5th SUSTAINABLE DEVELOPMENT REPORT 2015-16





MISSION

To achieve sustainable growth in business through diversification, innovation and global competitive edge.

To satisfy the customers and shareholders, employees and all other stake holders.

To continuously develop human resources, create safe working conditions, improve productivity and quality and reduce cost and waste.

To be a good corporate citizen, protecting and enhancing the environment as well as discharging social responsibility in order to ensure sustainable growth

To intensify R&D for technology development.

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 and 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.

Foreword

NALCO, one of the premier Aluminium Industries in India with a glittering global presence in the Aluminium Sector was established in 1981, with its operations, marketing network and offices strategically located across the country. Acknowledged as a pioneer, the organisation is responsible for many breakthroughs in the domestic Aluminium Industry. Ranked as one of the trend setters, NALCO is widely acclaimed for its commitment to environment protection and social responsibility which are an integral part of its operations, as reflected in the mission statement. These initiatives towards sustainable growth are outlined in the following pages.



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ORGANIZATION & STRATEGY



"We are deeply committed to practise & propagate sustainability and make it an intrinsic part of our business strategy"



Dear Stakeholders.

I take immense pleasure in presenting the fifth edition of our Sustainable Development report outlining the progress achieved during 2015-16, in the sustainability arena. With this, we carry forward our legacy of annual disclosures on relevant economic, social, environmental and governance aspects of sustainability. Our sustainability endeavour aims beyond just securing a social license to operate. It is a relentless pursuit to perpetuate our future viability, with targeted economic growth embedded with responsible care for society, governance and environment. Our vision & mission statements and the sustainable development policy remain the guiding beacon for our concerted efforts in this direction.

In the backdrop of a gloomy global scenario and the sluggish market for Aluminium industry, with about 70% aluminium smelters worldwide operating with losses, our achievements during the 2015-16 fiscal in physical as well as in financial terms, is quite encouraging. We have scaled a few heights of success with the Mines achieving the highest-ever bauxite production of 63.4 lakh tonnes, registering 10% growth over previous year, while Alumina Refinery has achieved the highest-ever alumina hydrate production of 19.53 lakh tones with a corresponding growth of 6%. Total metal sales during 2015-16 was 3.72 lakh tonnes, compared to 3.26 lakh tonnes during 2014-15 with wire rod sale of 1.01 lakh tonnes in domestic market being the highest-ever sale since inception. Such performance bears testimony to our efforts towards economic sustainability of the organization. Looking ahead, we have envisaged a New Business Model to address the market dynamics and to keep the company afloat with profitability, by leveraging the existing core competency in mining, metals and energy sectors through modernization, Greenfield and Brownfield expansions, upstream and downstream integration. The model, also aims for diversification into green power, IPP, caustic soda, rare metals like titanium, recovery of iron from red mud waste and merchant mining, which are immune to any downturn in metal market.

Aligned with the global priority for combating the climate change threat, strategies are carved out for adopting energy efficient and cost effective technology to reduce Green House Gas emissions. The existing 4.6-lakh tonnes per annum aluminium smelter based on AP18 technology, is planned to be upgraded to AP2Xn, which would reduce the energy consumption to a great extent. R&D initiatives in this area are being taken up on priority. Also, setting up a green field Smelter is being explored for infrastructure, technology and source of energy. Wind Power plants of 50 MW and 50.4MW are being set up in Rajasthan & Maharastra, respectively. Plans for setting up Solar Power Plants and Wind Power plants at suitable locations, are also on anvil.

Our focus on enhancing competitiveness, manifested through our relentless drive to improve productivity & profitability while maintaining a cleaner, greener and safer working environment is evident with all our production units operating with ISO 9001,ISO14001, OHSAS 18001 certificates with international accreditation, supported by valid Consent to Operate, Environmental Clearances, licenses etc. Concurrently, preparations are on the anvil to gear up for the industrial upsurge envisaged in a couple of years from now. Keeping abreast of this, the existing Management Systems are planned to be progressively bolstered with



Business Excellence (BE) initiative. The implementation process, rolled out in the Alumina Refinery with BE star recognition initiative during the year, saw the unit being successfully crowned with the award "BE Star Recognition as Leader in Process Industry" for excellence in Operations Management. The initiative is planned to be extended to other units in a progressive manner. Our Energy Efficiency Improvement Initiatives, were rewarded with issue of 36,119 Energy Saving Certificates (EScerts) to our units for their performance in PAT cycle I. Workplace Management System i.e. the widely-acclaimed 5S system, was also introduced in production units to develop a few model areas and substantial progress is noticed in these areas. Continual Improvement activities with involvement of employees in all production units have also been quite encouraging.

The importance of human capital for achieving organizational objectives does not need any elaboration. The sustainability of the organization in a turbulent business climate owes a lot to the committed employees, who collectively contributed for productivity, profitability and credibility of the organization. The industrial relations climate has been peaceful, healthy and conducive to growth because of the participative management processes. Strict adherence to the Presidential Directives, other Government advisory and statutory provisions in the matter of reservation and concessions for different categories are being monitored effectively.

CSR activities undertaken by us, are primarily aimed at building an improved & sustainable way of life for the weaker sections of the society around us. We are committed to grow as a responsible Corporate citizen in a respectful and interactive manner acknowledging the rights of the communities around and the needs of the environment. The thrust is given on promoting education & literacy, health care service, sanitation, drinking water facility, development of infrastructure facilities etc. An amount of Rs.27.17 crore was spent during the year under report against stipulation of Rs.26.24 crore as per applicable provisions of the Companies Act, 2013. The CSR projects are identified based on recommendations of District Administration, internal assessment in periphery areas directly by the Company or through NALCO Foundation, our CSR wing, as well as feedbacks received from stakeholders. Two of the major socially significant projects taken up were 'NALCO ki Ladli' scheme as part of 'Beti Bachao, Beti Padhao' programme and the Swachh Vidyalaya Abhiyan. It is our firm belief that an improved performance across the triple bottom line is vital to enhance stakeholder value.

I take this opportunity to thank all our stakeholders for their valued support in our sustainability journey, encouraging us in our resolve to continue our efforts and strive to raise the bar further.

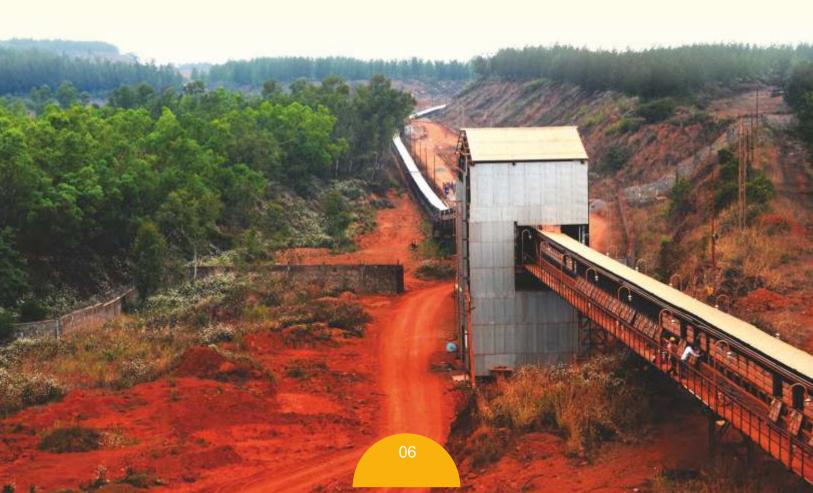
With best compliments (Dr. Tapan Kumar Chand)
Chairman-cum-Managing Director



About the Report

This is the fifth annual sustainability disclosure by NALCO regarding the approach adopted for reinforcing sustainability in the organization and the performance in this aspect for the Financial Year 2015-16. The report is an attempt to communicate to our stakeholders, internal and external, about our sustainability journey in a structured and transparent manner. National Aluminium Company Ltd., a Navaratna Central Public Sector Enterprise under the Ministry of Mines, Govt. of India, is one of the major global player in aluminium industry having an integrated Alumina-Aluminium complex in India.

Sustainable Development Reporting in NALCO was started as a voluntary initiative during 2011-12, following NVG principle to inform all the stakeholders, industry associates and world at large about our concern, effort and achievements on sustainability and environmental front. Continuing the journey forward, we switched over to GRI frame work in subsequent years to align with global reporting framework. We have adopted the latest GRI guidelines for reporting, since 2014-15. This report is also prepared following the GRI G4 framework for reporting, adhering to the principles of GRI Reporting Guidelines namely, materiality, stakeholder inclusiveness, sustainability context and completeness as per GRI G4 "In Accordance-Core" option. The important aspects of sustainability, i.e. economic, environmental, governance and social, are outlined in a balanced, clear, reliable, accurate, reasonable and transparent manner. Where ever possible, we have presented the measured data for reporting and in case of non availability of measured data recourse is taken for calculated data using the assumptions and standard calculation methodologies for estimation and quantification of data. For calculation of carbon emissions, emission factors provided by IPCC and Central Electricity Authority, Government of India have been used.





Reporting Scope and Boundary

The reporting boundary encompasses all our production units, i.e. Bauxite Mine at Panchpatmali Hills, Alumina Refinery at Damanjodi, Odisha, Aluminium Smelter & Captive Power Plant at Angul, Odisha, and Port Facility at Vishakhapatnam. Other business units, such as joint ventures, subsidiaries, leased operations, outsourced operations and services are not included in the report boundary. There were no significant changes during the reporting period in size, structure, ownership or reporting boundary.

Reporting standards

The data on economic performances reported here are based on the information from finance & commercial departments which are subjected to appropriate internal & statutory audits & are in compliance with applicable Accounting Standards. The data pertaining to safety, environment are based on reports from Environment, Health and Safety Department of the units., with structuring & reporting as per GRI frame work by Corporate Total Quality Management Depts. Regular quality, environment, health and safety, energy and social audits are conducted against International Standards such as ISO 9001, ISO 14001, OSHAS 18001, ISO 50001 and SA 8000. Further the systems are verified and reviewed by the concerned government authorities. Norms and procedures prescribed for the work place safety under the Ministry of Labour & Welfare (Factories Act), the Ministry of Environment, Forests and Climate Change and Directorate General of Mines Safety are followed. The diligent internal system adopted for annual reporting, reinforce the overall integrity and credibility of the disclosures in the Report without going for external assurance.

We have also tried to address the 3 principles of Accountability as per AA1000 APS - 2008; the principles of Inclusivity, Materiality and Responsiveness. The report represents the balanced and reasonable presentation of our contributions in the area of sustainability.

We gladly solicit your comments and feedback on the report which will be inputs for us to further develop on our future reports. You may send/email your feedback, comments or suggestions to:

Email: sustainability@nalcoindia.co.in

Postal Address: NALCO Bhavan, P/1, Nayapalli, Bhubaneshwar-751 013, Odisha





NALCO and its Units



About NALCO

National Aluminium Company Limited (NALCO), was established on 7th January, 1981 as a Central Public Sector Enterprise under the Ministry of Mines, Govt. Of India, having its corporate office at Nayapalli, Bhubaneswar, Odisha, to add value to the huge deposit of Bauxite discovered in the East Coast of India. It is acclaimed as one of the gigantic Integrated Aluminium Complex in Asia, encompassing Bauxite Mining, Alumina Refining, Aluminium Smelting and Casting, Power generation and Port operations. Since inception, NALCO, has not only addressed the need for self-sufficiency in aluminium, but has also given the country a technological edge in producing this important metal at global standards. In recognition of its scale of operation and outstanding performance Navratna status has been bestowed on NALCO since 28.4.2008.

NALCO Corporate office Address:
NALCO Bhawan, P/1, Nayapalli, Bhubaneshwar-751 013, Odisha, India

Registered with London Metal Exchange since 1989, the Company has been a consistent profit making organization with substantial foreign exchange earnings. It has earned laurels of being the first Company in the Aluminium Sector from our Country, to venture into International market in a big way. As on date, two phases of expansions have been successfully completed and we are set to launch our third phase capacity expansion. All the manufacturing units and the Port Facility of the Company are certified to ISO 9001, ISO 14001 and OHSAS 18001 Management Systems and Integrated Management System operates at these units. The energy intensive manufacturing units, i.e. Smelter, CPP & Alumina Refinery are also certified to ISO 50001 Standard for Energy Management System. Besides, all the manufacturing units and corporate office are also certified to SA 8000.

Products

NALCO is a leading producer of aluminium metal in the country and a prime exporter of alumina and aluminium in India. The export aluminium markets served by the Company include: Netherlands, Italy, Bangladesh, Korea, Malaysia, Singapore, Vietnam, Turkey, Thailand, Indonesia, China, UAE, Israel, Taiwan, Sri Lanka, etc. Top-quality Alumina produced by the Company is exported to China, Egypt, Iran, UAE, Bahrain, Indonesia, Malaysia etc.

S.No	Product Category	Products	Applications
1	Aluminium products	Standard Ingots, Alloy Ingots, T Ingots, Sow Ingots, Billets, Wire Rods, Chequered Sheet, Flat Rolled Products	 Ingots used for electrical conductors, casting and other applications Billets are basic input for manufacturing high-quality extrusions Wire rod coils have wide applications in conductor & cable industries Rolled & Chequered Sheets are used in manufacturing industries & automobile industries
2	Alumina Products	Calcined Alumina, Alumina Hydrates, Speciality Alumina & Hydrate	 Calcined Alumina used in aluminium smelting Speciality aluminas have applications in refractory and ceramic industries Speciality hydrates used as filler material in plastic, rubber, paper etc. and manufacturing alumina chemicals



NALCO Units



Bauxite Mine

Bauxite is mined from fully mechanised opencast mine of 68,25,000 tons per year capacity situated on Panchpatmali hills of Koraput district in Odisha. After primary crushing, the mined out bauxite is transported to Alumina Refinery by a singleflight, multi curve cable belt conveyor of 14.6 KM length and 1800 TPH capacity. The bauxite content of ore is 90% gibbsitic having 45% alumina & 3% silica.



Alumina Refinery

For extraction of alumina from mined out bauxite, Alumina Refinery of 22,75,000 tons per year capacity is operating at Damanjodi, Odisha, at a distance of approximately 14 km from the Bauxite Mine at Panchpatmali. The Alumina produced is transported to Aluminium Smelter at Angul (Odisha) and to Visakhapatnam Port by rail. Alumina produced is used as raw material for production of primary aluminium at Smelter and surplus alumina is exported for sale in overseas markets.



Aluminium Smelter

For smelting of alumina the 4.60 lakh tons per year capacity Aluminium Smelter is located at Angul in Odisha. Using AP18 smelting technology alumina is converted into primary aluminium in Smelter Plant. The plant has integrated facilities for anode making & manufacturing Standard & Alloy Ingot, Sow Ingots, T-ingots, Billets, Wire Rods, and Rolled products. Aluminium products are sold to different secondary producers in the domestic market and also exported through Kolkata, Paradeep & Visakhapatnam ports.



Captive Power Plant

To meet the power requirement for smelting Captive Thermal Power Plant of 1200 MW (10 X 120 MW) capacity is situated at a distance of 5km from Smelter plant at Angul, Odisha. While the Captive Thermal Power Plant provides power requirement of Aluminium Smelter, it also feeds power to Alumina Refinery through the state grid. The location of Captive Thermal Power Plant at Angul is also strategic to the availability and supply of coal from nearby Talcher Coalfields of Mahanadi Coalfields Limited.



Port Facilities

For exporting alumina in bulk and importing caustic soda, NALCO has established mechanized storage and ship handling facilities on the northern arm of the inner harbour of Visakhapatnam Port on the Bay of Bengal. It can handle ships of 40,000 MT DWT. The current handling capacity of port is 14,00,000 Tonnes per year. NALCO also uses the ports of Paradeep and Kolkata for export of Aluminium.



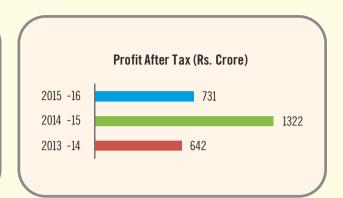
Wind Power Plants

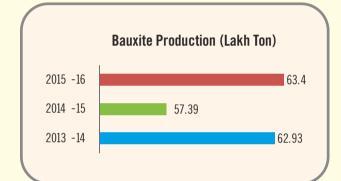
The 1st Wind Power Plant of capacity 50.4 MW (2.1 MW, 24 nos. WEGs) in Gandikota, Andhra Pradesh and the 2nd wind power plant of capacity 47.6 MW (0.85 MW, 56 nos. WEGs) in Jaisalmer, Rajasthan are in operation generating 156 MU during the year.

Performance Highlights & Achievements

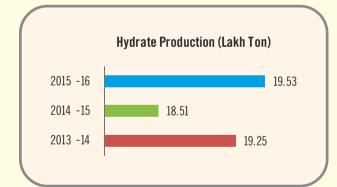
Performance Highlights

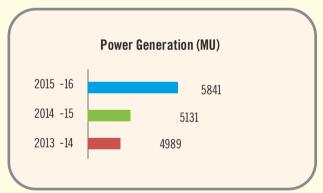


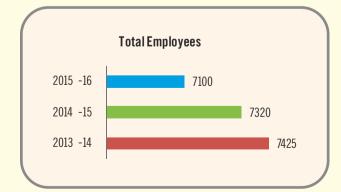


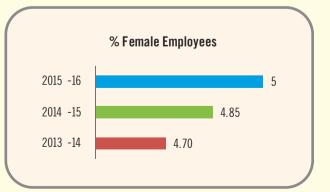














Achievements 2015-16







- Alumina Refinery achieved the highest ever alumina hydrate production of 19.53 lakh MT as against 18.51 lakh MT achieved in previous year registering 6% growth.
- Highest-ever production of 1.01 lakh MT of wire rod and 48,636 MT of tee ingot achieved in smelter surpassing previous best of 96,070 MT & 39,803 MT respectively.
- Mines achieved the highest-ever bauxite transportation of 63.4 lakh MT as against 57.42 lakh MT achieved during the previous year registering 10% growth.
- Ministry of Power Govt. of India accepted the enegry efficiency achievements of PAT Cycle I audited during 2015-16 & issued 36119 EScerts.
- Steam Generation Plant (SGP) at Alumina Refinery achieved the highest-ever net power generation of 438 Million Units (MU) surpassing previous best of 433 MU achieved last year.
- ₹27.17 crore spent towards Corporate Social Responsibility (CSR) adopting all the thrust areas identified in the Schedule-VII of the Companies Act, 2013.
- Allocation of Pottangi Bauxite Mine having reserves of about 80 Million Tonnes and Utkal-D & Utkal-E Coal Blocks having about 200 Million Tonnes of coal reserves.
- Rated 'Excellent' as per the Memorandum of Understanding (MoU), signed with the Government of India for the Financial Year 2015-16.
- Company has signed an MoU with Iranian Mines & Mining Industries Development & Renovation Organization (IMIDRO), a State-owned Company of Iran on 23.05.2016 for business co-operation and collaboration.
- Orders have been placed in January, 2016 for wind power projects of 50 MW and 50.4 MW in Rajasthan & Maharashtra respectively. Also Company has plans to set up 20 MW solar power plant in Madhya Pradesh and 50 MW solar & 50 MW wind power plants at suitable locations in India.

Awards and Accolades

In its journey of business excellence NALCO has earned many accolades for distinguished and meritorious performance in various fields. Some of the distinctions achieved during FY 2015-16 is presented below as testimonial to our performance.

- □ Engineering Export Promotion Council, Eastern Region (EEPC)'s Gold Trophy, as top exporter in the Large Enterprise category
- □ Highest Export Award of Chemical & Allied Products Export Promotion Council (CAPEXIL) for its outstanding export performance in Processed Mineral Category
- □ National Energy Conservation Award by Ministry of Power to M&R Complex, Damanjodi in recognition to its efforts in energy conservation in the Aluminum Sector for the year 2015.
- Pollution Control Excellence Award-2015 by Orissa State Pollution Control Board (OSPCB) to Panchpatmali Bauxite Mines) for effective pollution control measures and sound environment practices.
- □ Kalinga Safety Award in the 'Gold' category for the year 2013 to Alumina Refinery at Odisha State Safety Conclave-2015.

For its initiative towards bringing 655 tribal children of Koraput district to the mainstream education, NALCO bagged OTV CSR Award 2015, under primary education category.

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- Performance Excellence Award, by the Indian Institution of Industrial Engineering (IIIE) for NALCO's all round performance
- The Alumina Refinery of NALCO bagged the prestigious Business Excellence Star Recognition Award of CII as the "Leader in Process Industries, for Excellence in Operations Management".
- □ The Captive Power Plant of NALCO was awarded for 'proactive climate change' from State Pollution Control Board, Odisha.
- Best Mother Plant Award, at the concluding ceremony of Odisha MSME International Trade Fair, organized at Bhubaneswar.
- Panchaptmali Bauxite Mine was awarded the 1st Prize in Afforestation and 2nd Prize in Top Soil Management by Indian Bureau of Mines, Bhubaneswar Region.
- □ Panchpatmali Bauxite Mine was awarded the 1st Prize in Health and Welfare, 2nd prizes in training and overall performance by DGMS



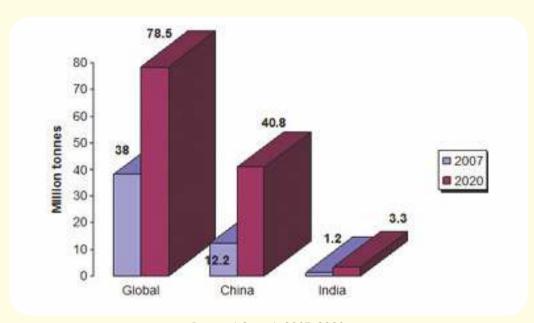
Sustainability: A Management Imperative

Sustainability is a major imperative in our strategy formulation for business growth. It is embedded in our strategic decision to enhance our overall performance & to provide a firm footing for launching our multi-pronged sustainable development initiatives. Addressing future needs and expectations, poses a major challenge in an increasingly dynamic and complex environment. Proper assessment of the external context of organisation like market scenario & economic environment, enables taking up effective strategic initiatives to address the market related issues and provide a sound basis for sustainable development initiatives.

Global Market Outlook

Global aluminium output in 2016 is estimated to rise to 58.9 Million Tonnes with an increase of 2.4% while global consumption is estimated to reach 58.4 Million Tonnes during the year, recording a growth of 3.5%. However, Chinese demand growth is likely to contract marginally during 2016, mostly due to lower off take from the construction sector. In 2015, the best performing sectors in the global market in terms of aluminium consumption included transport (automotive body sheet, marine and truck trailer etc.), commercial construction and packaging. In 2016, in addition to the above mentioned sectors, aerospace, defence and electrical sectors are also expected to show strong demand.

In 2016, LME prices are expected consolidate at around \$1,600/MT in the near term. This is largely due to support from firmer global market fundamentals, higher crude oil prices and softness in the US dollar. The London Metal Exchange aluminium prices have been highly volatile throughout the year in 2015, fluctuating between a low of USD 1424 in November 2015 (which was the lowest level for the last 5 years) to a high of USD 1919 in May 2015.



Demand Growth 2007-2020



Domestic Market Outlook

In the year 2015-16 the total domestic production of aluminium metal was 2.44 Million Tonnes compared to previous year production of 2.05 Million Tonnes registering a growth rate of 19.1%. During 2015-16 total domestic consumption of primary metal has registered sharp increase at the rate of 25.4% from previous year consumption of 1.58 Million Tonnes to 1.98 Million Tonnes. Primary aluminium exports by Indian producers also registered 15% growth from 0.77 Million Tonnes in 2014-15 to 0.88 Million Tonnes in 2015-16.

Indian aluminium production is expected to rise further in 2016-17 as domestic aluminium producers ramp up output in order to achieve higher capacity utilization. Overall, the growth rate of primary metal supply, in the country, is likely to be higher than the growth in demand for the primary metal within India which may lead to a widening of the surplus in the country, leading in turn, to a lowering of domestic prices. In the domestic market, with the Government's increased thrust on infrastructure, it is expected that aluminium off take from the electrical, building and construction sectors would pick up considerably. Strong trends also visible in areas like automotive, food packaging and aerospace. The Government's visionary initiatives such as 'Make in India' scheme, 100 'Smart Cities' programme, 100% rural electrification, indigenous space programmes etc. are expected to boost the off take of aluminium sharply in the coming years.

Priority Areas

The Macro Economic Scenario discussed above as well as the developments like COP21 agreement in Paris during December2015, the Sustainable Development Goals2030, reinforces the essentiality of integrating Sustainability with our strategic managerial interventions. A few focus areas were initially identified in this arena i.e. Good Governance, Sustainable and Responsible Operations, Resource Security, Employee Care and Corporate Social Responsibility. Core issues in these areas were, later on, prioritised through systematic Stakeholder Engagement process.





Stakeholder Engagement & Materiality Analysis

Our valued stakeholders have been active partners in our growth story. We recognize and involve all entities who have the potential to influence or get affected by our business activities and ensure that necessary actions are taken to foster mutual long term growth. The stakeholders' perspectives are kept in focus by consultation & engagement process and the critical inputs are incorporated in the decision making process. We continually strive to create value for our stakeholders and mitigate any adverse impact emanating from our operations. Engagement with different stakeholder groups gives us an opportunity for introspection, identifying any gap in our business strategy and to find out ways to mend them.

Stakeholder Engagement Approach

Our strategic approach towards stakeholder engagement demonstrates our strong belief in creating strong & enduring relationship with all our relevant stakeholders. Due to our multi-locational diverse operations, interactions with a broad spectrum of stakeholders are held through formal & informal engagement process on an ongoing basis and due cognizance is accorded to the views expressed by our valued stakeholders. The process facilitates a broad-based identification of our areas of strength as well as weakness and helps us in consolidating our strategies to counter the identified threats and to fructify the available opportunities. We considered those stake holders who are affected by our operation or who's function has a impact on us. The ways in which these stakeholders may be affected and extent of impact on them are assessed. The organization's sustainability agenda is based on a matrix of issues and subjects related to those of its operations identified as being of concern to internal and external stakeholders on account of their perceived significant economic, environmental and social impacts. Our last report explained how these issues were mapped and prioritized. Feedback of high impact stakeholders, i.e. customers, employees, government, regulatory authorities, investors and shareholders, industry associations, civil society organizations and suppliers and vendors are taken into consideration while mapping the prioritized sustainability issues across important domains, i.e. Economic, Environment, Labour Practices, Human Rights, Social, Corporate Governance etc. For engagement with prioritised stakeholders, the avenues explored are structured forums like vendors meet, suppliers meet, customers meet, regular meetings with shareholders & investors, Grievance handling & satisfaction survey and informal channels through active involvement in industry associations and other membership based organizations, trade fairs, seminars and discussions on different issues. These formal & informal ways of capturing concerns of our stakeholders are continuously updated and new stakeholders are identified as per the changing requirement of the organisation. Providing feedback to stakeholder intrinsically contributes to improve our brand image and earn goodwill. Our mission statement & Code of Conduct & ethics emphasise our focus on



Stakeholder Engagement Matrix

Stakeholder Categories	Modes of Engagement	Concerns of Stakeholders	Action by NALCO	Accrued Benefits
Government & Regulators	 Meetings with Centre and State Government, Ministry of Mines, Ministry of Corporate Affairs, Ministry of Environment, Forests and Climate Change on economic, environmental and social issues. Periodic communications and submissions of various compliances to statutory authorities. 	stram & ancillary industries.	 MoU with the Ministry of Mines. Alignment with Govt. policies and priorities Periodic government submissions Meetings with different Govt. Bodies Parliamentary Committee visits District administration on peripheral development work Annual reports and regulatory filings. Inspection and audit by different Regulatory authorities. 	Ensuring compliance, collaboration with Government on industrial and social development
Shareholders & Investors	 Annual General Meetings, Periodic financial reports to shareholders and investors Interactions with financial institutions, shareholders as per statutory need. Shareholders' surveys and meets 	 Company's Profitability Financial restructure and disinvestment of Govt. Shares. Dividend, results and other issues Grievance resolution 	 Analyst meet & conference calls Analyst briefings Quarterly results Annual general meeting Annual report Press releases Website updates Shareholder's grievance committee 	Wealth creation for shareholders, raising equity from the financial institutions, infusion of capital in business

Stakeholder Categories	Modes of Engagement	Concerns of Stakeholders	Action by NALCO	Accrued Benefits
Employees	 Bipartite & tripartite meetings with labour unions Collective bargaining Interaction with officers associations Official Communications Internal magazines and e-newsletters Employee satisfaction surveys Grievance redressal forums 	 Employee benefits and remunerations. Performance management and recognition. Carrer growth Training and skill development Safe and healthy working condition Quality of life 	 Bulletin boards Newsletters, mailers Notice, Circular & Office order. Grievance redressal mechanism Different Employee committees Discussions with recognised unions 	Satisfied, motivated & self actuated employees, timely detection and resolution of grievances, free-flowing communication
Customers & Consumers	 Regional and national customer meets Customers' plant visits and management interactions Customer satisfaction surveys Customer feedback and grievance redressal forums 	 Product quality, cost, and delivery Product life cycle including environmental aspects Customer feedback Customer complaint resolution 	 Strict quality control and timely delivery Product information through website. Biennial customer satisfaction surveys Customer complaint resolution system. Product support and down stream development 	Satisfied customers and improvement in business, stronger bonds with consumers resulting in long-term patronage
Suppliers, & Vendors	 Periodic vendor and supplier meets Regional, National and International trade fairs Supplier relationship management 	 Special privilege to MSE units Transparency & Anticorruption practices Simplified procedure & timely payment Inventory management Adoption of integrity pact programme 	 □ Vendor development and import substitution □ E- Procurement & E- Payment □ Participation in exhibitions organised by industry associations, state & central government □ Plant level sub- committee meet at Angul & Damanjodi □ Plant level advisory committee meeting at Bhubaneswar 	Improved relationship with suppliers and timely resolution of their queries, concerns and grievances



Stakeholder Categories	Modes of Engagement	Concerns of Stakeholders	Action by NALCO	Accrued Benefits
civil society	 □ Gram-sabha and public hearing □ RPDAC meetings □ Cultural, religious and social functions with community members and representatives □ Need assessment interactions for CSR projects □ Local community events 	 Community needs on infrastructure, education and health Financial Social and Environmental impact of Operation on Community 	 Operating mobile health units for periphery villages Organising health camps in periphery villages Sponsoring children from periphery villages of Damanjodi for formal education Water and energy study in periphery villages of Damanjodi Other CSR initiatives 	Partnership with communities for development of the region, improvement in the socioeconomic conditions
Industry Associations	□ Conference, Workshops & Seminars	 Policy issues Statutory Regulations International & internal market condition Technological developments 	□ Participation in developing industry and issue centric programmes and action plans as member of the CII, Utkal Chambers of Commerce, Aluminium Association of India and FIMI etc.	Knowledge sharing and capacity building
Contractors/ Other service providers	 Sharing information with job contractors & workers engaged by them. Improvement of their competence / capability. 	 Health and safety at workplace Employability Welfare measures Working hours and overtime (wages) 	 On the job counselling and feedback Trainings during induction Tool box talk Periodic meetings with production facility incharge 	Stronger and long-term relationships
Business partners / New ventures	 Review of business, Technical presentations. 	• Review of business, Technical presentations.	 Meetings Official communication between the parent and joint venture entities 	Technological advancements and knowledge sharing



Materiality Analysis

We are guided by a comprehensive framework for stakeholder engagement. Our learning from stakeholders engagement forms the basis of identification of material issues. Perspectives of high impact stakeholders i.e. customers, employees, government, regulatory authorities, investors and shareholders, industry associations, civil society organizations and suppliers and vendors are taken into consideration while mapping the prioritized sustainability issues across important domains, i.e. Economic, Environment, Labour Practices, Human Rights, Social, Corporate Governance etc. The concerns of stakeholders captured during the interaction augmented with management perception and risk analysis pinpoints the issues important to us.

To capture perspectives of different stake holders, a structured materiality assessment exercise was carried out across all the operational locations last year. A formal workshop was organised at each of our operational locations where we interacted with internal as well as some external stakeholders. Apart from informal verbal discussion the stakeholders were included in a survey, inputs for which were carefully selected as a questionnaire based on our past experience and current challenges. This materiality assessment also included one-to-one interaction with the top management at plants and mines as well as at corporate office in Bhubaneswar. Through this interaction, we were able to determine the issues which are important from the business perspective of NALCO and issues which are of concern to our esteemed stakeholders. For current year, the identified material issues are further reviewed and refined in view of changing business scenario and governmental guideline. Through this exercise, after identification of material issues, these issues form the focus of this sustainability report and our effort is to address these issues in a transparent and informative manner under GRI G4 "In Accordance Core" frame work. The issues find material are highlighted in the list of aspects give in the next page.

Materiality Matrix





Materiality & Aspects

Aspect	S.No.	
Market share and competition	24	Recycl
Raw material availability, price & quality	25	Impact
Land acquisition for mines and new projects	26	Hazard
Suppliers & dealers network	27	Improv
Customer satisfaction, customer care & trust	28	Release
Economic impact of NALCO's business	29	Greenin
Maintaining and improving product quality	30	Emissio
Efficient production process & technology		and em
Brand image of NALCO		Product
Logistics and distribution cost		Restric
Transparency, corporate governance and ethics		Product
Compliance to regulatory/statutory requirements	34	Eco-frie
Profitability of the Company		Labour
R&D and innovation management	36	Retenti
Good corporate governance	37	Employ
Development of local suppliers	38	Occupa
Globalisation of NALCO's business	39	Gender
GHG emissions & climate change	40	Address
Usage of renewable/alternative energy sources	41	CSR ac
Enhancing scrap recycling in aluminium making	42	Sports
	43	Employ
	44	Average
	45	Relocati
	Market share and competition Raw material availability, price & quality Land acquisition for mines and new projects Suppliers & dealers network Customer satisfaction, customer care & trust Economic impact of NALCO's business Maintaining and improving product quality Efficient production process & technology Brand image of NALCO Logistics and distribution cost Transparency, corporate governance and ethics Compliance to regulatory/statutory requirements Profitability of the Company R&D and innovation management Good corporate governance Development of local suppliers Globalisation of NALCO's business GHG emissions & climate change Usage of renewable/alternative energy sources	Market share and competition 24 Raw material availability, price & quality 25 Land acquisition for mines and new projects 26 Suppliers & dealers network 27 Customer satisfaction, customer care & trust 28 Economic impact of NALCO's business 29 Maintaining and improving product quality 30 Efficient production process & technology 31 Brand image of NALCO 32 Logistics and distribution cost 32 Transparency, corporate governance and ethics 33 Compliance to regulatory/statutory requirements 34 Profitability of the Company 35 R&D and innovation management 36 Good corporate governance 37 Development of local suppliers 38 Globalisation of NALCO's business 39 GHG emissions & climate change 40 Usage of renewable/alternative energy sources 41 Enhancing scrap recycling in aluminium making 42 Sustainable mining practices 43 Energy efficiency improvement 45

S.No.	Aspect
24	Recycling and reuse of waste water
25	Impact on ground water table and quality
26	Hazardous and Non-hazardous Waste
27	Improvement in air quality
28	Release of Ozone depleting substances
29	Greening of supply chain
30	Emissions form transportation of raw materials, products
	and employee commuting.
31	Product development strategy and innovation
32	Restriction of hazardous substances in process
33	Product labelling (e.g. ecolabelling, energy labelling)
34	Eco-friendly product packaging
35	Labour issues
36	Retention of talents by the Company
37	Employee training and skill up-gradation
38	Occupational health and safety
39	Gender equity & Non-discrimination
40	Addressal of employee grievances
41	CSR activities being undertaken by NALCO
42	Sports and cultural activities for employees
4.0	Employee volunteering
43	Liliployee volunteering
43	Average age of the workforce

Mapping of Aspects

S.No.	Serial No. of Aspects	Linkage with GRI Aspects	Aspect Boundary
1	1, 13, 17	Economic Performance	Within Organisation
2	2	Materials	Within Organisation
3	3	Investment	Within Organisation
4	5, 7, 9	Product and Service Labeling	Within Organisation
5	8, 22	Energy	Within Organisation
6	10	Procurement Practices	Within Organisation
7	11, 12,15	GRI Standard Disclosures	Within Organisation
8	24	Water	Within Organisation
9	21,26	Effluents & Waste	Within Organisation
10	27	Emissions	Within Organisation
11	36	Employment	Within Organisation
12	37	Training and Education	Within Organisation
13	38	Occupational Health and Safety	Within Organisation
14	41	Local Communities	Outside Organisation



Key Sustainability Targets & Performance

Priority Aspect	Business Risk	Key Stakeholders	Target for 2015-16	Achievement
Economic	Market Condition	□ Employees□ Share holders□ Financers	□ PAT/Net worth - 2.41□ Gross Operating Margin-₹624Crores	5.66 ₹1171 Crores
	Expansion & Diversification	EmployeesCompetitorsShare Holders	 Starting of EIA / EMP study for expansion of Refinery- June-15 Erection of 220 KV Sub-station at Refinery- for Laxmipur-Damanjodi 220Kv transmission line- Oct'15 	June-15 Oct-15
Production	Availability of raw material,fuel & power	EmployeesShare holdersCompetitors	□ Aluminium Production-3.80 Lakh MT	3.72Lakh MT
Environment	Material conservation	SocietyGovernmentCustomersRegulatorsNGO	 □ Net Carbon consumption – 433 kg/MT □ Lime consumption – 30 kg/MT □ Refinery Extraction Efficiency- 97% 	426 kg/MT 27.71 kg/MT 98.58%
	Energy efficiency	□ Regulators□ Community□ NGO□ Government	 □ Smelter Current Efficiency-93.5% □ Smelter DC Power consumption — 13500 KWH/MT □ Refinery Electric Energy Consumption-330 Kwh/MT 	94% 13453 KWH/MT 323 KWH/MT
	Green Energy initiative	WorldcommunityRegulators	 Finalisation of Tender for 100 MW Wind Power Plant — May. '15 Techno Economic feasibility study for 15 MW solar power plant- Oct'15 	June-15 Aug-15
Labour practices	Skill & job knowledge	EmployeeContractorsContract labour	 Training to employees-1800 employees Training on Certification on Project Management-5 	6499 nos. 6 nos.
Social	Community welfare	CommunitySocietyEmployees	□ Total spending under CSR head- ₹ 26.24 Crore	₹27.17 Crore
Product Responsibility	Customer satisfaction	SupplierCustomerShare holders	Customer satisfaction index target 0.7-90%Customer complaints per unit of sale-0.5	0.04



Corporate Governance

Corporate governance at NALCO epitomises professional management with centralised decision making and well-delegated power structure for effective and seamless governance. The governance mechanism oversees the actions, policies, practices, strategies and decisions of Company. Strict adherence to the regulatory norms and transparency in every facet of the activities is the hallmark of the governance methodology adopted, which is an institutional framework with proper checks and balances to undertake, co-ordinate and oversee the interest of all stakeholders through a two-tier system: Board of Directors and the management. The Board strives to ensure that the management provides the maximum thrust on performance and profitability of the Company while instilling a strong culture of value, ethics, integrity, reliability and fairness in dealing within and outside the organization thus equating better governance with better performance.



Our Philosophy

Our governance philosophy is anchored to ethics, transparency, integrity & accountability. Our strategies, policies and guidelines are documented & aligned with the above values and are adhered to in letter and spirit. We comply with all applicable statutory and regulatory requirements. Quick decision making with speedy execution is ingrained in our governance system. Timely and accurate disclosure of information on the financial position, performance, ownership and governance of the Company is the crux of our corporate governance. This not only enhances goodwill amongst our stakeholders, but also improves the brand image of the organisation.



The broad framework of our governance is based on the following principles:

- 1. Optimum combination of Executive and Non-Executive Directors on the Board.
- 2. Formation of various Board Committees, statutory as well as non-statutory.
- 3. Timely availability of information to each and every member of the Board and Board Committees for proper discharge of their fiduciary duties.
- 4. Robust system and processes in place for internal financial control.
- 5. Timely disclosure and dissemination of operational, commercial and financial information to the stakeholders.

Structure

At the apex level, the Company is governed by a Board Of Directors which formulates policies and oversees the performance of the Company. As on 31st March'16, the Board headed by Chairman-cum-Managing Director (CMD), consisted of total six full time (Executive) Directors (including CMD), two part-time official Directors nominated by Govt. of India and five part time non-official (Independent) Directors appointed by the Govt. of India. The Board is assisted by a management team to execute day to day activities in an efficient manner.

Corporate Governance Policies

Well documented policies & procedures define the essence of our governance philosophy. The significant codes and policies relevant to effective governance of business, are outlined below:

- (i) Code of Conduct for Directors and Senior Management
- (ii) Code of practices and procedures for fair disclosure of unpublished price sensitive information
- (iii) Code of Conduct to regulate, monitor and report trading by its employees and other connected persons
- (iv) Fraud Prevention Policy
- (v) Whistle Blower Policy
- (vi) Policy on Related Party Transactions
- (vii) Corporate Social Responsibility Policy





The Top Management



Shri R. Sridharan, IASPart-Time Official Director



Dr. T.K. ChandChairman-cum-Managing Director



Shri Subhash ChandraPart-Time Official Director



Shri N. R. Mohanty Director (Project & Technical)



Shri K. C. Samal Director (Finance)



Ms. Soma MondalDirector (Commercial)



Shri V Balasubramanyam Director (Production)



Shri B.K. Thakur Director HR



Prof. Damodar AcharyaPart-Time Non Official Director



Shri Dipankar Mahanta Part-Time Non Official Director



Shri Maheswar Sahu Part-Time Non Official Director



Shri S Sankararaman
Part-Time Non Official Director



Shri P K NayakPart-Time Non Official Director



Shri Biswaranjan Samal, IAS CVO



Board Level Committees

The Board has constituted nine committees, with a judicious mix of Executive and Non-executive Directors, to address various aspects of governance. Some of the committees are constituted as per statutory requirements and while a few others are formed voluntarily for smooth functioning of the activities of the Company.



In addition to above, four more committees are formed with only Executive (Functional) Directors of the Company as members, as given below:

- i) Investment Committee
- ii) Committee of Directors for Sale
- iii) Committee of Directors for Procurement
- iv) Share transfer Committee

The **CSR & Sustainability Development Committee**, looks into matters related to CSR and sustainability development activities of the Company. The six- member committee is headed by a Non-executive Independent Director. Two other Non-executive Independent Directors and three Executive Non-independent Directors constitute the committee as on 31st March, 2016. The committee oversees the sustainability initiatives and the CSR activities, taken up by the organization. The **'Ethics and Corporate Governance Committee'** monitors the Corporate Governance practices of the Company.

Enterprise risk Management

Business Risks are inherent in any enterprise. However, we are committed to suitably address the risks with appropriate mitigation measures with a view to maximizing opportunities keeping the negative impacts in control. Accordingly, action plans are charted out striking a balance between the opportunities envisaged and the inherent operational, financial, social, environmental risks. A risk management policy is in place incorporating the latest government guidelines. The Risk Management Committee at Board level reviews the



exceptional Risk Reports and advises the executive management on remedial measures to be taken, from time to time. The risk mitigation measures are also periodically reviewed so that the identified risks are properly addressed within the defined framework of risk management policy. New risk areas are identified through periodical reviews of critical & vital functions and analysis of external environment of business on continual basis and the mitigation plans are suitably updated. For the identified risks, the nominated risk officers maintain risk registers, overviewed by internal auditors of the Company as well as senior management. Deviations, if any, are reported to the Audit Committee and Risk Management Committee.

Financial Control Mechanisms

Financial health of any organization is the basic indicator of its sustenance. The Company has a robust internal financial control framework duly approved by the Audit Committee to ensure that executives adhere to different financial rules, regulation, policies and guidelines with due observance of canons of financial propriety. NALCO also has a defined delegation of power with financial limits for approving revenue as well as expenditure and expenditures are made after due approval of competent delegated authority and concurrence of appropriate financial authority. Financial Statements are prepared in compliance with applicable Accounting Standards & on the basis of the Significant Accounting Policies as adopted by the Company after being duly approved by the Audit Committee and the Board. These Policies apply uniformly across the Company. The Accounting Policies supported by standard operating procedures are reviewed and updated from time to time. The Company uses ERP Systems as a business enabler and also to maintain its Books of Account. The Standard Operating Procedures and transactional controls built into the ERP Systems ensure proper recording, approval mechanisms and maintenance of records. The systems, standard operating procedures and controls are reviewed by management from time to time. Receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company.

The Company's Internal Control System has been designed to provide for:

- Compliance with applicable statutes, policies & procedures, rules & regulations and delegated authority
- Adherence to applicable Accounting Standards and Policies
- Proper recording of transactions & timely reporting
- □ Effective use of resources and efficient operations
- Safeguarding of assets

The Company carry out audits at all locations and functional areas by internal auditors. The observations of internal auditors arising out of audits are periodically reviewed at appropriate level and compliances ensured. Material observations of internal auditors are submitted to Audit Committee for its review, analysis and advice to further strengthen internal control system. Over and above the internal audit statutory audit is done by auditors appointed by Comptroller and Auditor General of India and audit report is published as a part of annual report. Also cost audit as per Companies Act is done every year and audit report is submitted to Ministry of Corporate Affairs.

Corporate Ethics

Being Fully aware that excellence goes hand in hand with ethics we have institutionalised the following in the organization to ensure ethical business practices.

Vigilance Structure

Through a dedicated and proactive vigilance administration, an atmosphere of integrity, transparency and trust is created in the organization encouraging our employees and stakeholders to strive for enhancing effectiveness and efficiency while adhering to ethical standards. The Vigilance function is headed by a Chief Vigilance Officer (CVO), who is appointed on deputation from Govt. of India. Other vigilance officers assisting CVO are selected on deputation basis from the employees of the organization, in consultation with and concurrence of CVO. Vigilance department operates from three locations, i.e. Corporate Office, Bhubaneswar, S&P Complex, Angul and M&R Complex, Damanjodi.

The vigilance functions are generally in the nature of preventive, punitive, surveillance and detection. Vigilance department conducts Regular Inspection, Surprise checks, Intensive examination (CTE Type), sample check etc. as per requirement along with complaint investigation. All high value contracts and purchases are analysed by the vigilance department. Some of them are selected for intensive examination. Selected contract/ purchase cases are also analysed during routine/ surprise checks. When any irregularity is established, suitable disciplinary action is initiated through concerned disciplinary authority. Where necessary, findings along with system improvement suggestions, are given to the management by the vigilance department. The Vigilance Department functions in brief are:

- Investigating complaints
- Surprise Checks in sensitive areas
- Study of contract/purchase/sales files and Internal Audit Reports which are good source of information for vigilance cases
- Suggesting system improvements
- Circulation of CVC Circular / guidelines
- Giving vigilance clearances to employees for various purposes
- Scrutiny of Property Returns
- Advising on rotation of officials in sensitive posts
- Advising CMD on vigilance matters and matters relating to disciplinary procedures
- Liasioning with CBI
- Implementation of Integrity Pact
- Conducting training programmes for awareness among employees and general public



During the year, 201 stakeholder complaints related to ethics, bribery and corruption were received by the Vigilance dept. In addition to this, 25 complaints were pending from previous years. As on 31.03.2016, out of the total 226 complaints, 207 have been resolved and 19 are pending at different stages of investigation. Detailed investigations of the complaints, were carried out based on prescribed procedures with functional guidance sought from CVC, as per rules of the Company. Appropriate actions i.e. issuance of advisory letters and imposition of minor/major penalties etc. were taken, based on the gravity of findings. As a preventive vigilance measure, suggestions for a few important systemic improvements were also made during the year.

For creating awareness among employees, Vigilance Awareness Week was celebrated from 26.10.2015 to 31.10.2015 at all the units including Corporate Office and Regional Offices. During the year, 12 vigilance awareness training programmes were organized at different locations of the organization for sensitizing employees about various rules, CVC guidelines to bring about transparency in the system.

Whistle Blower Policy

Whistle Blower Policy is formulated by the organization in compliance with Companies Act, 2013 and SEBI Listing Regulations and is available in the Company website www.nalcoindia.com. The Company affirms that it has not denied any personnel, access to the Compliance Officer, Designated Committee or Audit Committee

Fraud Prevention Policy

A Fraud Prevention Policy (available in the Company website www.nalcoindia.com) is implemented, instituting a system for detection and prevention of fraud, reporting any fraud that is detected or suspected and providing fair dealings in matters pertaining to fraud. The policy applies to any fraud, or suspected fraud, involving all employees as well as representatives of vendors, suppliers, contractors, consultants, service providers or any outside agency (ies). No fraud has been reported by the Auditors under Section 143(12) of Companies Act, 2013, during the year under report.

Code of Conduct

The Code of Business Conduct & Ethics is applicable for all Board Members including CMD and Senior Management. This code is intended to serve as a basis for ethical decision making in the conduct of professional work. It depicts the integrity, transparency, ethics and non discrimination to be practiced by the Board and Senior Management along with values, competency, duty and discipline expected from them. All the Board members and Senior Management personnel affirm to abide by the Code of Conduct while transacting business of the Company. The Code of Conduct is available in NALCO web site for reference.

Integrity Pact

In compliance with the guidelines of Dept. of Public Enterprises and to instill further transparency in our procurement transactions, the Integrity Pact Program is adopted in the organisation since September 2012. Integrity Pact is applicable to all procurement transactions and contracts of value INR 5 crore & above. This pact mandates, an agreement to be signed with the bidder, to avoid all forms of corruption by following a system that is fair, transparent and free from any influence, prejudiced dealings prior to, during and subsequent to the currency of the contract. Independent External Monitors are appointed, to monitor the efficacy of Integrity Pact between the signed parties.



RIGHT TO INFORMATION

The RTI act is implemented, in letter and spirit, in order to promote transparency and accountability. Nominated CPIO/APIO/ Appellate Authorities at its Corporate Office, Units and Branch Offices provide required information to the citizens under the provisions of the Act. During the reporting period, a total of 209 applications were received in addition to the 18 pending ones from previous year. Out of these, the status as on 31.3.16 is: 184 queries have been settled including one query transferred to other public authority, 26 applications have been rejected and, balance 17 queries are in different stages of Compliance.

Investors Complaints

103 number of investor complaints were received during the FY 2015-16 and all of them have been resolved satisfactorily during the year.

Compliance

Different reports are furnished to statutory authorities, in respect of, corporate governance ie. Quarterly reports on Corporate Governance to SEBI, Self appraisal reports on Corporate Governance to DPE quarterly & annually. A detailed report on Corporate Governance practices & Secretarial Audit Report is published, in the Annual Report every year. Statutory Auditors conduct audit on the implementation of Corporate Governance practices and furnish a certificate on Corporate Governance, which is placed before the shareholders as a part of the Annual Report.

MoU Performance

A Memorandum of Understanding signed with Ministry of Mines, the administrative ministry, sets targets for different financial and operational performance parameters. The parameters were carefully selected by experts to monitor the performance taking in to account the broad spectrum activities in our business. Based on financial performance and achievement of other parameters laid down, the Company is rated 'Excellent' for the Financial Year 2015-16. Variable pay of NALCO employees in the form of Performance Related Pay (PRP) is linked to MoU performance.

Precautionary Approach

All proposed project or process is evaluated based on financial, environmental & social impacts before implementation. Environmental Impact Assessments are carried out for all projects and appropriate actions are taken to mitigate the impacts, if any.

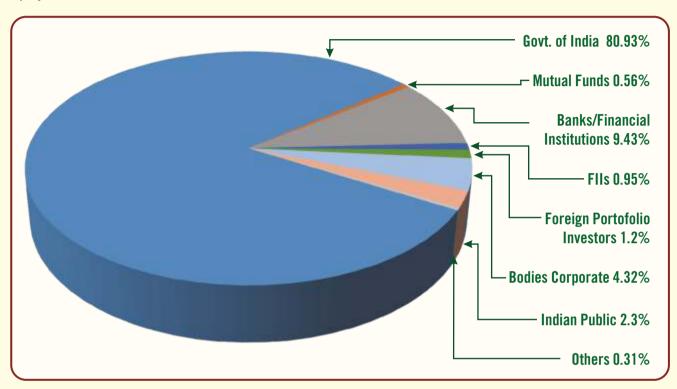
E-governance

The e-governance progress continued with stabilization of material procurement and service procurement module by e-tendering. Strengthening of employee services is on the anvil to provide online application and approval of leave, loans and employee bills through system. On-line performance appraisal for executives and recruitment through online applications become well established during the reporting year.



Shareholding pattern

The shareholding pattern of NALCO as on 31stMarch'16, is depicted below. The Govt. of India holds 2,085,782,622 equity shares (80.93%).



Shareholding pattern as on 31.03.2016

SI No.	Category	No of Share Holders.	No of Shares	Percentage of Share Holding.
1	Promoters (Government of India)	1	2085782622	80.93
2	Mutual Funds	53	14540221	0.56
3	Banks/ Financial Institutions	29	243124171	9.43
4	Insurance Companies	2	1600	0.00
5	FIIs	66	24455295	0.95
6	Foreign Portfolio Investor	41	30940814	1.20
7	Bodies Corporate	1205	111223002	4.32
8	Indian Public	77271	59210548	2.30
9	Others	5309	7960239	0.31
	TOTAL	83977	2577238512	100

Public Policy Advocacy

Realising that it is vital for the organisation to work collaboratively with other to learn, share & strive for common goals, public policy issues are taken up in our discussions & active involvement in the following platforms:

- 1. Aluminium Association of India
- 2. Standing Conference of Public Enterprise (SCOPE), New Delhi
- 3. Federation of Indian Mineral Industries (FIMI), New Delhi.
- 4. National Safety Council, Mumbai
- 5. TOM Division of CII
- 6. Quality Circle Forum of India, Secunderabad
- 7. Indian Ceramic Society, Kolkata
- 8. Confederation of Indian Industry (CII), New Delhi
- 9. Utkal Chamber of Commerce & Industries, Cuttack
- 10. Engineering Export Promotion Council, Kolkata
- 11. Federation of Indian Export Organisation, New Delhi
- 12. International Chamber of Commerce, Delhi
- 13. Odisha Productivity Council, Cuttack
- 14. National Institute of Personnel Management, Kolkata
- 15. All India Management Association
- 16. All India Public Sector Sports Control Board, New Delhi

Some of the major issues, taken up are:

- Enhancing use of Aluminium in various sectors as a material for sustainable future.
- Use of fly ash
- Sustainable mining practices
- □ Issues of miners' health
- Betterment of industry and its stakeholders
- Employee involvement
- Carbon sequestration
- Compliance to the regulatory requirements
- Protection of interest of aluminium manufacturer of India



Business Growth Perspectives

The contemporary business scenario calls for a review of the existing corporate plan and vision 2020 statement. In the backdrop of continuing uncertainties in the global business environment coupled with the changing landscape of business, industry and regulatory framework within the country, the strategies for growth and sustainability need recasting. A new Corporate Plan, spanning a horizon of 10 years is envisaged to be robust & flexible enough to meet the challenges of the evolving future. Some of our new Initiatives in this direction are presented below.

Alumina Refinery Project in Gujarat

NALCO has carried out a feasibility study to set up a 0.5 MTPA alumina refinery project in Kutch dist. of Gujarat based on supply of bauxite from Gujarat Mineral Development Corporation (GMDC)'s mines.

□ 100 MW Wind Power Plant

NALCO placed orders in Jan, 2016 for installation of two wind power projects - 50.4 MW in Maharashtra and 50 MW in Rajasthan.

Solar Power Projects

- i. 20 MW Solar PV Power Project: NALCO plans to set up 20 MW Solar PV Power Project in Madhya Pradesh. New and Renewable Energy, Govt. of M.P. (MPNRED) has accorded in-principle approval for the project. Action has been initiated for selection of solar power developer.
- ii. Rooftop Solar Plant: The Company placed order in March, 2016 to install 50 kWp rooftop solar project at NALCO Research and Technology Centre (NRTC), Gothapatna, Bhubaneswar under MNRE subsidy scheme.

□ Titanium Slag Project

NALCO has signed MoU with Indian Rare Earth Ltd. (IREL) in July, 2014 for development of 1 Lakh TPA Titanium Slag Project at Chatrapur in Odisha in Joint Venture. Pre feasibility report for the project has been prepared.

Overseas Smelter

NALCO is exploring to set up a greenfield aluminium smelter in a country where energy would be available at a competitive price. Iran, Oman and Indonesia have been identified to be suitable destinations for the project.

□ Angul Aluminium Park Pvt. Ltd. (JV between NALCO and IDCO):

NALCO has formed a JV Company named Angul Aluminium Park Pvt. Ltd. (AAPPL) with IDCO in 2010 to promote downstream and ancillary industries in Odisha. NALCO has committed to supply 50,000 MT of molten aluminium per year for a period of 20 years to the JV Company. Recently, Angul Aluminium Park Pvt. Ltd. (AAPPL) has been designated as the State Implementing Agency (SIA) for the project under the Modified Industrial Infrastructure Upgradation Scheme (MIIUS) of Govt. of India which enables the project to avail grant from Department of Industrial Policy and Promotion (DIPP).

Caustic Soda Project

NALCO has formed a Joint Venture Company with Gujarat Alkalies Chemicals Ltd. (GACL) named GACL-NALCO Alkalies & Chemicals Private Limited "GNACPL" on 4th Dec, 2015 to set up 2.7 Lakh TPA caustic soda plant along with 100 MW captive power plant. NALCO will hold 40% equity in the JV and balance 60% will be held by GACL.



ECONOMIC PERFORMANCE

Robust Performance

Disclosure on Management Approach - Economic Performance

Our commitment in the area of economic performance is encapsulated in the vision and mission statement. The same is exhibited through sound economic performance and strategic financial management, evident from adequate profit generation and surplus fund availability for successful completion of two major expansion projects. Proactive strategic interventions have enabled us to tackle economic slowdown & the recessionary metal market, to deliver healthy bottom line performance. Over the years, the organisation has made significant efforts for upliftment of local communities through CSR activities. Employment generation and procurement from local Micro and Small Enterprises units & ancillary units, have contributed significantly to wealth generation in the areas of operations. Investments in Green energy projects reflect the concern for climate change.

During the period, the Alumina Refinery plant at Damanjodi produced 19.53 lakh MT of alumina hydrate which is highest ever production till date. Steam & Power Plant (SPP) a co generation plant achieved highest ever net power generation of 438 MU surpassing previous best of 433 MU achieved during previous year. The Aluminium Smelter produced 3.72 lakh MT of metal against previous best of 4.44 lakh MT and compared to 3.27 lakh MT produced during last year. The Smelter achieved highest ever production of Wire Rod of 1.01 lakh MT surpassing previous best of 96,070 MT produced last year. Tee Ingot production of 48,636 MT was the highest ever since inception surpassing previous best of 39,803 MT achieved last year. The Captive Power Plant generated 5,841 MU of Net Power against previous best of 6,608 MU and compared to 5131 MU generated during previous year.

The total metal sales during 2015-16 were 3,72,424 MT compared to 3,26,079 MT during 2014-15. Total metal sale consists of domestic sale of 2,77,753 MT and export of 94,671 MT. The domestic sale includes Wire Rod sale of 1,01,444 MT which is the highest ever sales made since inception, surpassing the previous best of 96,070 MT achieved during 2014-15. Chemical sale during 2015-16 was 12,19,926 MT compared to 12,24,643 MT achieved during 2014-15. This includes Calcined Alumina export of 11,74,224 MT during 2015-16 as compared to 11,84,595 MT exports made during 2014-15.

NALCO has been exporting aluminium metal and calcined alumina to various overseas destinations like Netherlands, Italy, Singapore, Malaysia, Korea, Japan, Turkey, Vietnam, Bangladesh, Bahrain, China, Egypt, Iran, UAE, Indinesia, Thailand etc. Export orders are booked through e-tendering system to the registered customers.



Net Worth (Rs. Crore)



Aluminium Sales (Lakh Ton)



Alumina Sales (Lakh Ton)



Domestic Sales (Rs. Crore)



Export (Rs. Crore)



Profit Before Tax(Rs. Crore)



Wind Power Generation (MU) 175 144 2013 -14 2014 -15 2015 -16



During reporting year NALCO has achieved a Profit after Tax of Rs. 731 crores. The Company has earned foreign exchange of Rs. 3008 crore during the reporting period. The net worth of the Company increased to Rs. 12,907 crore during 2015-16 as compared to 12,797 crore during 2014-15. The details of financial performance are given below:

Particulars (in Rs Crore)	2013-14	2014-15	2015-16
1. Direct Economic Value Generated			
a) revenue from operation (includes export incentive)	6,780.85	7,382.81	6816.00
b) revenue from other sources	557.71	672.64	536.57
Total Economic Value Generated	7338.56	8055.45	7352.57
2. Economic Value Distributed			
a) Operating expenses (excluding employee wages and benefits)	5126.05	4564.12	4888.45
b) Employee wages & benefits	1294.70	1377.91	1361.36
c) Payments to providers of capital	386.59	451.02	515.45
d) Payments to government (Tax on PBT)			
i) Corporate Tax	275.46	791.57	371.75
ii) dividend distribution tax	65.70	90.18	104.93
Total Economic value Distributed(a+b+c+d)	7148.5	7274.8	7241.94
3. Economic Value Retained (1-2)	190.06	780.65	110.63
4. Additional information on Expenditures included in operating expenses (2a above)			
a) Community Investment (included in 2(a) above)			
i) CSR expenses	29.00	19.09	27.17
ii) Horticulture (green belts within and vicinity of the plants)	5.6	5.52	5.84
Total community investment	34.6	24.61	33.01
Important Financial Indicators			
Particulars	2013-14	2014-15	2015-16
Profit Before Tax (Rs Crore)	918	2,113	1102.76
Profit After tax (Rs Crore)	642	1,322	731.01
Net worth (Rs Crore)	12,122	12,797	12907
Return on Net worth (%)	5.29	10.33	5.66
Book value per share (Face value of Rs 5/- each)	47.04	49.65	50.08
Earning per share (Rs)	2.49	5.13	2.84



Local Employment Opportunity

Disclosure on Management approach - Employment

NALCO has played a major role in the economic development of the locality where it operates by providing ample opportunity for local employment, both at grass root level and managerial positions. Recruitment opportunities for nonexecutives are advertised in the local & national newspapers including the Employment News and the local employment exchanges are also informed for forwarding the names of registered jobseekers. For the openings at managerial levels, recruitment notifications are also given publicity in the print media as mentioned above. All such opportunities are also notified in the website. These opportunities have benefitted the local economy substantially through provision of stable livelihood as reflected in the healthy local employment statistics. As on 31st March'16, the total strength of regular employee is 7100 out of which about 91% are Odisha-based. Similarly, about 73% of the total executive strength of 1804, are Odisha-based. The group of contractual employees engaged by job contractors for outsourced jobs in Maintenance, Sanitation, Conservancy, Hospitality, Project work etc. have a total strength of 9688, out of which about 95% are also from Odisha. These contractual work force are provided with benefits like weekly off, overtime, annual health check up, termination allowance, EPF, ESI etc in addition to being paid higher wages ranging from about 10% to 17% at different grades, in comparison to the statutory minimum wages prescribed by the Government.

Contractual workforce	Minimum wage prescribed	Wages offered by NALCO	% Higher than prescribed wage
Unskilled	246	290	17.88%
Semiskilled	307	351	14.33%
Skilled	368	412	11.95%
Highly Skilled	429	473	10.25%

Ancillary Development

Disclosure on Management Approach – Local Procurement

In order to galvanise the industrial climate in the vicinity of our operations, we nurture the potential of MSE Units and appreciate their concern regarding competing with big industrial houses. Opportunity is extended to them to exploit their capacity to produce and supply various input materials & services through a well-defined Ancillary Development policy. MSE Facilitation cells operating at our Units, provide guidance to vendors in important areas like technical issues, commercial terms & conditions, knowledge sharing and other entrepreneurial attributes. Many of them are recognised as Ancillary industries in line with Government policies. A Plant Level Advisory Committee (PLAC) is formed to advise on different MSE related issues and the PLAC sub-committee meeting was held at M&R Complex and S&P Complex during the year. Entrepreneurs Week was also organized at S&P and M&R Complex with hand holding guidance for entrepreneurs to venture in to new fields with special focus on developing entrepreneurs among SC & ST aspirants.

Following the implemented Ancillary Development policy, till date we have recognised 59 industries as ancillary units of NALCO. List of goods and services with their annual requirement, which a MSE unit can offer is mentioned in our web site. In the display hall at M&R complex and S&P complex the material required are displayed with associated information like technical specification, amount of requirement and last purchase price etc for benefit of local small timers. Purchase preference is extended to MSE units and ancillary industries quoting within the price band of 15% of lowest quoted price with suitable amendment in purchase manual. Care is taken to educate MSE vendors in e-tendering by imparting training and hand holding guidance both at M&R complex and S&P complex. MSE units and ancillary units are exempted from earnest money deposit and tender fee for their registered product

The procurement of products produced and services rendered by MSE (Micro and Small Enterprises) units of Odisha inclusive of Ancillary Units during 2015-16, was Rs 236.64 crores, while the same from MSE units (including those from outside Odisha) was worth Rs.322.33 crores. The procurement from MSEs during the year was 20.45% of total procurement. The target set for the same, in 2016-17, is Rs.323.18 crores. Continuous efforts to engage the local MSEs and encourage them to enhance their contribution, resulted in having two successful PLAC Sub- Committee meetings in the year, one each at at M&R Complex and S&P Complex, during July2015 and February2016 respectively. In order to encourage SC/ ST vendors, Vendor Development Programmes for SC/ST Entrepreneurs was conducted at M&R Complex on 30.7.2015 and at S&P Complex on 26.2.2016.

Our participation in various MSME exhibitions also provides the much needed exposure and encouragement to many vendors. During the year, we participated in such exhibitions and were honoured with the 'Best Display Award' in the Mother Plant category at the 'MSME Expo Odisha-2015' December'15 exhibition at Cuttack organized by the MSME Development Institute of Ministry of MSME, Govt. of India. This event also had concurrent National Vendor Development Programme with Buyer-Seller meet. Our efforts in this area were also recognized by the MSME Dept., Govt of Odisha, who conferred on us the 'Best Mother Plant' award in the 'Odisha MSME International Trade Fair 2016', Bhubaneswar held during January'2016.



Climate Change Imperative

The National action plan on Climate Change (NAPCC) framed by the Government of India had launched the Perform, Achieve & Trade (PAT) scheme under the National Mission for Enhanced Energy Efficiency (NMEEE) mission, as one of the significant initiatives to meet the global commitment towards combating climate change. The Smelter & Power Complex at Angul and the Mines & Refinery Complex at Damanjodi, are the two notified designated consumers (DC), who were assigned energy efficiency improvement targets for reducing specific energy consumption (SEC) by 5.024% and 5.54% respectively to be achieved during the three-year PAT Cycle1 i.e. 2012-15. Based on the audit reports of accredited monitoring & verification auditors, both the DCs of NALCO have performed better than the target by achieving SEC reduction of 6.66% and 5.85%. Ministry of Power Govt. of India has issued 36119 Energy Saving Certificate for PAT Cycle I achievement. Major initiatives have also been taken on renewable energy front which are detailed in our Energy section, by which we have successfully fulfilled the renewable purchase obligation (RPO) on non solar front through wind power generation of 156 MU.

Enhancing Competitiveness & profitability

Business Excellence initiatives was rolled out during this year at Alumina Refinery. The Continual Improvement initiatives were also bolstered with 5S implementation in different units. Some of the significant measures taken during the year are:

- Ramp-up of metal production to 3.72 lakhs MT from 3.27 lakhs MT of previous year, resulted in higher contribution of about Rs.60 crores.
- Production of higher margin products like Wire Rods and Rolled Products brought in additional profit of minimum Rs. 20 crores.
- Higher utilisation of MerryGoRound(MGR) rail facility for transportation of Coal to CPP from Bharatpur Coal Mines resulted in cost reduction of about Rs.35 crores.
- Reduction in specific consumption of coal in CPP and fuel in Refinery has resulted in savings of Rs. 15 crores.





Environmental Excellence

Environmental Excellence

Environmental Care

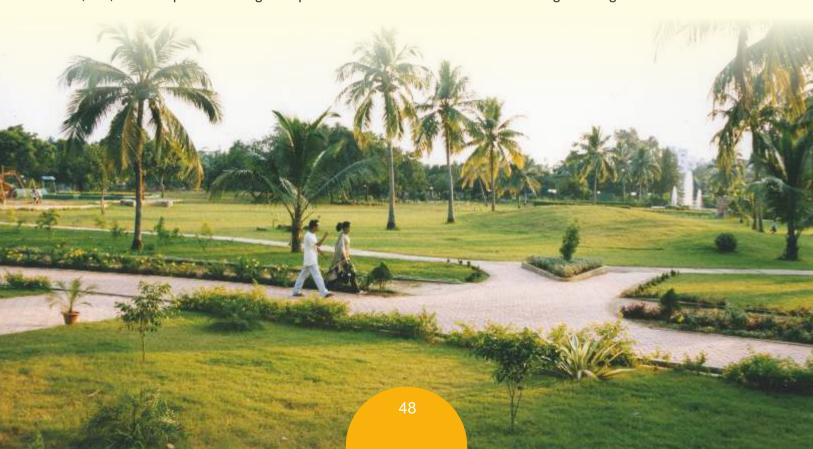
Our operations mainly being in the mining and metal extraction arena is perceived to be high environment-risk prone. With due cognizance to this, we had accorded utmost priority to environmental care, as reflected in our environment policy applicable to all our units, operations and offices. At the Corporate level and at all our units, we have dedicated Environment, Health & Safety Depts, responsible for total environmental care. All our production units operate an Environmental Management System conforming to the international standard ISO 14001. The units are equipped with laboratory facilities and trained manpower for monitoring the environmental parameters. Our energy intensive operational units ie. CPP, Smelter & Refinery have established and maintained Energy Management System certified to ISO 50001 standard. Use of fluoride, caustic soda, explosive and fuels are always taken up with utmost care. Prevention of ground water and surface water contamination, air pollution, rehabilitation of mined out areas and utilisation of fly ash & red mud are some of the highpoints of our proactive environmental care.



Our focus on combating climate change through various energy efficiency initiatives, has resulted in successful achievement of the PAT cycle-1 targets assigned to our units. All our production units are operating with Valid Consent to Operate (CTO), Authorization, Environmental Clearances, licenses etc. as per requirement of the applicable statutes.

Commensurate with increasing stringency on environmental regulation front, proactive actions are taken to retrofit ESP, installation of GTC, revamping of FTC etc to comply with the emission norms. Zero Discharge waste water management system, Safe disposal of Hazardous wastes and incorporation greener technologies in new & existing projects are also taken up as part of pollution prevention strategies. Rain water harvesting is also taken up in all the production units. Emission due to combustion of fuel and concentration of particulate matters in air are strictly monitored at units. All our units are zero discharge units and recycling & reuse of process water is done suitably. All the hazardous chemicals are stored and used as per specified operating procedures. Special care is taken to prevent fluoride contamination in Smelter plant and caustic contamination in Refinery unit. Waste management and containment measures are taken in all our units and guidelines issued by State pollution Control board is complied with in letter and spirit for waste handling. Sustainable mining practices including the approved Mining Plan & Mines closure plan are implemented in the Mines area. Wildlife Conservation Plan and Biodiversity Management Plan are also in place for launching appropriate initiatives. Some of the initiatives taken during last year in this direction are illustrated below.

Emissions like NOx, SOx, etc, generated by the combustion of fossil fuels are within the permissible limits prescribed by CPCB/ SPCB. These parameters are individually monitored due to their detrimental effect on atmosphere at the out let of stack and also in ambient air continuously and data is also uploaded to OSPCB server for verification and record. The environmental statement containing such information is submitted to regulatory authority every year. By conservative use of ozone depleting gases we could limit consumption of R-22 refrigerant gas & R-124 gas for smelting operation to 732 kg and 854 kg and mining used 40 kg of R-22 gas (ODS) to make up for the leakages. Captive Power Plant of NALCO consumed 549 kg of R-22 gas.



Pollution Control Measures

In order to reduce the harmful effects on environment and mitigate the air pollution, some of the measures taken are described below:

- □ In Smelter three dedusting units having capacity 82000 NM3/h 6300NM3/h and 13000 Nm3/h installed at the butt section of rodding shop to prevent dust emission.
- □ In Smelter Real Time Data Acquisition System has been installed with analyser in the stacks of Fume Treatment Plant 1 to 8, Bake Oven Stacks 1 & 2 & outlet of Deflouridation Plant to monitor emission level and upload the same at OSPCB server.
- Provision of High Concentration Slurry Disposal (HCSD) of fly ash to minimize water consumption and land pollution at Refinery plant is now under pre tendering stage.
- Revamping of Boiler accessories & ESP for further reduction of particulate matter in stack emission of SPP is completed in Unit 2 Boiler
- □ Work is going on for partition of existing Refinery Ash Pond into three compartments to ensure 100% utilization of Pond ash.
- Upgradation of existing Sewage Treatment Plants of Refinery to meet the revised standards of treated water quality is under active consideration & different alternatives for upgradation is being evaluated.
- Carpeting the abandoned areas of red mud pond (an experimental patch) with fly ash covered with soil to prevent dust pollution and for growth of vegetation.
- Proposal has been initiated for construction of second Red Mud Pond at Refinery.
- Vegetation survey conducted at the surrounding of Alumina Refinery to access the environmental impact.
- Distribution of saplings to local villages.
- □ Initiatives for setting up of a fly ash based cement plant for utilisation of fly ash of SPP are taken.
- □ Use of Rippers is being done to the extent possible to avoid drilling & blasting at Mines.
- □ Pre wetting of blasting site is practiced for all the blast hole drills during the dry seasons with use of suitable blast design to avoid excess generation of dust during blasting operations.
- □ Proper maintenance of diesel equipment & transportation vehicles to decrease the emission level of NOx and SOx.
- Pressurized water sprinkling/dry fog system is used at un- loading point & transfer points of crushing & conveying system to suppress air borne dust. Completely covered conveyor belt of 14.66 km is provided for dust free transportation of crushed bauxite to the stockpile at refinery plant.
- 5 water tankers of 28 KL capacity each are deployed for regular water sprinkling on haulage roads. On permanent haul road, PLC controlled auto sprinkling system is installed to control dust generation.
- Staggered layout of mine faces to avoid concentration of dust, noise, vibration and exhaust emission due to HEMM operation.
- At the edge of the plateau, peripheral barriers of 7.5 m wide are left in-situ to act as a safety barrier to prevent men & machines falling down the stiff escarpment to the valley at 300m below. A green belt of fast growing plantation is maintained ahead of working faces to provide a biological fencing over these peripheral barriers to prevent dust & noise spreading outside the mine area.
- □ Stack emission has been maintained well within the permissible limit after completion of retrofitting by installing an additional pass and revamping of ESPs (electrostatic precipitator) of exiting old ESPs (Unit-1,2,3,4,5,&6) of CPP.



- Monitoring of effluent quality at CPP has been improved after installation of Online effluent quality monitoring system at the outlet of IDWRS &hooking of the effluent data to the server of SPCB.
- Steps have been taken to reduce fugitive dust at CHP area like damaged ventilation ducts at tunnel has been repaired and optimization of new Dust Extraction system installed at Crusher house-II and revamping of settling pit of Crusher house-II.
- CPP,NALCO is the first Public sector in the country to implement of pilot-cumdemonstration project of carbon Sequestration from flue gas by Algae.
- □ The project of ash transportation to allotted South Bharatpur abandoned mine void in lean slurry disposal mode is going on .So far around 72% work has been completed.
- Ash mound construction over Ash Pond-II of CPP has been completed in Jan'2016 and around 15 lakh cubic meter of ash was used.
- Ash Pond-IV meant for high concentration slurry disposal having HDPE liner has been taken into service for ash transportation in HCSD mode from Unit-7 to 10 of CPP.
- RTDAS (Real Time Data Acquisition System), ambient air monitoring stations and effluent monitoring station for continuous uploading of monitored data to the server of OSPCB through GPRS service implemented at different production units of NALCO.



Per Fluorocarbon (PFC) gases from Smelter

The primary aluminium production process i.e. smelter operations lead to emission of two Per fluorocarbon (PFC) gases i) tetrafluoromethane (CF4): 80-90% and ii) hexafluoroethane (C2F6): 10-20%, having high global warming potential. Emission of these gases are due to Anode Effects from Electrolytic cells. An anode effect is a process upset condition, where an insufficient amount of alumina is dissolved in the electrolyte bath. This causes the voltage in the pot to be elevated above the normal operating range, resulting in the emission of gases containing the PFCs; tetrafluoromethane (CF4) and hexafluoroethane (C2F6). The Smelter Plant is equipped with the most advanced ALPSYS pot regulation system, which helps in reducing the frequency and duration of anode effect by timely dosing alumina into the pot. We monitor Perfluorocarbons (PFCs) emissions, produced in the primary aluminium reduction process at Smelter during anode effects. For the year 2015-16, the PFC emission from Smelter Potline has been reestimated using AP (Aluminium Pechiney) overvoltage method and the values are given below:

CF4(kg/TAI)	0.0384
C2F6(kg/TAI)	0.0046

Plantation

As a proactive measure against climate change we have started plantation activity right from the beginning and have maintained the good practice with increasing zeal. Details of plantation work carried out during the reporting period is given below.

Unit	Mines	Refinery	Smelter	CPP	Total during 2015-16
Plantation done	1,11,282	31,625*	10,100	10,000	1,63,007
in year 2015-16					

^{*} Another Extra 7444nos saplings are distributed to public



Environmental Risk Management

Environmental effects of our operations are reviewed every year and as per the observed environmental risks we review our environmental focus and strategy. Product wise environmental risk analysis is done from time to time and it is our constant endeavour to turn observed environmental risks to the best possible advantage. As a part of risk control our R&D Department is working on projects for viable reuse of waste. We are continuously trying for adoption of new technology for energy conservation and control of emission and waste. The brief description of various environmental risks identified, is placed below:

Products	Environmental Risk areas	Environmental concerns	Opportunities
Calcined Alumina	 Air Pollution Water pollution Land contamination 	 Fly Ash Lime grit Waste water Caustic Spillage Redmud 	 Utilisation of fly ash in manufacturing of fly ash bricks, cement, road construction, filling up low lying areas in organization premises. Thrust given on increase of utilization of fly ash by motivating entrepreneurs for utilization Utilisation of lime grit in fly ash brick manufacturing. Extraction of Iron from Redmud and Gallium from process liquor of Refinery. Recycling of return water from ash pond and red mud pond for reuse in ash slurry pumping, red mud slurry making and mud washing. Scientific Management of Wastes and incorporation of improved technology for prevention & control of environmental pollution etc.
Aluminium	 Air pollution Water pollution Land contamination 	potlining • Generation of aluminium dross	 Spent potlining utilization in Cement industry and power plant. Provision of recycling of Aluminium Dross in Smelter Plant. Prevention of HF gas leakage from potline by using leak proof pot hoods. Absorption of Fluoride gases in alumina by dry scrubbing method in FTPs thus recycling fluorine to process Provision of automatic shutoff valve and recycling of spillage bath. Operation of multiple oil-water separators and safe disposal of waste oil. Improvement of maintenance practices. Automatic burner firing system in Cast House and heat regulation system in Anada Bake Furnace.



Products	Environmental Risk areas	Environmental concerns	Opportunities
Electricity	Air PollutionWater PollutionLandContamination	 Emissions Fly Ash Waste water	 Fly ash utilization in brick making, cement plant, road construction, reclaimation of low lying area, abandoned stone queries, abandoned coal mines void etc. Recycling of ash pond decanted water for ash slurry making. Utilisation of ETP & STP water in process and for horticulture & plantation purpose.
Bauxite	Air Pollution,Noise pollutionLandContamination	DustExplosiveOverburden	 Recycling of treated waste water for dust suppression and horticulture activities Reuse of overburden material for backfilling of mined out area Rehabilitation of backfilled area with plantation thereby converting the barren mined out area into deep forest Rain water harvesting in ponds and utilization of water thus stored for various purposes. Use of NONEL to delay blasting sequence to reduce noise level

Raw Materials Sourcing & Conservation

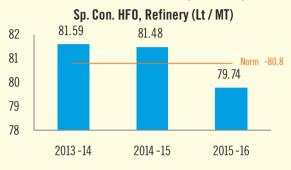
Disclosure on Management Approach - Raw materials

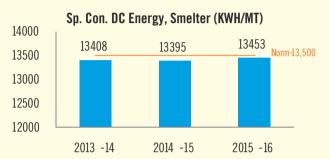
Raw material security & conservation is vital for survival of any industry and more so for the aluminium industry, since the process consumes major inputs like coal, coke, lime, aluminium fluoride, pitch, caustic & power. Risks of uncertainty of supply of critical inputs are suitably addressed by developing multiple sources for procurement raw material and adopting a detailed procurement plan chalked out at the beginning of year with inbuilt flexibility for meeting any contingency. The existing captive bauxite mine at Panchapatmali & the recent allocation of Potangi bauxite mine and Utkal D & E coal mines are expected, in the long run, to enhance the raw material security for two of the most important inputs, Bauxite and Coal. Other raw materials, sourced from multiple vendors through contract agreements, reduces the risk of banking on single source only. Efficiency in resource use is integrated into our product and process design. Monitoring of specific consumption of raw materials, energy & water, backed by effective process control measures enables us to address conservation of raw materials aspect of sustainability. R&D efforts and innovative steps are taken for continual improvements in optimization of resource use.

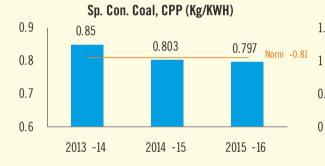


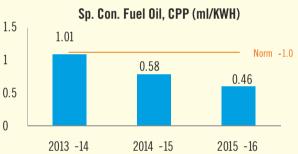
The specific consumption trend of important raw materials are quite encouraging during the reporting period.

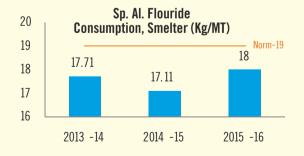
Sp. Consumption of Key Raw Materials

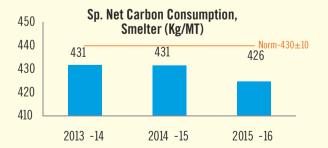














Consumption of Important Materials

Materials consur	ned	Source	2013-14	2014-15	2015-16
Raw Material	Alumina (MT)	Internal Production	6,13,943	6,31,453	7,20,918
	Coke (MT)	External Suppliers	1,16,988	1,24,310	1,43,290
	Pitch (MT)	External Suppliers	27,621	29,075	34,240
	Bauxite (MT)	Internal Production	62,92,677	58,34,921	63,40,142
	Caustic Soda (MT)	External Suppliers	1,88,279	1,90,491	2,07,312
Associated Process Material	Aluminium Fluoride (MT)	External Suppliers	5,606	5,597	6,760
	Wheat Bran (MT)	External Suppliers	2,369	1,881	1,977
	Lime (MT)	External Suppliers	60,660	50,231	54,127
	Explosives (MT)	External Suppliers	1,013	1,068	1,924
Packaging Material	VSI HDPE fabric (sq mtrs)	External Suppliers	5,16,082	6,53,517	6,11,500
	Wood in wooden pallets(Cubic feet)	External Suppliers	17,109	33,634	30,981
	Steel straps (MT)	External Suppliers	172	170	194.5
	Polyster Strap (MT)	External Suppliers	52	55	60.7
	HDPE Laminated bags for hydrate & Alumina (Nos)	External Suppliers	5,35,633	6,79,056	7,55,307

Recycled Input Materials (MT)	2013-14	2014-15	2015-16
Al. Dross	3390	2745	5523

Sustainable Sourcing

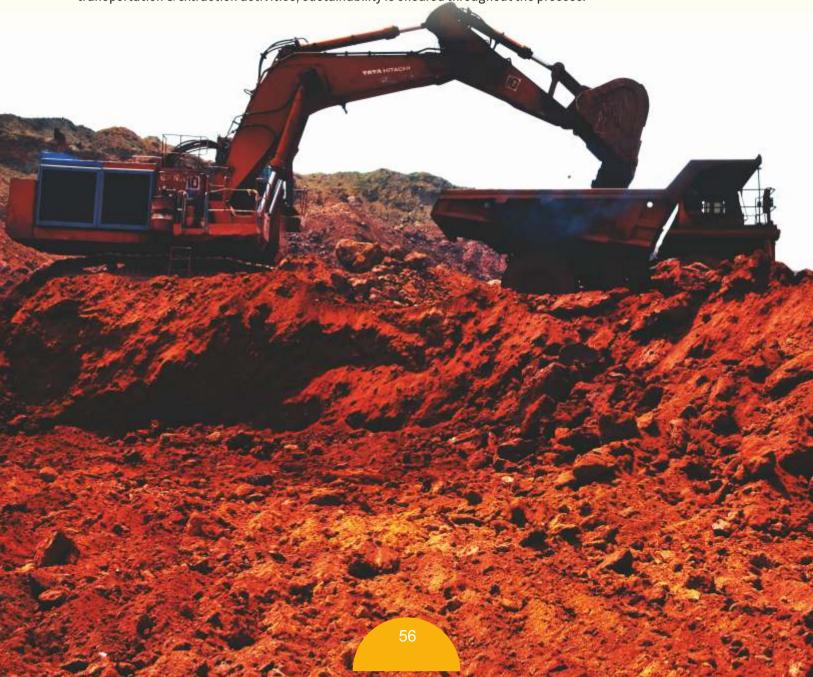
Sustainable sourcing of raw materials has been primarily ensured by establishing the major manufacturing units close to the source of crucial inputs like bauxite and Coal. Alumina Refinery, is situated very close to the captive Bauxite Mines and the major raw material ie. Bauxite is transported to the plant by a single flight long distance cable belt conveyor installed in our mines. 100% of our bauxite requirement is met from this source. During this year, a new deposit of about 79 Million Tonne of Bauxite at Pottangi is likely to be allocated to us soon to meet our growth needs and long term requirement. This is likely to boost up our raw material security as far as sustainable Bauxite availability is concerned.

Similarly, our Smelter Plant & the Captive Power Plant are situated quite close to the coal mines of M/s MCL, from which coal is procured as per the prevailing Fuel Supply agreement (FSA) and are well connected by road & rail. A dedicated Merry Go Round (MGR) captive rail system is also installed between the Bharatpur Coal mines of M/s



MCL and our Captive Power Plant, which ensures reliable and cost effective coal transportation to the power plant. Shortfall in coal availability if any, is bridged by purchase of coal mostly through e-auctions notified and conducted by Coal India subsidiary companies. The option of using imported coal is also available & is exercised, depending on the exigency of requirements & outcome of detailed cost-benefit analysis. During the reporting period we have not taken recourse to importing coal and all our requirements were mate through FSA and E-auction coal. With allocation of Utkal D & E coal blocks having coal reserve of 200 Million Ton, our position pertaining to sustainable availability of coal, is also expected to improve.

We also ensure sustainable supply of all critical inputs by expanding our vendor base, with efforts to source from vendors close to our units. All input materials are sourced 100% in sustainable manner, with procurement through competitive bidding. Orders for supply of all bulk raw materials i.e. Caustic soda, Lime, CT pitch, CP coke, Aluminium fluoride etc. are also distributed amongst multiple vendors meeting the qualifying criteria in order to enhance sustainability of sourcing by improving the reliability of supply. Due to our direct control over mining, transportation & extraction activities, sustainability is ensured throughout the process.

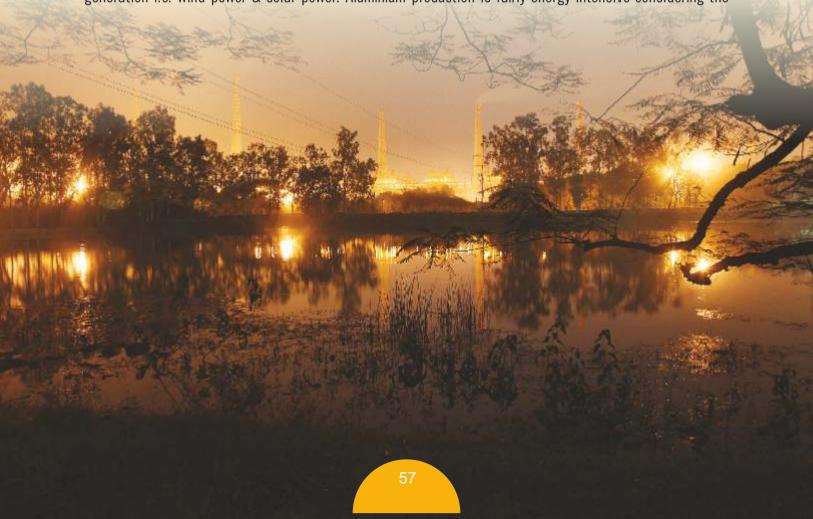


Energy Efficiency

Disclosure on Management Approach – Energy & Emission

For an energy-intensive industry like aluminium, implementing energy efficiency improvement initiatives in the organisation is essential for addressing a vital global issue like climate change. As a major consumer of fossil fuels i.e. coal & fuel oil, we are committed to take proactive actions towards reduction of GHG emissions by reducing consumption of fossil fuels and building awareness regarding relentless fight against the menace of climate change. We must pursue the objectives of limiting climate change to the lower end of the IPCC emission scenarios in line with current international agreements, while providing access to reliable and affordable energy to support economic development and improved living standards. Efficiency in energy use is addressed since selection of technology. Employees are encouraged to come up with ideas and suggestions about energy conservation. R&D efforts and innovative steps are taken for continual improvements in optimization of energy consumption.

Energy Management Systems conforming to ISO 50001 standard are implemented in our energy intensive plants, CPP, Smelter and Alumina Refinery. Implementation of the Management System, certified by a reputed external Certification Body with global accreditation, underpins the priority accorded towards energy management. Energy Policy emphasizes our thrust on driving energy efficiency measures. The Sustainable Development Policy also provides ample focus on energy related issues. Steps are also taken for green energy generation i.e. wind power & solar power. Aluminium production is fairly energy intensive considering the





process of extracting alumina from bauxite and then smelting it into liquid metal. With several interventions aimed towards reducing the energy consumption, we are able to continually improve performance in terms of energy use. This has also led to reduction in the amounts of greenhouse gas (GHG) emissions. Achievement of Specific Energy Consumption beyond than the assigned target in PAT cycle-I provides ample testimony towards our commitment on energy conservation front.

Consumption of primary fuels (including fossil fuel) leads to direct GHG emissions and consumption of electrical energy leads to associated, indirect GHG emission. Total energy consumption in our operations during 2015-16 was 114,023 TJ. Site specific calorific values were used for determining energy consumption from fuels. In absence of site specific values, calorific values by IPCC were used. Emissions from electricity have been calculated using the emissions factors published by the Central Electricity Authority of India. Total greenhouse gas emissions for the reporting period of 2015-16 was 11.05 million tonnes of CO2e. The other relevant indirect greenhouse gas emissions are insignificant considering the scale of operation. Due to ramping up of alumina productions by 5.5% Aluminium Production by 13.8% & power generation by 13.8%, direct Energy consumption has increased 10.7% & GHG Emission has increased 10.8%.

Energy Consumption:

Direct Energy consumption (GJ)	2013-14	2014-15	2015-16
HFO	7,200,188	6,827,126	7,146,371
LPG	4,845	7,701	8480
LD0	105,715	114,748	155,545
Diesel	238,713	228,620	242,926
Coal	99,296,324	95,793,431	106,470,041
Indirect Energy consumption (GJ)	19,495	0	0
Total Energy Consumption (GJ)	106,865,280	102,971,626	114,023,363

GHG Emissions (In Tonnes CO2e) — Scope 1 & 2

Fuels Consumed	2013-14	2014-15	2015-16
HFO	557,295	528,420	553,129
LPG	305	486	535
LD0	7,833	8,503	11,526
Diesel	17,689	16,941	18,001
Coal	9,760,829	9,416,494	10,466,005
Electricity Consumed	4,224	0	0
Total GHG Emission	10,348,175	9,970,844	11,049,196

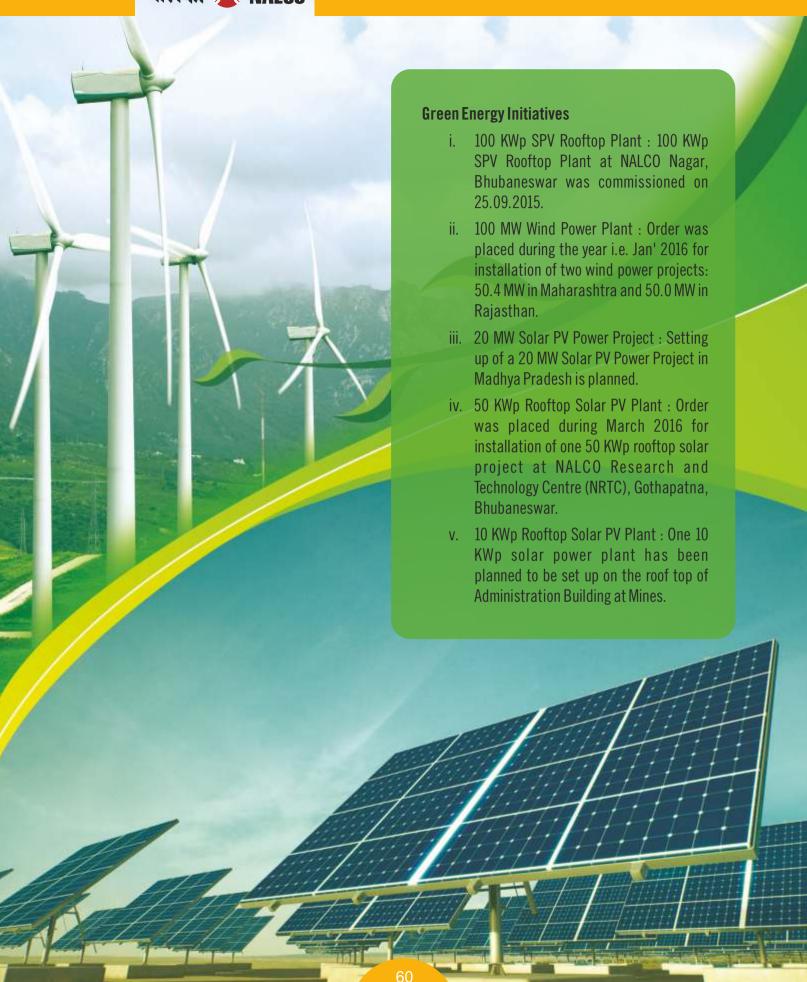


Energy conservation initiatives

Major initiatives on Conservation of Energy, implemented at different units during the financial year 2015-16, and the impact thereof, are indicated below:

Un	nit		Energy Conservation Measures2015-16			
	umina	1.	Replacement of Air Pre heater in Boiler-2 of SPP	2450 TOE		
Re	finery	2.	Installation of Magnadrive coupling in conveyor 5A, 5B and 6B	1.88 TOE		
		3.	Replacement of Dump Steam Condenser control valves	2912 TOE		
		4.	Modification of Plate Heat Exchanger of Evaporation area to transfer hit from sodic condensate to RMP Return Water	205 TOE		
	uminium nelter	1.	The specific DC energy consumption in smelter Plant has reduced to 13453 KWHr/MT of Hot metal during the FY 2015-16 against the target of 13500 KWHr/MT by using ALPSYS Pot regulation system in all Pot Lines, reducing anodic problems, reducing wedge drop and stem beam drops, use of graphitized cathode blocks, use of slotted anodes and increasing Anode stub hole & pin length in running pots.	1515 TOE		
		2.	Replacement of TFL tubes with T5 lamps			
		3.	Use of energy efficient motors in place of standard motors			
	ptive Power	1.	Replacement of 850 KW ACW pump motor with energy efficient motor.	60 TOE.		
Pla	ant	2.	Use of 474 nos. energy efficient tubelights & 683 nos. electronic choke	78.5 TOE.		
S .	nuxite ning	1.	Replacement of condenser coils of 4 x 13 Ton air conditioner and other renovations	3 TOE		





Water Stewardship

Disclosure on Management Approach – Water

Availability of water from natural sources is becoming scarcer day by day. The sustainability of operations is greatly affected by availability of water in adequate quantity and appropriate quality. This critical resource need to be utilized in a responsible manner, taking into account the inherent seasonal fluctuations in availability of water from natural sources like rivers and streams. This calls for responsible stewardship towards water resource through out the operation cycle. Top priority is accorded to sustainable use of water & we recover and reutilize water where ever possible. All our production units are zero discharge units with respect to their waste water and sewerage water management. The treated waste water was reused in process and treated sewerage water is used for horticulture purpose. Augmentation and recycling of waste water at our Smelter plant by a nano based Defluoridation plant is being set up in collaboration with M/s Eesavyasa Technology Pvt. Ltd., Hyderabad.

In CPP, the ash pond overflow water is recycled and reused in the ash disposal system. Like wise in Refinery unit in excess of 100% of supply water from red mud pond and ash pond are recycled back for same use. In the year 2015-16: 1,49,30,800 cubic meter water was recycled from the CPP ash pond & 9095911 cubic meter and 3813309 cubic meter water was recycled from Refinary ash pond & red mud pond

Water withdrawal by different units of NALCO (m³)

	Source	2013-14	2014-15	2015-16
Smelter & CPP	Brahmani River	3,47,58,550	3,11,57,944	3,61,41,063
Alumina Refinery	Kerandi River	94,65,271	99,23,139	99,23,370
Bauxite Mines Jholaguda Stream		5,44,905	6,92,567	8,25,425
Total Withdrawal of surface water		4,47,68,726	4,17,73,650	4,68,89,858

The fresh water requirement at our CPP and smelter is fulfilled from Brahmani River. The water in the river Brahmani dries up during Summer season and changes its course away from the Intake pump house of NALCO due to deposit of sand during monsoon season. This threat is countered by dredging of the river Brahmani to create channel for water course to-wards NALCO Intake point. We apprehend water scarcity in the near future. Hence we are currently focusing on adapting the following river management strategy:-

- $\, \square \,$ Jack-Jetty and submerged vane for diverting the flow towards the pumping main
- $f \square$ In-stream water storage creation on the river bed by providing piano weir water storage system.

As mentioned above Smelter receives required water from CPP. In the reporting period Smelter has received 2144959 cubic meter water from CPP mainly for cooling and township use. Smelter does not require any process water. However, the rain water when comes in contact with fluoride bearing material lying on the ground, gets contaminated with fluoride. Smelter is having a modern defluoridation plant using ion-exchange technology to remove fluoride from the waste water.



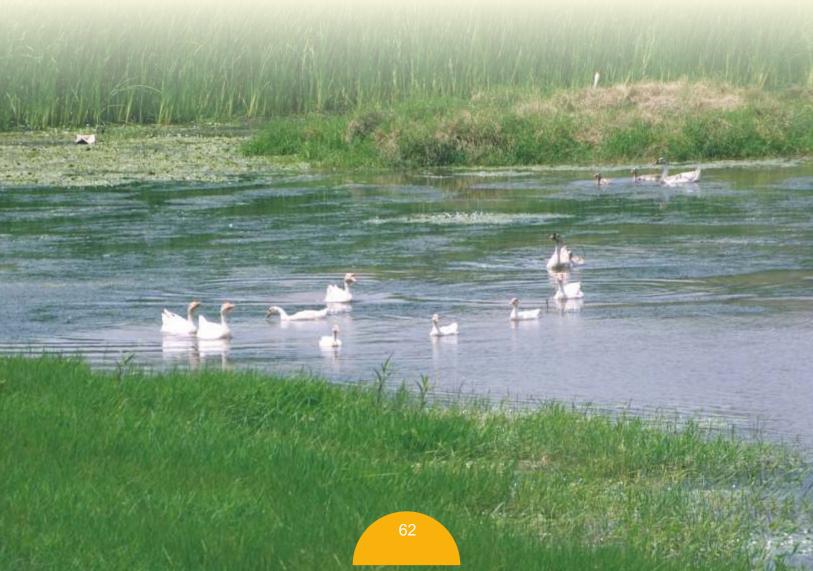
Sewage water is treated in the STP by activated sludge process. Treated sewage water is reused for gardening and maintaining green belts. This reduces filtered water consumption. The residue is used as manure.

Alumina Refinery and Bauxite Mines receives the required water from River kerandi and Jholaguda stream respectively. Being augmented by Kolab Reservior River Kerandi provide round the year water to Refinery, Mines require relatively small quantity water, prime requirement being for cooling and domestic consumption. Being a perennial source of water Jholaguda stream provide adequate amount water to Mines.

Besides this for our port facility we received 10487 KI water from Vizag Port Trust. Almost whole of the water is consumed in gardening/plantation inside its premises. A negligible quantity of water is consumed for drinking purpose & in toilets. There is no industrial effluent. The domestic effluents from toilets go to Septic-Tanks followed by Soak-pits. There is "NIL" discharge of any kind from NALCO Port Facility to storm water drains/any water body.

Water Recycling and Reuse

All our production units are zero discharge units. All the waste water of the plants are recycled after proper treatment for different uses. We evacuate ash and redmud in hydroslurry form and buffered water of redmud pond and ash pond are recycled for reuse in slurry making. The treated sewerage water is used for horticulture. We are also practicing rain water harvesting and ground water charging to augment our supply. The details of some of our water recycling efforts are given below.



Sludge Pond Recovering system of CPP	In the sludge pond recovering system, sludge, grit consisting of sand, gravel, or heavy solids are allowed to settle and around 270-290 m³ per day (depending on seasons) of water is recovered and sent to the raw water reservoir of CPP.	
Dust Suppression System at CPP	Clear water of around 13 m³ per hour is recovered from the dust suppression system in CPP and is guided for use as ash slurry.	
Sewage Treatment Plants of CPP	In CPP Treated sewage water of 175 m³ per day from STP-I & 206 M³/day from STP-II is reused for gardening and maintaining green belts. This reduces the use of raw water from the river. The residue is used for land filling and as manure.	
Ash pond Recycle System of CPP	Around 55,000 m³ per day water is recycled back from CPP ash pond to the ash water pump house after treatment.	
Industrial Drain Water Recycling System(IDWRS) of CPP IDWRS has been designed to treat all liquid effluents which originate within to station. A total of 250-300 m³ per hour of water is reused for ash water make coal quenching in CPP.		
Storm water recycling at CPP	One settling pit with recycling facility has been completed at the exit point of storm water drain.	
Rain Water Harvesting at CPP	At our captive power plant, a catchment area of 2500 square meters has been made to harvest the rainwater. Also at the RCPH, a catchment area of 1250 square meters harvests the rainwater. At smelter plant, there is a rainwater holding pool of 80,000 m³ capacity which is treated and used in the plant operations.	
Surface runoff recycling at CPP One high capacity water harvesting pond of size (150mx100mx4.0m) with facility is under progress at the low lying area (near Watch tower No-3) of collection of surface runoff water and storm water.		
Recycling of Subsoil water at Smelter water at Smelter The subsoil water collected below the potline 3 & 4 are recycled in the process. subsoil water of potine 3 is used in cooling and fire water makeup of rolling pla whereas the subsoil water of Potline 4 is recycled in makeup water in compress cooling. Around 700 to 900 KLD water is conserved in the above way.		
Re-routing of drain of RP area of Smelter	A portion of surface runoff of RP area which was flowing outside the plant boundary through natural gradient was diverted to Holding pool by reversing the slope of the drain. The job was completed before the onset of monsoon. This surface water will be treated in Defluoridation plant and used in green belt development.	



Re-using Drain 1 water in Cooling tower.:	At present surface water flowing through drain 1 is used in Horticulture purpose only. Project has been under taken to reuse this water as cooling tower makeup, thus reducing water intake from the river.
Rain water harvesting effort at Smelter	Initiative is on to construct a large reservoir near watch tower 23 to collect surface runoff of non plant area and use of the same in plant.
Water purification at Smelter	Smelter does not have any process water. However, when the water running in surface water drains as well as the rain water comes in contact with fluoride bearing material lying on the ground during transportation, the water gets contaminated with fluoride. We have installed a modern defluoridation plant using ion-exchange technology to remove fluoride from the waste water
Rain water harvesting effort at Refinery	In addition to existing two roof top rain water harvesting projects at Training Centre and Administrative building, construction of another Rain Water Harvesting project has been planned in township of Refinery.
Effluent water handling in Mines	Effluents from the Mechanical Workshop area is being channelized through well-designed oil-water separation tank where oil is collected and the clear water is discharged to zero discharge sump. Effluent from canteen is treated in a biological treatment unit and treated waste water is discharged to the zero discharge sump. Water from the zero discharge sump is pumped to an overhead tank from where water is used for dust suppression and horticulture purpose.
Rain Water harvesting at Mines	NALCO's sedimentation basins located inside the mining area act was significant ground water recharging facilities, when rain water percolates down and enriches the ground water table located below the surface. Besides four nos of ponds have been excavated in the unexplored area which is also acting as a significant rain water storage and reuse facility. Two nos of roof top rain water harvesting structures have been constructed in the Administrative Building and Mine Manager's Building of the Mine.

Water Recycling data of units

Mines	Water Recycled/Reused (m³)	% Water Recycled/Reused
	ETP	
2014-15	76650	11.07%
2015-16	76650	9.29%

CPP	Water Recycled / Reused (m³)			% Water Recycled/Reused
	STP	ETP	Ash Pond	
2014-15	100000	2390000	12517775	67.7%
2015-16	100000	2154200	14930800	63.50%

	Water Recycled / Reused (m³) (Estimated)		% Water Recycled/Reused
	STP	ETP	
2014-15		324000	24.59%
2015-16	219000	292000	23.82%

Refinery	Water Recycled / Reused (m³) % Water Recycled/Reused			
	RMP	Ash Pond	STP	
2014-15	3171586	9095084	492750	129%
2015-16	3813309	9095911	543120	136%

Waste Management

Disclosure on Management Approach – Effluent & Waste

Since processing of ore and extraction of metal is our prime business, non metallic portion of ore is rejected as waste. Inherent limitation of technology, process instability and human negligence also contribute for waste generation. In the first place we reduce the waste generation due to uncontrolled process and human negligence. For the inevitable wastes we adopt the principle of recover, reuse and recycle. Through our R&D effort we are constantly striving to discover new use of wastes and new methods of recovery and recycle to turn waste to wealth. We are aware that not only wastes are a drain of natural resource but also involves handling cost for safe disposal and segregation. In every aspect of waste handling we insulate its effect on environment in general and human beings in particular.

War on wastes start from identification and handling of process waste right during project planning and evaluation stage. Environment Impact Assessment and preparation of Environment Management Plan also presents opportunity for advance planning for waste management. The waste management plan is continuously reviewed by us to accommodate new breakthrough and changing regulatory guidelines. The total process is monitored by regulatory agencies such as State Pollution Control Board, IBM and MOEF. Proper waste handling is also conferred due weightage during Aspect Impact Study, Hazard Identification & Risk Assessment and Disaster Management Plans

NALCO has identified all wastes generated during its operation and segregated them as hazardous and non hazardous depending on its impact on biodiversity and environment. We have waste management plan in place for handling hazardous and non-hazardous wastes in benign manner. Over burden generated during our mining operation are reused fully for back filling. Red mud generated during refining process of bauxite is washed to reduce caustic content and disposed safely in red mud pond with zero overflow to avoid any incidents of soil/ground water contamination. The excess water from pond containing caustic soda was reclaimed back for mud washing and suitable use in the process there by recycling the valuable caustic for process use. About 500 to 800 MT of caustic per month is recovered by this intervention. In Smelter the left over portion of carbon anode is recycled for anode making and spent cathode residue is segregated in secured landfill and concrete storage sheds. Now we are exploring the possibility of use of spent cathode as a fuel mixture in boiler. Ash generated in boilers of power plant was disposed to ash pond for safe storage. Different use of ash, from land filling and road making to brick making and concrete making are being developed now for cost effective utilisation. We are developing a project for mine void filling by use of boiler ash and the project is around 72% completed. E-waste is managed as per the guideline through identified recycler and original manufacturer. Recycling & utilisation of different wastes are summarised below:



Hazardous waste g	eneration	2015-16	Waste Management Method
Alumina Refinery	Spent Resin (MT)	0.7	Disposed in secured land fill
	Used oil (KL)	59.96	Sold to authorized recycler
	Discarded Asbestos (m3)	47.5	Dumped in specified pits
	Empty Contaminated Containers (Nos)	4958	Recycled to venders
Smelter	Aluminium Dross (MT)	6103	Recycled in the process
	Cathode Residue (MT)	3740	Stored in secured land fills
	Spent Anode (MT)	63527	100% recycled in anode making
	Rejected Filter Bags (MT)	11.424	Incinerated in pot
	Rejected ALF3 bags (Nos)	134599	Incinerated in pot
СРР	Used oils (KL)	10.84	Sold to authorized recycler
	Spent Resins (KL)	2.9	Disposed in secured land fill
Mines	Used oil (KL)	133.71	Sold to authorized recycler

Non Hazardous waste generation		2015-16	Waste Management Method
Alumina Refinery	Red mud(MT)	2789116	Disposed to redmud pond
	Lime grit (MT)	18573	Used as land fill
	Fly ash (MT)	603648	98.67% ash reused & rest dumped at ash pond
Smelter	Metallic Scrap (MT)	4768.16	Sold to recyclers
	Mixed Debris (MT)	2350	Disposed in the low lying areas
	Refractories Bricks(MT)	1800	Reused in construction of temp. resistant floor
CPP	Fly ash (MT)	2200151	1463437 MT (66.52%) reutilised within the unit while rest is disposed to ash pond
Mines	Overburden (MT)	1837000	Reused in backfilling of mined out area

Recycling & Reuse

Being a primary aluminium producer, we are not in the business of recycling of aluminium. But maximum thrust is given to recycle the inevitable process wastes to the maximum possible extent. The aluminium dross generated in melting furnaces at Smelter are processed in autogenous mills where metal is separated from bath material and the recovered metal is recycled. The aluminium wedges used for bypassing pots, pot hoods, pot cowl, residual metal pad etc are melted and recycled through potline scrap melting furnace. Caustic soda is recovered along with the redmud pond recycled water and used for mud washing and process make up. Details of Some of major recycled wastes are presented below.

Unit	Utilisation	Percentage
Bauxite Mines	Overburden is utilized for reclamation for mined out areas	100%
Alumina Refinery	Caustic Soda is recycled from redmud	5.51%
	Ash utilization	98.67%
Smelter	Recycling of Aluminium scrap,	100%
	Aluminium dross recycled as input to process	90.5%
	Recycling of spent anode	100%
CPP	Ash Utilisation	66.52%

Responsible Mining

Bauxite extraction involves open cast mining and the process entails inherent adverse impacts on air, water, land, flora and fauna of the region. In light of this, sustainable mining interventions were planned out since the inception of our mining project work, which is evident from the present scenic greenery of our Panchapatamali bauxite mine. The sustainable mining practices implemented, ranges from selection of right mining technology, adoption of environmental pollution control measures and biodiversity management plan. Appropriate measures were taken for addressing issues like air pollution, water pollution, excessive noise & vibration and land degradation, successfully safeguarding the ecology from negative impacts of mining. By proper rehabilitation of mined out areas and management of top soil, over burden and wastes, the area gets restored to its virgin state. As far as eco-friendly mining is concerned, the mine is reclaimed concurrently as per progressive Mine Closure Plan of the approved plans for Mining. Overburden & top soil stripped ahead of bauxite mining faces, are dumped in the backfilled/mined out area. Dumped lateritic overburden gets levelled before topsoil is put on it and subsequently, the top soil is properly dressed making the reclaimed land suitable for plantation, with adequate provision for benches and terraces. Secondary blasting of hard strata is totally avoided to prevent excess noise & vibration and degradation of topsoil fertility. Well maintained mining equipments and machines also prevent leakage of oil & grease, which could have adversely affected the quality of soil. The mined out area is totally reclaimed with backfilling, plantation and water basins at strategic points for ensuring proper drainage. Afforestation is carried out with selected forest and fruit bearing species in this



back filled areas. Care is taken to preserve the natural topography of the virgin area. At present total overburden(laterite & top soil) removed is being used for backfilling the mined out area obviating needs for further creation of overburden dumps. The overburden dumps of construction phase are suitably stabilised through necessary soil conservation measures. These areas, after plantation, are now covered with good vegetation, where growth of vegetation is satisfactory.

Year	Mined out Area rehabilitated during the year	Cumulative area rehabilitated since inception
2015-16	16.08 Ha	279.38 На

Bio-diversity Management

Maintaining finer balance between biodiversity and associated ecosystem is essential for the very sustenance of the ecology of the area. We are conscious of the necessity of managing our land and adjacent forest cover and contribute to afforestation schemes launched by Regulatory Authorities. Ensuring community support calls for a greater deal of land stewardship. None of our units are located near any world heritage site. But our bauxite mine requires addressing bio-diversity aspect. By its basic nature bauxite bearing hill top are barren land with only sparse bushes. Due to lack of any forest cover on bauxite hilltops possibility of damage from mining is minimum. None of our mining operations are within 10 km of International Union for Conservation of Nature (IUCN) protected areas or areas of high biodiversity value having risk of direct impact on ecosystem leading to any threat to IUCN Red List Threatened Species. However, after taking up mining activities in the bauxite mines lot of plantation activities have taken place and greenery on hill top has improved. Every year, about 1,00,000 trees, both fruit bearing and forest species, are planted in the Mines and peripheral areas. Our other units i.e. Alumina Refinery, Smelter, CPP and the Port Facilities do not operate in bio-diversity sensitive areas. We have already initiated a vegetation survey for crops and vegetables in the nearby area of our Alumina Refinery.

Afforestation activities & wildlife conservation

The afforestation plan has been prepared keeping in view the land use changes that will occur due to mining operation in the core area. The objectives of the restoration plan are to:

- Reclaim the mined out areas by planting trees which are indigenous in nature;
- Provide a green belt around the periphery of the mining area to combat the dispersal of dust in the adjoining areas;
- Prevent propagation of noise;
- Protect the erosion of the soil;
- Conserve moisture for increasing ground water recharging;
- □ Restore the ecology of the area;
- Restore aesthetic beauty of the locality; and
- Meet the requirement of fodder, fuel and timber of the local community.

Year	Area covered under plantation during the year in Ha		Cumulative area covered under plantation in Ha	Total no of trees planted Cumulative since inception
2015-16	31.26	1,11,282	1066.76	32,03,140

NALCO has prepared plan for conservation of wildlife in the core and buffer zone of Mines. The Site specific Wild Life Plan for South Block and Central & North block has been approved by PCCF (Wild life), Bhubaneswar. As per the wildlife management plan for the Central and North Block In the core area, there are 5 mammals, 4 reptiles and 9 bird species present. No schedule-1 species, as per the Wildlife Conservation Act -1972, are present within the core zone. In the buffer zone, there are 16 mammals, 9 reptiles and 29 bird species present out of which, two mammalian species (Elephant and Sloth bear) belongs to Schedule-I category. The following major suggestions have been implemented under wild life management plan.

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

Further NALCO has carried out a study on bio-diversity in and around Panchpatmali Bauxite Mine Central & North Block with Botany Department, Utkal University. The study has been completed and various suggestions for conservation of bio-diversity are under study for implementation.

Runoff management and drainage Control

Control measures are being taken to control soil erosion and sedimentation of water courses. Garland drains are cut ahead of overburden fronts to curtail the entry of rain water into the mining area. Surface run off water inside the active mining area mostly percolate down through the partially lateritised khondalite substratum and backfilled area and thus help in recharging the perennial streams and ground water. An in-situ peripheral barrier of about 7.5 m width is left around the mine boundary which will not allow silt or soil to egress or overflow to the neighbouring water courses. Nevertheless, check dams and gabion structures have been constructed at strategic locations at foot hill of the Mine to arrest washed outs, if any. During the year 07 nos of check dams have been constructed.



Noise and vibration control measures

Adequate noise and vibration control measures have been taken so that a healthy work environment is provided to the workers as well as not to adversely affect the wild life of the vicinity.

Green belt has been made around the mine lease boundary to screen the noise and also for arresting fugitive dust. Sharp drill bits are used for drilling of holes to reduce noise generation and dust emission. Noise generated due to blasting is impulse type which may be controlled by putting adequate stemming column. Use of noiseless trunk line for bottom initiation is done as such noise from primary blasting are completely eliminated. Use of Rock breakers is done for size reduction of oversize boulders thereby avoiding secondary drilling and blasting, which generates irritating noise. Cabins of HEMM and other mining equipments like crushing, etc are made sound proof to protect the operators from high noise levels. Maintenance and fine tuning of machinery is regularly ensured to reduce undesirable noise. Earplugs and earmuffs are provided to the workmen working near high noise generating area like Drills, HEMM, etc. Crusher is enclosed to minimise noise generation.

Vibrations due to blasting is also kept to a minimum by adopting a well designed blasting pattern with sequential blasting by use of delay detonators or by use of NONEL. As per the study conducted by M/s ISM, Dhanbad& M/S CMRI, the blast vibration falls to an unperceivable limit within a distance of 50-60 metres on hill slope.

Besides NIMH, Nagpur carry out six monthly study of noise and vibration of various equipment and structures inside the Mine for rectification of any abnormal conditions.



HUMA SOURC EAMNORY Human Resource Excellence

Participative Management

We recognise freedom of association and ensure that complete freedom is enjoyed by the employees to form or participate in any association or trade union. About, 99% non executive employees are members of the registered Unions. In every unit amongst the registered unions the trade union having highest follower, decided based on secret ballot, is bestowed the status of recognised union. We negotiate all matters affecting workers with our recognized unions. Authorised representatives of the Recognised Unions are invited to issue based discussions on all important matters affecting the service conditions and welfare measures of the employees and final decision is taken through mutual consultation, wherever required ending with formal settlement.

The four layered i.e. Unit level, Complex level, Corporate level (Directors level) and Apex level (CEO level) system of consultation with Recognised Union, ensures truly participative management. Apart from this shop level, joint committees are also very effective in ensuring workers' participation in day to day operation of plant. Trivial issues like job distribution, a breach of safety due to wrong work procedure or a broken machinery is itself get settled by shop level discussion. Different purpose driven consultative bodies are also available to chalk out guideline and extend support to different employee related activities. Canteen committee, Safety Committee, Shop Council, Grievance Committee, Welfare Committee etc are examples of some of the structured forum in this regard. A notice period of 21 days is allowed, as per section 9 of the Industrial Dispute Act of 1947, prior to implementation of any significant operational change. Important policy matters connected to issues like wages, incentives, benefits, standing order etc., are finalised through collective bargaining method. NALCO respects the rights and privileges of the registered trade unions, providing a conducive environment for maintaining good Industrial relations. A conducive atmosphere for growth and profitability is maintained by good industrial relation with trade unions demonstrated best by the fact that during the reporting period there was no strike, lock out or worker unrest.

The five recognized trade unions at units are:

Units	Name of Recognised Unions
Smelter	NALCO Employees Sangha
Captive Power Plant	NALCO Shramik Congress Union
Mines	NALCO Mines Employees Union
Alumina Refinery	NALCO Mazdoor Sangha
Corporate Office including Port Facility & Regional Offices	NALCO Employees Forum



Management Employee Relationship

Our HR systems and processes are aimed towards making the organisation an employer of choice. This is in perfect alignment with our mission "to continuously develop" human resources and "to satisfy employees". Our vision "To be a reputed Global Company in the Metals and Energy Sectors" calls for implementation of processes to develop a capable talent pipeline in the organisation. The HR practices championed in the organisation are aimed at attracting, developing and retaining right talent at all levels. The Company strives to increase diversity and employee engagement and practices the principles of an equal rights employer through non-discrimination based on caste, community, race, color and gender. Competency of employees is fully harnessed by providing work satisfaction, personal development and career growth, and motivating employees through recognition and reward Employee welfare measures of high standards are adopted in the organisation strongly promoting workers right to a decent work place. With time there has been continuous technological improvements and workforce skill profile is upgraded through focussed training. A holistic approach to Learning & Development through well-established inhouse training centres ensures that Training needs of the employees are catered with the objective of building a rewarding career with ample progress and high level of satisfaction.

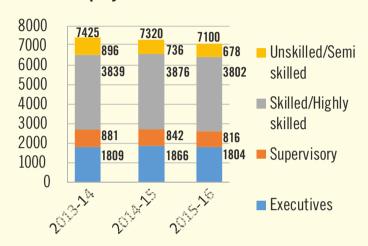
We provide enablers for employees to play a pivotal role in shaping the future of the organisation. Innovativeness and creativity are promoted through the ongoing scheme like QCs, Kaizens Suggestion Schemes which encourage team work. Long term wage Settlements and Settlement related to Performance Based Award Scheme emphasise the organization's approach towards its core workers. Care for employees is also demonstrated through schemes that promote employee education, health and opportunities for social engagement. To pre-empt possible threats, care is taken to ensure succession planning for critical positions. The actions and initiatives are backed by the strong management systems such SA 8000 and OHSAS 18001 which have been implemented across all the locations.

Equal Opportunity Employer

Equal Opportunity is provided to all applicants for job opportunities within the frame work of Govt. Policies During recruitment we pay attention to Presidential Directives, for recruitment of SC, ST & OBC candidates. Differently abled persons are also considered for recruitment under the provision of Persons with the Disabilities Act. 1995... In order to have a control over the implementation of Presidential Directives as well as Government instructions. Liaison Officers for SC/ST/OBC have been appointed to look after the reservation matters for SCs/STs/OBCs as well as Persons with Disabilities (PWD).

As on 31.03.2016, out of 7,100 employees (including Trainees) on the Company's roll, there were 1,162(16.37%) SCs, 1,286 (18.11%) STs, 783 (11.03%) OBCs and 83(1.17%) persons with disabilities. As can be seen from the above, every third employee in NALCO belongs either to SC or ST category. The total number of female employees in the organization stands at 355. A Comparative Graphical presentation of Work force by cader for last three years and employee breakup of reporting period is giving below.

Employees: Year Wise



Employees Break-up 2015 - 16





Age profile of employees as on 31.03.2016 and gender breakup of workforce cader for last three years is giving bellow

Total no. of Employees

Type of Employees	Male		Female			Total			
	<30	30-45	>45	<30	30-45	>45	<30	30- 45	>45
Executives	170	512	1048	17	25	32	187	537	1080
Non-executives	191	1504	3320	21	112	148	212	1616	3468
Total	361	2016	4368	38	137	180	399	2153	4548

Employee's Skill Matrix & Gender Diversity

Total Employees		2013-14			2014-15			2015-16		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Executives	1741	68	1809	1789	77	1866	1730	74	1804	
Non Executives	5335	281	5616	5176	278	5454	5015	281	5296	
 Supervisory 	833	48	881	796	46	842	765	51	816	
Highly skilled /skilled	3710	129	3839	3747	129	3876	3672	130	3802	
Semi-skilled /Unskilled	792	104	896	633	103	736	578	100	678	
Total	7076	349	7425	6965	355	7320	6745	355	7100	

New recruitments with age wise breakup of recruitees are given bellow.

New Hires (2015-16)	Male			Female		
	<30	30-45	>45	<30	30-45	>45
Executives	0	9	0	1	0	0
Non Executives	12	0	0	7	0	0
Total	12	9	0	8	0	0



Employee Benefits

Different benefits extended to permanent employees include medical facilities, leave travel concession, subsidised accommodation, subsidised electricity & water facilities, miscellaneous allowance, parental leave, pension schemes, Cash incentive for acquiring higher qualification, Different loans & advances, Scholarship for dependant children etc. Company has provision of dedicated fund for different defined benefit schemes like gratuity, pension, provident fund etc. Apart from these direct benefits Company also extend many indirect benefits like well developed township, Multipurpose cooperative society, 24 hour security in township, amenity bus service, subsidised canteen etc to its employees. Contract employees are also covered under some benefit schemes such as Provident Fund, Medical benefits, etc. During the year 2015-16, Rs 1,361 crore was spent towards employee benefit expenses including salary as opposed to Rs 1,378 crore spent during 2014-15. Due to proper care employees are a satisfied lot and the separation of employees from the organisation is low as given in the following table for the reporting period.

Defined Benefit Scheme
Provident Fund
Pension Fund
Gratuity
Post Retirement Medical Benifit
Setting in Benefit
Long Service Reward
NEFFARS
Leave Encashment
NALCO Benevolent Fund Scheme
NALCO Retirement Welfare Scheme
Superannuation Gift Scheme

Employee Separation

Reason	Executives		Non Exe	Total	
	Male	Female	Male	Female	
Demise	1	0	34	1	36
Resignation	15	2	1	0	18
Superannuation	61	2	148	2	213
Termination/Struck Off			1		1
Total	77	4	184	3	268



Enhancing Competency

Disclosure on Management Approach-Training & Education

In the present competitive world adoption of new technology, renovation of old plant and machinery and invention of new business strategy are elements for success of any organisation. In this scenario of change keeping your workforce educated and well trained is the need of the hour. Keeping this in mind different training for employees are arranged by our Training Department after proper evaluation of training needs. Functional and developmental training needs are identified from multiple sources, primary being, the competency related needs, secondly, needs arising from organizational requirements and finally departmental / sectional imperatives. Based on the training requirement annual training plan is prepared. Trainings are provided by both internal and external experts both at Units and our centralised HRD Centre of Excellency at Corporate. For specialised training we also send our employees for different training in India and abroad. For new recruits we provide customised induction training and on the job training. Feedbacks received regarding training are analysed for incorporating improvements in module, methodology and arrangements.

The Training dept. conducted 12923 man-days of formal training in 2016. The subjects covered included Project Management, Personal Effectiveness, Quality Tools, Finance for non-finance executives, Shopfloor management, Negotiation and conflict management based programs. Robust Graduate Induction training program was developed for Graduate Engineer Trainees.

Training statistics 2015-16

Employee Category	No. Of persons trained		-	Training Man-Days		
	Male	Female	Total	Male	Female	Total
Executives	2696	135	2831	5835	318	6153
Non-Executives	3497	171	3668	6479.5	290	6769.5
Total	6193	306	6499	12314.5	608	12922.5



Training on Human Rights and Anti-Corruption

NALCO conducts regular training programs to train our employees on human rights and socially accountable policies. Specific emphasis is given to training on rights of lady employees, prevention of child labour and discrimination at work place. We provide training on SA 8000, covering various aspects of human rights, to our executive and non-executive staff besides training programmes are also conducted on health and Wellness, Lifestyle Management, etc. As on date almost all the executives and most of the nonexecutives were given awareness about SA8000. to improve understanding of employees on community expectations and social aspects of running business.

Employees trained on Human Rights

Employee Category	No. Of employees trained		Training M	an-Days
	Male	Female	Male	Female
Executives	56	18	87	36
Non-Executives	0	42	0	84
Total	56	60	87	120

Also importance is given on different anticorruption and preventive vigilance training as a awareness building measure in the organisation. Every year about 200 executive and non-executives employees are covered in various Vigilance and ethics related training programmes in entire NALCO. Persons deputed to vigilance department were imparted specialised training by CBI Institute and other professional bodies. Sessions on vigilance awareness are also conducted during a few other trainings at suitable opportunities. During vigilance awareness week seminars, discussion and talks are arranged on anti-corruption, ethics and transparency. Various circulars of CVC are circulated to all concerned, as and when required. CVC guidelines are also suitably addressed in various manuals i.e. Purchase Manual, Contract manual.

Employees trained on Anti Corruption

Employee Category	No. Of employees trained	Training Man-Days
Executives	133	197
Non-Executives	31	31
Total	164	228



Grievance Redressal Mechanism

Formal grievances of the employees are handled and redressed following established grievance handling procedure. There is a scheme of formal grievance procedure for both executives and non-executives. Under the scheme a grievance committee is formed for non executives taking representatives of the Recognised Union, Management and representative from HRD Dept. An aggrieved employee is supposed to intimate verbally to superior officer about the problem and if not satisfied with decision may submit written request to HOD. If the grievance still persists grievance committee may be approached. Any grievance application received from any employee is scrutinized by the committee and expeditious action is being taken to resolve the grievance within the framework of the Company policy. In case any grievance could not be solved due to any ambiguity, the concerned employee is counselled with reason of non-action. Likewise an executive can take advantage of three tier arrangement of HOD, Unit Head & Functional Director for redressal of his grievances.





Occupational Health & Safety



Disclosure on Management Approach - Occupational Health & Safety

Our employees are our valuable asset and we care for health and safety of our employees. Our concern for safety and health of our employees is conceptualised in our well defined occupational health and safety policy, which includes contractual workers and peripheral dwellers along with employees in its fold. The policy ensures compliance to law on various safety and health related aspects as well as periodic monitoring, health check-up and building awareness through training on various related issues. Adoption of management systems like OSHAS18001 in all our production units further augment our conviction to protect and promote the safety and health of workers through structured and documented interventions. Any breach of safety is viewed seriously and remedial measures are taken immediately. Along with reportable and minor accidents we maintain record of near miss situations and analyze them to prevent their recurrence. Also at unit level Safety committee reviews our safety performance periodically and any gap in safety practice is expediously plugged. Health and safety audits are being done regularly to assess our performance. Trainings with internal and external faculty are arranged regularly to bring the awareness on safety and health issues. Process design, safety engineering and administrative controls are some of the tools used extensively to prevent accidents at work place. Our efforts have brought about significant success over the years. We constantly try to instil the notion that safety is an individual's responsibility and everybody has a part in the safety of themselves and their co-worker's safety.

Occupational Health

To monitor the health hazard of industrial activity we have Occupational Health Centre (OHC) at S&P Complex as well as M&R Complex. They are well equipped with qualified doctors, technical staff & modern testing facilities. We conduct PME of employees regularly and the analysis of PME results indicates presence of no Occupational Diseases in both the complexes. Well equipped hospitals at S&P complex and M&R complex look after any ailment of our employees and their dependant family members. If required employees and their dependants are referred to different Govt. and corporate hospitals depending on situation. Even we extend health care facility to our retired employees and reimburse their medicine and hospitalisation expenses.



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

- Stress management training programmes are regularly organized with expert faculty assistance from reputed organization for employees & their spouses. Specific programs for top management based on Yoga for relieving stress are also organised at Corporate office and site.
- □ Special programmes on prevention of life style diseases are regularly organized for employees and their family members
- □ Signage boards are put up at various places including No smoking and No-Tobacco use to educate general public.

PME Statistics

Unit	Permanent Employees	Contractual Employees		
CPP	1242	2030		
Smelter	2804	2836		
Refinery	1404	1596		
Mines	246	146		





Safety

All units of NALCO follow Safety Compliance; record the Accidents, near miss Incidents, unsafe acts and unsafe conditions observed during site inspection. The same are analyzed and suitable corrective actions are initiated. Necessary Safety Signages are provided at requisite location of the plant premises for awareness amongst the employees, contractor workers, visitors etc. Standardized Safety Items like Safety Shoes, Safety Helmet, Safety Goggles and other Specialized Personal Protective Equipments are used by employees / contract workers while executing the work. Observance of proper safety measures is a contract condition in all major contacts and in case of violations fines are imposed on contactors suitably.

Our safety performance for the reporting period is provided in the table below:

Unit	Category	Reportable	Man-days worked	Man days lost	Man-hours Worked	Lost days Rate	Rate of Injury	Absentee Rate
Smelter Plant	Employees	0	838370	0	6706960	0	0	0
	Contract Labour	02	1316775	130	10534200	0.009	0.19	12.34
CPP, NALCO	Employees	0	367668	0	2941344	0	0	0
	Contract Labour	0	574519	0	4596152	0	0	0
Mines	Employee	0	133797	0	1070376	0	0	0
	Contract Labour	0	156601	0	1252808	0	0	0
Alumina Refinery	Employees	01	481138	0	3849104	0	0.26	0
	Contract Labour	0	536550	0	4292400	0	0	0
Port Facility	Employees	0	14600	0	116800	0	0	0
	Contract Labour	0	31390	0	251120	0	0	0



Safety initiatives at NALCO units:

Bauxite Mines

- □ Training on "Basic First Aid Treatment" and "Basic Fire Fighting" were imparted to employees during the year.
- Dust, Noise and Equipment Vibration Survey by National Institute of Miners Health (NIMH), Nagpur was carried out during the year. All the parameters are within prescribed norms.
- ☐ There were no fatal, serious, reportable and minor accidents at Mines during the year.

Refinery Plant

- 1) As regards to road safety, crash helmet for two wheelers have become compulsory with the support of Union and Management, which has added value for improvement of safety standard of Alumina Refinery.
- 2) In the calendar year 2015, 325nos. Employees and 403nos. Contract workmen have undergone In-house Safety awareness training program.
- 3) The total nos. of First-aid incidents reported in 2015 has come down to 58 where as the nos. of First-aid incidents in 2014 was 73.
- 4) Total 36 nos. Safety related abnormalities have been resolved in the Calendar year -2015 through Safety Committee meeting. .
- 5) The work permit system was suitably revised based on the operation and maintenance requirement of the Plant and made common for Alumina Refinery & SPP
- 6) Tool box talk practice has also been implemented for our Contract workmen before start-up of the job at their respective areas in order to inculcate the safety awareness and culture among the workers.
- 7) As regards to safety signage boards, 312 nos. safety and environment related safety signage boards were procured and installed in and around Alumina Refinery including the township.
- 8) Hazard Identification & Risk Assessment (HIRA) & Aspect Impact Study (AIS) pertaining to all the concerned departments has been reviewed and updated every year.
- 9) Road safety awareness campaigning inside the plant was undertaken during the Road Safety Week from 11th Jan-2016 to 17th jan-2016 with the help of Safety Committee members.
- 10) In order to assess the emergency preparedness, Mock Drill was carried out two times at Alumina Refinery as per the On-site Emergency plan , with the help of CISF (Fire wing)

Smelter Plant

- 1. Following safety inspections are taken up in this year and SOPs are prepared to do the job safely.
- a) Online twin hopper repairing for arresting leakage of alumina powder involving representative of Safety & Pot Line. A total repairing of 27 Nos of online alumina hopper of pot superstructure was completed.
- b) A thorough safety inspection during cold start up of various pots was held and communicated to the departments for immediate compliance. Major points had been liquidated. Basing on the recommendation, Aluminized Kevlar based protective clothing for cold start up in Pot Lines was procured and handed over to the group engaged in the job.
- 2. Colour coding / painting of pipeline job completed which is marked with their contents and flow direction as per IS Standard.

- 3. Stability test of 24 Nos of buildings after construction have been completed by the competent persons.
- 4. One new smoke detection system has been installed and commissioned at the administrative building.
- 5. Total 5 safety related suggestions have been accepted and implemented by the management under sarjana scheme.

Captive Power Plant

- 1. Audio-Video training programmes are conducted in regular basis for contractor workers in our training hall. So far 80 training programmes have been conducted covering 1442 contractor workers. The whole purpose of the training programme is to create awareness on safe work practices, use of PPEs, Behavioral Based Safety, material handling, work at height, construction safety, housekeeping and Road safety.
- 3. For External Safety Audit, work order has been awarded to M/s RLI, Kolkatta.
- 4. On-Site Emergency Management Plan of CPP has been reviewed and updated by M/s. NSC, Mumbai
- 5. 06 nos. mock drills have been conducted in different areas as per the annual schedule & follow up action has been taken for improvement in regards to the observations made during mock drill.
- 6. Safety messages are being communicated to all at CPP on regular basis regarding use of PPEs, safe working habits, daily tool box talk, road safety & adherence to safety norms.
- 7. Safety Clearances are being issued to the contractors after physical issuance and checking of PPEs to contractor workers every year.
- 8. 11 (Eleven) nos. Safety Committee Meetings have been conducted and points raised in the meetings are being complied sincerely.





Safety Awareness and Training



Safety Training is imparted to employees and contract workers considering their area of work. Behaviour based safety, Safety during handling of hazardous material, Fire fighting, Electrical safety, Safety practices for height work etc. are some of the selected subjects on which training is imparted. Details of safety training imparted to employees is given below.

Catagory	No. Of employees trained			Training Man-days			
	Male	Female	Total	Male	Female	Total	
Executives	174	02	176	336	03	339	
Non Executives	544	23	567	1035	43	1078	
Casual Workers	843			1641			
Security Personnel	402			1123			
Total	1988			4181			



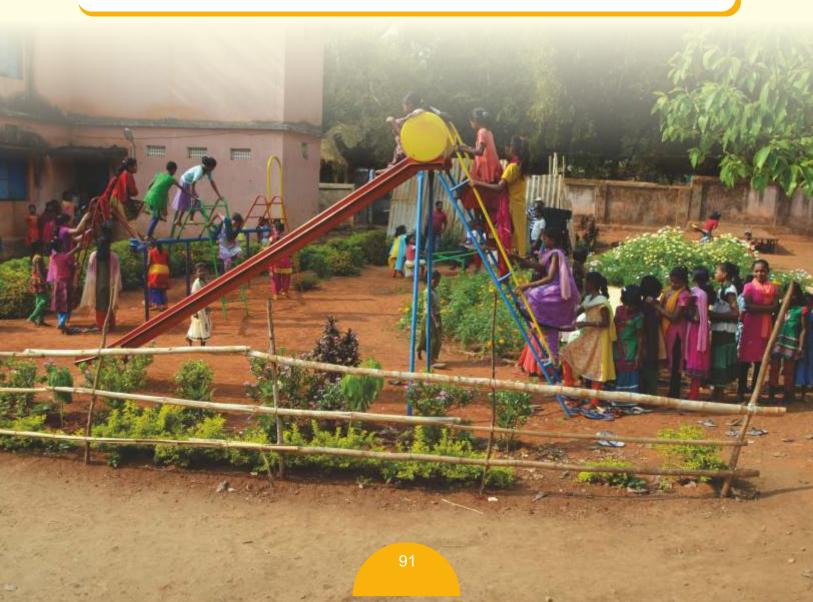




Human Rights Policy and Practice

Disclosure of Management Approach – Human Rights

Protecting and respecting human dignity is central to our everyday business operations. The spirit of human rights, as enshrined in various international conventions and declarations such as; United Nations Universal Declaration of Human Rights and its Protocols, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work and principles of the UN Global Compact, etc are reflected in our Social Accountability Policy, Sustainable Development Policy, and Code of Conduct. Senior Management, mandates to be fair and not to discriminate on the basis of race, sex, religion and the values of equality, tolerance, respect for others are stressed. Human Rights practices with ethics is a highpoint in our Sustainable Development Policy. Operating decent work places, free of child labour, forced/compulsory labour and operating ethical business practices, is ensured by implementation of SA 8000 Management System at all our production units and Corporate Office. In the job contract conditions, human rights related parameters like child labour, forced/compulsory labour are introduced to restrain the service providers for any violations. The employee grievance mechanism encourages venting the voice of employees related to discrimination if any.





The policy on Human Rights covers all our employees, contract labours and other service providers. The Code of Business conduct and ethics for board members and Senior Management, affirms an obligation to protect fundamental human rights and to respect the diversity of all cultures. Human Rights practices mandated as per the various applicable statutes i.e. Factories Act 1948, Industrial Disputes Act 1947, Mines Act 1972 etc. are implemented across the supply chain and necessary screening & evaluation is done for suppliers and contractors. Also, in the job contract conditions, important human rights concerns i.e. child labour, forced and compulsory labour are suitably addressed to restrain any human rights violation. Our units including Corporate Office is certified to SA 8000.

Screenings during projects and procurements

Our concern for human right starts with conceptualisation of a new project or tendering for a new contract. During due diligence of a new project or contact, care is taken so that violation of human rights and human dignity could be avoided. Special care is taken for rehabilitation of displaced persons and indigenous people. For ensuring protection of human rights and social accountability We have formulated a SA 8000 based questionnaire which helps us in screening all our vendors on various human rights and social accountability aspects such as forced labour, compulsory labour and child labour. We do not discriminate our suppliers, contractors, customers, different service providers based on their gender, caste, religion, region of domicile etc. All our agreements and tenders are in compliance with all the relevant statutory obligations and national laws. We also do regular monitoring of our existing supplier to verify their adherence to our policies.

Facilitating human rights through trainings

We conduct regular training programs to train our employees on our human rights and socially accountable policies. We provide half a day training on SA 8000, covering various aspects of human rights, to our executive and non-executive staff. As on date almost all the executives and most of the non-executives were given awareness about SA 8000. Details of training imparted on human rights is included in Training & Development section of the report.





Community Engagement

Community Engagement & Care



Disclosure on Management Approach - Local Communities

It has been a core belief at NALCO, that our sustainable development commitments need to be well crafted, addressing the People, Planet and Profit aspects of the enterprise, in a balanced manner. The communities living around our operations are our key stakeholders and creating an enduring positive social impact on them was taken up with priority on voluntary basis, since the initial days of our operations. As per the Companies Act 2013, spending 2% of the average net profit realised during the three immediate preceding years, is mandated on the activities stipulated under schedule VII of the act. The specific activities are taken up based on the need assessment by the organization as well as the need projections made by the local people and their representatives, encompassing thrust areas like upliftment of economic status & community care, development of infrastructural facilities, health care and health education, promoting education and literacy, promotion of Sports & Games, Arts, Crafts and Culture etc. The thrust is on promoting the public image of the Company by responsible care of the community around in a proactive manner. The Board approved CSR policy of the Company, available in Company's website i.e. www.nalcoindia.com, governs our initiatives in this area.





Our long involvement with local community has provided us opportunity to understand their needs & requirements. Capitalising on the gained insight we have segregated the following areas for assistants and care.

- Improving the living standards and quality of life of the community through upliftment of economic status & community care
- Developing the infrastructural facilities to cater to the social and economic need in vicinity of the community
- □ Providing better health care & health education
- Promoting education & literacy
- Promoting sanitation and cleanliness
- Plantation and environmental measures
- Promoting sports & games, arts, crafts & culture
- Striving to minimise (making it zero) the negative & social environment impact resulting from its economic activities
- Promoting a responsible public image

CSR Initiatives

During the reporting period, Rs. 27.1665 crore was spent on CSR activities, which is about 2.07% of the average net profit of the previous three financial years, encompassing the following thrust areas:

- Health Care at the periphery villages: Operation of Mobile Health Units (MHUs) and OPD Centres at our periphery villages as detailed later.
- □ Promoting education: Continued education of students from 18 periphery villages of Damanjodi sponsored for formal education in the 3 residential schools (Refer a Case Study)
- Peripheral village students are also extended educational facilities in the Company aided schools i.e. Delhi Public Schools and Saraswati Vidya Mandirs located at Damanjodi and Angul.
- "Beti Bachao & Beti Padhao": Promoting education of girls students by way of monetary support, as per Govt. of India initiative, has been well appreciated by the people in the vicinity of its operations.



- "NALCO Ra Aliali Jhia" is a scheme for promoting education of meritorious & poor female students under BPL category by way of monetary support, is implemented in line with Government of India objective of "Beti Bachao & Beti Padhao". Financial assistance @ Rs.6000/- per annum was provided in order to meet the expenses of uniform and study materials to 82 nos. of girl students (50 from M&R Complex, Damanjodi and 32 from S&P Complex, Angul) starting from class-VIII to class-X.
- Swachh Bharat and Swachh Vidyalaya Abhiyan
- 433 toilets were constructed in schools of Koraput & Angul district, Odisha and Visakhapatnam district, Andhra Pradesh, against Ministry of HRD target of 354 toilets within the stipulated time-frame.
- 250 nos. of temporary toilets were provided at Puri, during Nabakalebar in 2015 with financial assistance from NALCO.
- □ 10 lakh bacteria free drinking water pouches were provided to the pilgrims/devotees during Nabakalebar at Puri in 2015.
- □ Financial assistance was provided for PARAB, Koraput, a community festival organized by the district administration to promote tribal cultural activities.
- Projects for drinking water supply, infrastructural development were taken up in periphery villages
- □ Plantation work was taken up in periphery of our units as well as in and around Bhubaneswar.

Healthcare

Providing healthcare continued to be a major thrust area of CSR activities in the Company. Making provision for infrastructure to ensure basic healthcare for people living in the vicinity of our plants and mines was taken up on priority basis. In order to enable delivery of quality healthcare at the doorsteps of the needy, four Mobile Health Units (MHUs) are being operated in collaboration with Wockhardt Foundation in periphery villages of M&R Complex, Damanjodi and three Mobile Health Units (MHUs) are operating in Angul Sector with the help of Lions Club, Angul. Each MHU is equipped with health care personnel and para medical staff to provide basic healthcare including diagnosis, free medicines and awareness building through Information, Education & Communication (IEC) activities. In addition to above, an OPD Centre meant for Out Patient Treatment of people of periphery villages in Angul sector has also started operating since July, 2014 in the S&P Complex. The Centre is functioning with a qualified Doctor, para-medical staff. Free medicines are provided to the patients of periphery villages through the Centre. During the year, total 1,05,562 patients from periphery villages of Damanjodi and Angul were treated and medicines were, provided free of cost.





A Case Study on Health care

Despite the fact that availability of health care is one of the basic need of human beings, a large section of the population in the neighbourhood of our operations are deprived of the bare minimum health facilities and lack basic awareness on hygiene. The initiative of operating Mobile health Units in the periphery villages of operational areas was a major step to bridge the huge gap that exists in this vital area. A case from S&P Complex, Angul is cited here to illustrate this.

Smt. Bachani Naik, a 63-year old lady is a resident of Sanajorada village in the periphery of S&P Complex. Her family comprising of her husband and one daughter, avail the BPL category facility extended by the government. The lady is a chronic patient suffering from acute diabetes and blood pressure. The hospital having basic check up facilities was about nine kms away from her village and the old lady was unable to avail the facilities on her own due to her health conditions and had to depend on others for some occasional visits for check up. Also, she could barely afford to purchase the whole lot of costly medicines for her treatment and had to live in this unfortunate situation for a long period.

However, now with the Mobile Health Care facility of NALCO reaching their village, this facility was available virtually at her doorstep and free health check-up, medicines are provided to Smt. Bachani Naik, which were found to be effective for dealing with her ailments. Now, it is a much improved situation for her and her villagers and she not only avails the facility on regular basis but also persuades others to avail this wonderful facility. Mobile health care initiative of NALCO has proved to be a major help for needy people like her and others in the neighborhood. As Smt. Bachani Naik articulates this, 'I have informed many people of my village to avail the facility. We are thankful to NALCO as well as the doctor and staffs for their support and service."

Education

Wholly committed to spread the light of education amongst the downtrodden and marginalised class of the society, NALCO has continued the education process of 655 identified students from 18 peripheral villages at our Damanjodi operations, sponsoring their education in three residential schools viz. Kalinga Institute of Social Science (KISS), Bhubaneswar; Koraput Development Foundation (KDF), Jeypore; Bikash Vidyalaya, Koraput, making provision for the total cost of their education ie. lodging, boarding and academics related expenses from class I to class X.



Peripheral village students are also extended educational facilities in the Company aided schools i.e. Delhi Public Schools and Saraswati Vidya Mandirs located at Damanjodi and Angul.

An illustrative case is outlined here.



Case Study on Education:

Nakshetra Mahanandia:

A flourishing journey from Bhitargarh, a remote village of Koraput to Odisha, Under-16 cricket team



The initiative taken up by NALCO to sponsor students from families coming under the disadvantaged and marginalized section of society in the Koraput district, to identified residential schools is not just about education, but about ushering in great possibility by nurturing hidden talents. The case of Sri Nakshetra Mahanandia. a 14 year old boy of Bhitargarh village of Laxmipur block of Koraput district, bears testimony to such magical twists possible in the life of an aspiring and gifted young child, if given the right break. Nakshetra, was one such student sponsored by NALCO Foundation to the Koraput Development Foundation (KDF) School, Jeypore in the residential education program. Being the second amongst five siblings from a family, with parents engaged as agricultural labourers to eke out a living and where arranging for education of the children was implausible, he and later on his younger siblings. were identified by NALCO foundation and sponsored for education in the KDF school, Jeypore. The parents of this deserving family are effusively thankful to NALCO as evident from their statement "Sir we are very poor people. Being agricultural labourers it is very difficult on our part to afford daily expenses of the family. From such disadvantaged conditions, we can't even dream about

educating our 4 children in a school like KDF, Jeypore. We are very much grateful to NALCO for giving our children such an opportunity for education, thus freeing them from the stigma of illiteracy attached to us".

During interactions, Nakshetra appeared to be very happy to be at KDF School and said "I and my siblings don't miss our village much, getting fully involved in this educative ambience, where along with good text books, food, uniforms and sports materials like cricket kits are being provided. I find this environment very conducive to improve my academic knowledge as well as honing my latent cricketing skills. Even though I was initiated to cricket from my village days, I could develop my skills here and got the opportunity of participating in district level selection camp because of the KDF School."



The headmaster of KDF, Sri Narayan Rao & his colleague, are eloquent about the positive changes in the attitude and behaviour of Nakshetra as well as other students sponsored by NALCO over the past years. "When the children came here, we faced problems in communicating with them because of language barrier. Sanitation and hygiene was hitherto unknown to them. But, now they are very conscious about personal hygiene. They are punctual and disciplined in their activities. Their knowledge level has enhanced significantly."

The accomplishments of students like Nakshetra, not only in education but also in extracurricular activities like sports, reinforces our determination to continue the noble efforts and ignite the mind of the children from the vulnerable and marginalized section of our society for the betterment of the people and the planet.





Customer Focus

Product Responsibility

Disclosure on Management Approach – Product & Service Labelling

NALCO meets the requirements with respect to product labeling by following the practices as prescribed by regulations. For e.g. in case of Aluminium metal, the product grade, stack no., bundle no., net weight is displayed on the product label. In case of Rolled Products, Name of the Company & production unit and place, Coil No, Grade, Size (Thickness X Width) in mm, Net Weight (in kgs.), Signature of the inspecting authority, Date of Packaging, No. of sub-stacks and total no. of sheets per packet (for Rolled sheets only) is displayed on the product label.

We have created a brand image for our products by maintaining quality and adhering to delivery schedule. Calcined Alumina, produced as per the internationally recognized Metallurgical Grade Alumina standard and Aluminium conforming to the P1020A specifications mandated for London Metal Exchange (LME) grade registration, are well received in the domestic as well as in the international markets. Our products are widely acclaimed by customers globally for meeting the national as well as international standard specifications. Due consideration is given to the market dynamics and customer requirements, while planning the product mix. Production of wire rod and Tee ingots were enhanced, during the year, keeping this in view. The development of products and associated processes, incorporates economic value, societal benefits and environmental stewardship. Safety, Occupational Health and Environmental issues are also comprehensively addressed in our procedures.

Our products, through our customers, reach the end users for use in different sectors. Due to strict quality control products of consistent quality is being supplied to customers, resulting in smooth operation at customer end and helping the customer to plan energy, water and other requirements optimally. Also, applications of Aluminium in automobile, aerospace, green buildings & strategic sectors like defence, do have enormous scope from sustainability point of view, due to the inherent properties of Aluminium which enable significant weight reduction, fuel efficiency enhancement, recycling etc. In the transportation sector, reduction in weight achieved due to use of aluminium results in reduced fuel consumption and reduced emission.

We are vocal about extensive use of aluminium in construction and automobile sector. Reducing weight of an automobile by 10% can result in up to a 7% reduction in the vehicle's GHG emissions over the life cycle due to improved fuel efficiency. (Source: European Aluminium Association). Comparing a baseline steel vehicle with an Aluminium-intensive vehicle design revealed that the Aluminium design offer 25% reduction in vehicle weight resulting in 20% reduction in primary energy consumption and a 17% decline in CO2 emissions over the vehicle's life cycle. (Source: Oak Ridge National Laboratory). Significant environment footprint reductions have been achieved over the years by Aluminium industry. Aluminium is a versatile materials which is 100% recyclable and energy required for recycling is nearly 5% of the energy required for production. Increased Aluminium use can drive future improvements.



Continual improvement of processes through in-house initiatives and collaborative Research & Development (R&D) efforts have enhanced our competitiveness, ensuring that our products are much sought after in domestic and international market. Through R&D activities, efforts are made towards bringing in innovation & improvements to consistently produce quality products with better energy efficiency, thereby reducing the carbon footprint. One R&D initiative for development of AP2XN technology to reduce the electricity consumption in pots has been taken up with Rio Tinto Alcan. Similar major R&D initiatives taken up during the year are separation of iron concentrate from Red Mud in collaboration with Chalieco, China and extraction of Gallium from Bayer Liquor. Our focus on R&D, is reflected in our investment of Rs.15.75 Crore during this year. Also one patent has been filed and one patent granted during the year. Till now 27 patents have been filed, 9 patents granted and 5 R&D process commercialised.

There has not been any case filed by any stakeholder against the Company regarding unfair trade practices, irresponsible advertising and/or anti-competitive behaviour during the last five years.





Our business philosophy underscores adopting a customer centric approach to strive for meeting the needs and expectations of the customers concomitant with delivery of superior services to delight the customers. For us ensuring customer satisfaction is key to increased market share and improved profitability. Our mission highlights enhancing customer satisfaction, reinforcing the drive for business excellence. All our commercial activity is aligned catering to this basic need. This can be augmented by betterment of our work systems & business ethos, through continual improvements in processes according due cognizance to feedbacks obtained through customer meets & similar interactions with customers. It is our constant endeavour to identify the requirements of customer and discover ways to address them. Our strive for timely delivery of product of required quantity & quality, is strengthened by the provision of signing MOU with customers for their requirements. In order to reach out to domestic customers for providing better service, stockyards are strategically located across the country ensuring enhanced logistics support. In order to properly asses the customer perceptions about our products and service, customer satisfaction survey is conducted twice a year. Feedbacks received during the survey are analysed for mapping satisfaction index and identifying the lacuna in our processes and practices.

We have also instituted, a structured customer complaint handling process, to promptly & proactively respond to customers and to carry out indepth analysis for taking effective corrective action. The statistics on customer complaints, in respect of 2015-16:

Average Customer Satisfaction Level (Metal Sector, Domestic Market) 0.95 0.93 0.92 2013 -14 2014 -15 2015 -16

Customer Complaints pending as on 31.03.2015 : 01
 Customer Complaints received during FY 2015-16 : 22
 Customer Complaints disposed during FY 2015-16 : 21
 Customer Complaints pending as on 31.3.16 : 02
 % Customer Complaints resolved as on 31.3.16 : 92 %



Abbreviations

AA	AccountAbility						
CAFÉ	Corporate Average Fuel Economy						
CAGR	Compounded Annual Growth Rate						
CHP	Coal Handling Plant						
CPCB	Central Pollution Control Board						
CPP	Captive Power Plant						
CPSE	Central Public Sector Enterprises						
CSR	Corporate Social Responsibility						
CVC	Central Vigilance Commission						
EIA	Environmental Impact Assessment						
EMP	Environmental Management Plan						
ESP	Electro Static Precipitator						
ETP	Effluent Treatment Plant						
FSA	Fuel Supply Agreement						
FY	Financial Year						
HEMM	Heavy Earth Moving Machinery						
ISO	International Organization for Standardization						
LME	London Metal Exchange						
MHRD	Ministry of Health Resource Development						
MHU	Mobile Health Unit						
MoU	Memorandum of Understanding						
MSE	Medium & Small Enterprises						
MU	million units (million kWh)						
ODS	Ozone Depleting Substances						

ОНС	Occupational Health Center					
OHSAS	Occupational Health and Safety Management Systems					
OSPCB	Odisha State Pollution Control Board					
PAT	Profit After Tax					
PAT Scheme	Perform Achieve and Trade Scheme					
PBT	Profit Before Tax					
PFC	Per Fluoro Carbon					
PME	Periodical Medical Examination					
RPDAC	Rehabilitation and Peripheral Development Advisory Committee					
S&P	Smelter and Power					
SA	Social Accountability					
SC/ST	Scheduled Caste / Scheduled Tribe					
TG	Turbine Generator					
TOE	Ton of Oil Equivalent					
TPH	Tons per hour					
VFD	Variable Frequency Drive					





GRI sector supplement for Metals and Mining sector

MM1	Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or rehabilitated.						
Response	Page No: 68						
MM2	The number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria, and the number (percentage) of those sites with plans in place.						
Response	Page No: 68						
MM3	Total amounts of overburden, rock, tailings, and sludges and their associated risks.						
Response	Page No: 66						
MM4	Number of strikes and lock-outs exceeding one week's duration, by country.						
Response	Page No: 73						
MM5	Total number of operations taking place in or adjacent to Indigenous Peoples' territories, and number and percentage of operations or sites where there are formal agreements with Indigenous Peoples' communities.						
Response	NALCO has only one mining operation at Damanjodi. While setting up its operations all local regulatory requirements have been adhered to.						
MM6	Number and description of significant disputes relating to land use, customary rights of local communities and Indigenous Peoples.						
Response	There have been no disputes relating to land use, customary rights of local communities and Indigenous Peoples.						
MM7	The extent to which grievance mechanisms were used to resolve disputes relating to land use, customary rights of local communities and Indigenous Peoples, and the outcomes.						
Response	There have been no disputes relating to land use, customary rights of local communities and Indigenous Peoples.						
MM8	Number (and percentage) of Company operating sites where artisanal and small-scale mining (ASM) takes place on, or adjacent to, the site; the associated risks and the actions taken to manage and mitigate these risks.						
Response	There are no Company operating sites where artisanal and small-scale mining (ASM) takes place on, or adjacent to, the site.						

MM9	Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process.					
Response	No resettlements took place at any location during the reporting period					
MM10	Number and percentage of operations with closure plans.					
Response	Page No: 67					
MM11	Programs and progress relating to materials stewardship.					
Response	Page No: 55, 56					





GRI G4 Content Index



General Standard Disclosures					
General Standard Disclosures	Page no.	External Assurance	Description		
Strategy and Analysis					
G4-1	3,4,5	-	Statement from the most senior decision-maker of the organization.		
Organizational profile					
G4-3	8	-	Name of the organization		
G4-4	9	-	Primary brands, products, and/or services.		
G4-5	8	-	Location of organization's headquarters.		
G4-6	9	-	Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report.		
G4-7	34	-	Nature of ownership and legal form.		
G4-8	9	-	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).		
G4-9	13,14,40	-	Scale of the reporting organization.		
G4-10	76	-	The total number of employees by employment contract and gender		
G4-11	73	-	The percentage of total employees covered by collective bargaining agreements		
G4-12	55,56	-	The organization's supply chain		
G4-13	7	-	Significant changes during the reporting period regarding size, structure, or ownership		
G4-14	33	-	Whether and how the precautionary approach or principle is addressed by the organization		
G4-15	7	-	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses		
G4-16	35	-	Memberships of associations (such as industry associations) and national or international advocacy organizations		

General Standard Disclosures	Page no.	External Assurance	Description			
Identified Materials Aspects and Boundaries						
G4-17	10,11,12	-	All entities included in the organization's consolidated financial statements or equivalent documents			
G4-18	23,24	-	The process for defining the report content and the Aspect Boundaries			
G4-19	24	-	All the material Aspects identified in the process for defining report content			
G4-20	24	1	For each material aspect, whether the Aspect is material within the organization			
G4-21	24	-	For each material aspect, whether the Aspect is material outside the organization			
G4-22	no restatement	-	The effect of any restatements of information provided in previous reports, and the reasons for such restatements			
G4-23	7	-	Significant changes from previous reporting periods in the Scope and Aspect Boundaries			
Stakeholder Engagement						
G4-24	20,21,22	-	List of stakeholder groups engaged by the organization			
G4-25	19	-	Basis for identification and selection of stakeholders with whom to engage			
G4-26	20,21,22	-	Organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group,			
G4-27	20,21,22	-	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting			
Report Profile						
G4-28	6	-	Reporting period (such as fiscal or calendar year) for information provided			
G4-29	6	-	Date of most recent previous report (if any)			
G4-30	6	-	Reporting cycle (such as annual, biennial)			
G4-31	7	1	The contact point for questions regarding the report or its contents			
G4-32	6,7	1	The 'in accordance' option the organization has chosen, the GRI Content Index for the chosen option, the reference to the External Assurance Report, if the report has been externally assured			
G4-33	7	-	Organization's policy and current practice with regard to seeking external assurance for the report			
Governance	Governance					
G4-34	26,27,28,29	-	The governance structure of the organization, including committees of the highest governance body			
Ethics & Integrity						
G4-56	31,32	-	The organization's values, principles, standards and norms of behaviour such as codes of conduct and codes of ethics			



Specific Standard Disclosures					
DMA and Indicators	Page no.	omissions	External Assurance	Description	
Category : Economic					
Material aspect: Economic Per				1	
G4-DMA	39	-	-	Disclosure on Management Approach	
G4-EC1	41	-	-	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	
Material aspect: Procurement	Practices				
G4-DMA	43	-	-	Disclosure on management approach	
G4-EC9	43	-	-	Proportion of spending on local suppliers at significant locations of operation	
Category: Environmental					
Material aspect: Materials					
G4-DMA	53	-	-	Disclosure on management approach	
G4-EN1	55	-	-	Materials used by weight or volume	
Material aspect: Energy					
G4-DMA	57	-	-	Disclosure on management approach	
G4-EN3	58	-	-	Energy consumption within the Organization	
Material aspect: Water					
G4-DMA	61	-	-	Disclosure on management approach	
G4-EN8	61	-	-	Total water withdrawal by source	
Material aspect: Emission					
G4-DMA	57	-	-	Disclosure on management approach	
G4-EN15	58	-	-	Direct greenhouse gas emission	
Material aspect: Effluents & Wa	ste				
G4-DMA	65	-	-	Disclosure on management approach	
G4-EN23	66	-	-	Total weight of waste by type and disposal method	
Category: Social					
Labour practices and Decent Work					
Material aspect: Employment					
G4-DMA	42	-	-	Disclosure on management approach	
G4-LA1	76,77	-	-	Total number and rates of new employee hires and employee turnover by age group, gender, and region	

Specific Standard Disclosures						
DMA and Indicators	Page no.	omissions	External Assurance	Description		
Material aspect: Occupational	Material aspect: Occupational Health and Safety					
G4-DMA	83	-	-	Disclosure on management approach		
G4-LA6	85	-	-	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and gender.		
Material aspect: Training and E	ducation					
G4-DMA	78	-	-	Disclosure on management approach		
G4-LA9	78	-	-	Average hours of training per year per employee by gender and by employee category.		
Human Rights						
Material aspect: Investment						
G4-DMA	91	-	-	Disclosure on management approach		
G4-HR1	92	-	-	Percentage and total number of significant investment agreements and contracts that include human rights clauses or that have undergone human rights screening.		
Society						
Material aspect: Local Commu	nities					
G4-DMA	95	-	-	Disclosure on management approach		
G4-S01	95,96,97	-	-	Percentage of operations with implemented local community engagement, impact assessments, and development programs.		
Product responsibility						
Material aspect: product and Service Labelling						
G4-DMA	103	-	-	Disclosure on management approach		
G4-PR5	105	-	-	Results of surveys measuring customer satisfaction.		



A Commitment that's making a difference



National Aluminium Company Limited
A NAVRATNA PSU
Under Ministry of Mines, Govt. of India
Nalco Bhawan, Nayapalli, Bhubaneswar - 751 013, India www.nalcoindia.com CIN: L27203OR1981GO1000920