304: Biodiversity 2016			
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	63	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	45	-
103-2	The management approach and its components	45	-
103-3	Evaluation of the management approach	45	-
GRI 305: Emissions 2016			
305-1	Direct (Scope 1) GHG emissions	53	-
305-2	Energy indirect (Scope 2) GHG emissions	53	-
305-3	Other indirect (Scope 3) GHG emissions	53	-
305-6	Emissions of ozone-depleting substances (ODS)	53	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	58	-
103-2	The management approach and its components	58	-
103-3	Evaluation of the management approach	58	-
GRI 306: Waste 2020			
306-1	Waste generation and significant waste-related impacts GRI	58	-
306-2	Management of significant waste-related impacts	58	-
306-3	Waste generated	60	-
306-4	Waste diverted from disposal	60	-
306-5	Waste directed to disposal	60	-
400 Series (Social Topics)			
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	66	-
103-2	The management approach and its components	66	-
103-3	Evaluation of the management approach	66	-
GRI 401: Employment 2016			
401-1	New employee hires and employee turnover	67	-
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	67	-
401-3	Parental Leave	68	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	72	-
103-2	The management approach and its components	72	-
103-3	Evaluation of the management approach	72	-
GRI 403: Occupational Health and Safety 2018			
403-1	Occupational health and safety management system	73	-



403-2	Hazard identification, risk assessment, and incident investigation	73	-
403-3	Occupational health services	74	-
403-4	Worker participation, consultation, and communication on occupational health and safety	75	-
403-5	Worker training on occupational health and safety	74	-
403-6	Promotion of worker health	73	-
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	73	-
403-9	Work-related injuries	75	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	70	-
103-2	The management approach and its components	70	-
103-3	Evaluation of the management approach	70	-
GRI 404: Training and Education 2016			
404-1	Average hours of training per year per employee	71	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	68	-
103-2	The management approach and its components	68	-
103-3	Evaluation of the management approach	68	-
GRI 406: Non-discrimination 2016			
406-1	Incidents of discrimination and corrective actions taken	68	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	68	-
103-2	The management approach and its components	68	-
103-3	Evaluation of the management approach	68	-
GRI 407: Freedom of Association and Collective Bargaining 2016			
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	68	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	68	-
103-2	The management approach and its components	68	-
103-3	Evaluation of the management approach	68	-
GRI 408: Child Labor 2016			
408-1	Operations and suppliers at significant risk for incidents of child labor	68	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	68	-
103-2	The management approach and its components	68	-
103-3	Evaluation of the management approach	68	-
GRI 409: Forced or Compulsory Labor 2016			
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	68	-
GRI 103: Management Approach 2016			
103-1	Explanation of the material topic and its Boundary	77	-
103-2	The management approach and its components	77	-
103-3	Evaluation of the management approach	77	-
GRI 413: Local Communities 2016			
413-1	Operations with local community engagement, impact assessment and development programs	79	-

Abbreviations

AAQMS	Ambient Air Quality Monitoring Systems
APIO	Assistant Public Information Officers
BEE	Bureau of Energy Efficiency
BPTG	Back Pressure Turbo Generator
BRR	Business Responsibility Report
CAAQMS	Continuous Ambient Air Quality Monitoring Stations
CAG	Comptroller and Auditor General
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CBO	Community-based organisations
CC	Climate Change
CDA	Conduct Discipline and Appeal
CEMC	Centre for Envotech and Management Consultancy Private Limited
CMD	Chairman cum Managing Director
CMRI	Central Mining Research Institute
CPCB	Central Pollution Control Board
CPP	Captive Power Plant
CPSEs	Central Public Sector Enterprises
CSO	Chief Safety Officer
CSR	Corporate Social Responsibility
CTE	Chief Technical Examiner
CVC	Central Vigilance Commission
CVO	Chief Vigilance Officer
DFPlant	Defluorination Plant
DPE	Department of Public Enterprises
EBIDTA	Earnings Before Interest,tax,depreciation and amortisation
EFBS	Employee Family Benefit Scheme
EMS	Environment Management Systems
ERM	Enterprise Risk Management
ERP	Enterprise Resource Planning

ESI	Employee State Insurance
ESP	Electro Static Precipitator
FIMI	Federation of Indian Mineral Industries
FSAs	Fuel Supply Agreements
GACL	Gujarat Alkalies and Chemicals Ltd.
GHG	Green House Gas
GJ	Gigajoule
Gol	Government of India
GPL	Grams Per Litre
GRI	Global Reporting Initiative
HCL	Hindustan Copper Limited
HDPE	High Density Polyethylene
HEMM	Heavy Earth Moving Machinery
HFO	Heavy fuel oil
HR	Human Resource
IBM	Indian Bureau of Mines
ICAR	Indian Council of Agricultural Research
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
KVK	Krishi Vigyan Kendra
IDCO	Industrial Infrastructure Development Corporation
LDO	Light Diesel Oil



LME	London Metal Exchange
LODR	Listing Obligation and Disclosure Requirements
MECL	Mineral Exploration Corporation Limited
ML	Mega liters
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
Mnt	Million Tonnes
MU	Million Unit
MW	Mega Watt
NALCO	National Aluminium Company Limited
NAMASYA	NALCO Micro and Small enterprise Yogayog Application
NASs	Need Assessment Surveys
NBFS	NALCO benevolent fund scheme
NEFFARS	NALCO employee's family financial assistance rehabilitation scheme
NMEEE	National Mission on Enhanced Energy Efficiency
NOx	Nitrogen Oxides
NRTC	NALCO Research & Training Centre
NRWS	NALCO retirement welfare scheme
NVG	National Voluntary Guidelines
OHSAS	Occupational Health and Safety Assessment Series
ORMAS	Odisha Rural Development and Marketing Society
OSPCB	Odisha State Pollution Control Board
PAT	Perform, Achieve& Trade scheme
PAT	Profit After-tax
PBT	Profit Before Tax
PCCF	Principal Chief Conservator of Forests
PPE	Personal Protective Equipment

PFCs	Perfluoro carbons
PRA	Participatory Rural Appraisal
PRMBS	Post-retirement medical benefits scheme
PSEB	Public Sector Enterprises Board
PSUs	Public Sector Units
PWD	Persons with Disabilities
R&D	Research & Development
RMP	Red Mud Pond
RPDAC	Rehabilitation and Periphery Development Advisory Committees
RTA	Rio Tinto Alcan
RTI	Right to Information
SA	Social Accountability
SCOPE	Standing Conference of Public Enterprise
SDG	Sustainable Development Goal
SEBI	Securities and Exchange Board of India
SEC	Specific Energy Consumption
SGP	Steam Generation Plant
SHGs	Self Help Groups
SOx	Sulphur Oxides
SPCB	State Pollution Control Board
SRM	Supplier Relationship Management
STP	Sewage Treatment Plant
tCO ₂ e	Tonnes of carbon dioxide equivalent
TII	Transparency International India
TISS	Tata Institute of Social Sciences
TOE	Tonne of Oil Equivalent
UAE	United Arab Emirates
UN	United Nations
UNGC	United Nations Global Compact
USSS	Udyog Samasya Samadhan Shivir
VDC	Village Development Committee



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