



中国铝业股份有限公司

ALUMINUM CORPORATION OF CHINA LIMITED

Stock Code: 2600 (HKSE) ACH (US) 601600 (China)

2016

Environmental,  
Social and  
Governance  
Report



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# Chairman's Statement

## INNOVATING DEVELOPMENT CONCEPTS AND LEADING THE FUTURE OF THE INDUSTRY

As the price of global bulk commodity plummeted in the early 2016, aluminum price had dropped to the level that of 20 years ago, causing widespread losses of China's and even global aluminum industry.

Facing the severe and complicated external environment, under the tremendous pressure from the market's widespread pessimism due to the aluminum price dropped below 10,000 RMB per ton in the beginning of the year. Chalco didn't step away from the challenge. By adhering to the development concepts of "Innovation, Coordination, Green, Openness and Sharing", we adopted approaches of "improvement of weakness, reduction of un-functional business, development through innovation, and capitalization of resources". With persisting in idea of "Doing one thing and getting it done well", we have been making up where we were weak and gathering new momentum for development. By following approach of "using minor earthquakes to neutralizing major ones", we cut down zombie companies to usher in a new frontier. In belief of "innovation-driven development", we have strengthened our leadership position in the industry by advancing technologies and through innovation. Following the working idea of "limited resources but unlimited creativity", we turned resources into capitals to maximize benefits. At the same time, Chalco breaks stereotyped mindset, and makes its management more innovative. We have been decreasing cost to cope with market, and enforcing reforms to ensure our cost maintaining low. Because of drastically cutting down of the full costs of leading products, we have avoided the negative impact of market price drop and significantly strengthened our competitiveness.

In 2016, Chalco bucked the trend and made breakthrough development. We achieved the best business performance in the recent years. Our efforts were highly recognized by our shareholders, society and capital markets.

**Ao Hong**  
*Secretary of Party committee and Chairman  
Chalco*

# About this Report

## REPORTING PERIOD

1 January 2016–31 December 2016. Some content exceeds this scope.

## REPORTING CYCLE

The Environmental, Social and Governance Report (Corporate Social Responsibility Report) of Aluminum Corporation of China Limited is an annual report. It is regularly released. This report is our ninth report.

## SCOPE OF THE REPORT

Unless otherwise stated, this report includes Aluminum Corporation of China Limited and all its subsidiaries.

## REPORTING REFERENCE

This report is prepared with reference to *The Environmental, Social and Governance Reporting Guide of The Stock Exchange of Hong Kong Limited*, notice on Strengthening Listed Companies' Undertaking of Social Responsibilities and Issuance of 'Guidelines on Environmental Information Disclosure by Companies Listed on the Shanghai Stock Exchange', *Sustainability Reporting Guidelines (G4)* issued by the Global Reporting Initiative (GRI), and the *ISO26000 Social Responsibility Guideline*.

## About this Report (Continued)

### REPORTING SPECIFICATION

For the convenience of reading, Aluminum Corporation of China Limited hereinafter is referred to as "Chalco", "the Company" and "We". The group of Aluminum Corporation of China is referred to as "Chinalco". Other definitions are as follows:

Shanxi Branch	refers to	Chalco Shanxi Branch
Guangxi Branch	refers to	Chalco Guangxi Branch
Guizhou Branch	refers to	Chalco Guizhou Branch
Zhengzhou Institute	refers to	Chalco Zhengzhou Research Institute of Non-ferrous Metal
Henan Branch	refers to	Chalco Henan Branch
Liancheng Branch	refers to	Chalco Liancheng Branch
Chalco Shandong	refers to	Chalco Shandong Co., Ltd
Zhongzhou Aluminum	refers to	Chalco Zhongzhou Aluminum Co., Ltd.
Ningxia Energy	refers to	Chalco Ningxia Energy Group Co., Ltd.
Maliantai Power Plant	refers to	Maliantai Power Plant of Chalco Ningxia Energy Group Co., Ltd
Chalco Logistics	refers to	China Aluminum Logistics Group Corporation Co., Ltd.
Chalco Mining	refers to	Chalco Mining Co., Ltd.
Baotou Aluminum	refers to	Baotou Aluminum Co., Ltd.
Chalco Trading	refers to	China Aluminum International Trading Co., Ltd.
Shandong Huayu	refers to	Shandong Huayu Alloy Materials Co., Ltd.
Shanxi Huaze	refers to	Shanxi Huaze Aluminum & Power Co., Ltd.
Shanxi Huaxing	refers to	Shanxi Huaxing Aluminum Co., Ltd.

## About this Report (Continued)

### REPORT DATA SPECIFICATION

The financial data referred shall be subject to the Company's financial report in case of any discrepancy with the annual report. The Chinese currency, Yuan, is used as the unit for the financial data in the report, unless other indicated.

### ACCESS TO THE REPORT

This report is published both in Chinese and English, the electronic one is available as follows:

The Website of Hong Kong Exchanges and Clearing Limited  
The Website of Shanghai Stock Exchange  
The Website of Aluminum Corporation of China Limited  
*The Securities Times*

<http://sc.hkex.com.hk>  
[www.sse.com.cn](http://www.sse.com.cn)  
[www.chalco.com.cn](http://www.chalco.com.cn)  
<http://www.stcn.com/>

## 2. About Us

### 2.1 COMPANY PROFILE

Aluminum Corporation of China Limited was incorporated on 10 September, 2001 in China, Aluminum Corporation of China is its controlling shareholder. Chalco is a leading company in China's non-ferrous industry, with a strong portfolio of assets among global competitors. Chalco has been listed in the Stock Exchange of Hong Kong, The New York Stock Exchange, and the Shanghai Stock Exchange.

Chalco is also the only large company in China's aluminum industry that is engaged in the whole value chain, from exploration and mining of bauxite and coal, the production, R&D of alumina, primary aluminum and aluminum alloy products, to international trade, logistics, and power generation from both fossil fuels and sustainable energy. By the end of 2016, Chalco has 49 subsidiaries, including 10 branches, 18 wholly owned and 21 controlled ones.

Chalco has made its mission to safeguard development and utilization of national strategic resources. The company plays an essential role in the application of aluminum in the aeronautics and space industry, rail transport, and the production of high-end alloys for civil purposes. The Company has provided a large number of high quality key materials for products including China's first man-made satellite, Long March rockets, Shenzhou spacecrafts, Chang'e lunar probes, commercial airplanes, high-speed trains and that of other construction and transportation industries.

### 2.2 CORE PHILOSOPHY

<b>Our vision:</b>	To become a world-class global company with innovative capability and international competitiveness
<b>Our mission:</b>	Benefits shareholders, employees, clients, communities and environment
<b>Core values:</b>	Responsibility, Integrity, Openness and Excellence
<b>Corporate spirit:</b>	Striving for better performance and innovating for prosperity
<b>Management philosophy:</b>	Striving for excellence and collaborating for efficiency
<b>Operation philosophy:</b>	Creating values and maximizing returns
<b>Responsibility philosophy:</b>	Turning stone into gold and benefiting mankind
<b>Corporate culture:</b>	Transparency, Honesty, Simplicity and Open-mindedness
<b>Business concept:</b>	Work without corruption and perform with virtues

## 2. About Us (Continued)

### 2.3 HONORS AND AWARDS

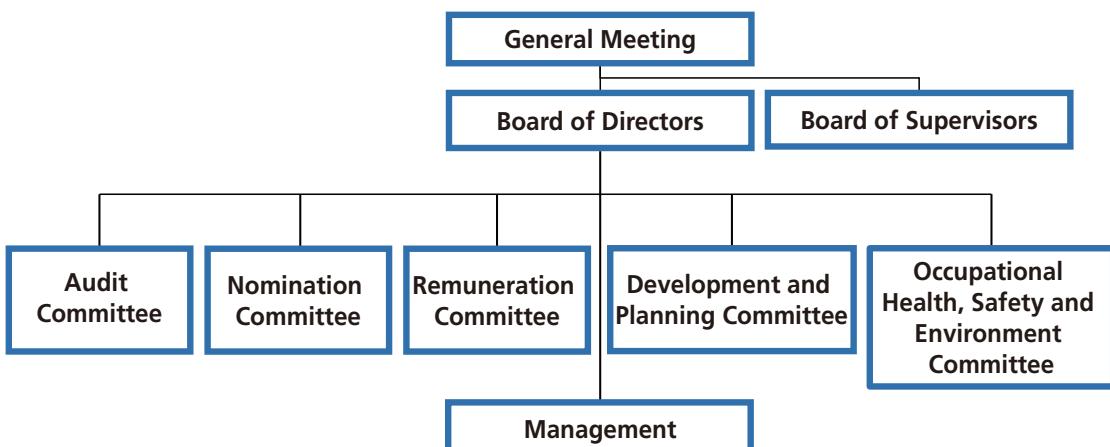
- The Most Competitive Alumina Producer in 2015–2016 by 2016 China Aluminum Summit
- The Most Competitive Electrolytic Aluminum Producer in 2015–2016 by 2016 China Aluminum Summit
- Award for Outstanding Contribution of Mother Earth-Water Conservancy Project on the fifth anniversary of the project
- Excellence Award of the eighteenth China Patent Award by the State Intellectual Property Office and the World Intellectual Property Organization
- 2016 China Patent Excellence Award
- Won one first prize, four second prize, five third Prize of the China Nonferrous Metals Industry Science and Technology Award
- Won 11 Science and Technology Progress Awards
- Best Investor relationship Award of Listed Companies' Awards by *China Financing*

### 3. Governance: Deepen Reform and Integrate Resources

The Company adheres to the principles of integrity and compliance, continuously improves the management level of the Company's social responsibility work in order to ensure the efficient operation of the Company. In 2016, taking "Advancing quality and efficiency, reform and innovation, transformation and upgrading" as main work idea, Chalco raised its profitability to create more value for stakeholders, such as shareholders, employees, clients and communities by further deepening reform, integrating quality resources, reducing costs, increasing benefits, strengthening cost budgeting control, and reducing the cost of main products substantially.

#### 3.1 CORPORATE GOVERNANCE

Chalco strictly follows the laws, regulations and regulatory rules of securities in the listing locations of Shanghai, Hong Kong and New York City, continues to improve the Company's governance structure and regulate the work flow and management process of the Company's operations through a governance structure called "Three Boards and One Layer" to form an operation and management framework that is featured in explicit authority and responsibilities, clear and separate roles, inter-coordination, effective checks and balance, scientific decision-making and standardized operations of/among its staff or departments/offices.



##### General Meeting

The general meeting is the highest authority of Chalco, legally exercising its rights to decide on the Company's management principles investment plans, review and approve the Company's profit distribution and loss recovery plans, revise the Company's constitution and rule of procedures for the general meeting, Board of Directors and Board of Supervisors. During the reporting period, Chalco has held three general meetings and reviewed 20 proposals.

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

#### Board of Directors

Board of Directors is the operating decision-making body of Chalco, answers to the general meeting. The Board of Directors legally exercises its duties including but not limited to the following items: executing the resolutions of general meetings, deciding on the Company's development strategies, business plans and investment plans, formulating the Company's annual financial budget plan and financial statement plan, profit distribution plan and loss recovery plan, the Company's plan for increasing or decreasing the registered capital, and its basic management system, as well as supervising the implementation of various regulations, deciding on the Company's policies for risk management, compliance and internal control, and making related systems of internal control and compliance management and equity incentive plans, etc.

In 2016, the Company's 6th session of Board of Directors consists of nine directors with chairman and non-executive Director, Mr. Yu Dehui, executive Director Mr. Ao Hong, non-executive Director Mr. Liu Caiming, executive Directors, namely Mr. Lu Dongliang and Mr. Jiang Yinggang, non-executive Director Mr. Wang Jun, and independent non-executive Directors, namely Ms. Chen Lijie, Mr. Hu Shihai and Mr. Li Dazhuang. During the reporting period, the Board has held 13 meetings and reviewed 62 proposals.

#### Board of Supervisors

Board of Supervisors is the Company's supervisory body, and answers to the general meeting. The Board of Supervisors legally exercises its duties to inspect and investigate the Company's financial and risk management and internal control, supervise and appraise the performance of the Board of Directors, senior management and their members, as well as give their opinions and make recommendations. During the reporting period, the board, consists of three supervisors with two supervisors on behalf of shareholders, one supervisor on behalf of employees, has held five meetings, reviewed and approved 11 proposals.

#### Management

The main functions of management include being in charge of the Company's production, operation and management, organizing the implementation of the Board of Directors' resolutions and the Company's development strategies, annual business plan, investment plan, financial budget plan, as well as formulating and carrying out the performance appraisal and remuneration incentive scheme. The Board of Directors would review the functions and performance of the management to ensure the interest of the Group as a whole. The Company's management would report on the signing and implementation of major contracts, the use of funds and its profit and loss situation.

In 2016, the Company's key management includes: Mr. Ao Hong, President; Mr. Lu Dongliang, Senior Vice President; Mr. Jiang Yinggang, Vice President; Mr. Xu Bo, Vice President; Zhang Zhankui, Chief Financial Officer and the Company's Secretary (Board Secretary); Mr. Leng Zhengxu, Vice President. For specific information on senior management, please see the Company's website: [http://www.chalco.com.cn/chalco/gsgk/glry/A120110web\\_1.htm](http://www.chalco.com.cn/chalco/gsgk/glry/A120110web_1.htm).

### **3. Governance: Deepen Reform and Integrate Resources (Continued)**

#### **3.2 INTEGRITY AND COMPLIANCE**

Chalco follows the laws and regulations, abides by business ethics, continuously improves its internal control and risk management system, and develops a system of prevention and punishment, thus nipping evils in the bud to ensure a regular and legal operation and management of the Company.

##### **3.2.1 Total Risk Management**

Chalco raised the principle of “strengthening internal auditing as an opportunity to effectively prevent internal control risks, strengthen internal control system and consistently build the capacity of risk warning and the level of management”, putting risk awareness into every operational activity ranging from strategic management to day-to-day operations and doing a best job on the prevention of risks, especially striving to minimize the risk to the extent that the company can withstand.

To maintain an effective operation of risk management, Chalco actively takes on comprehensive risk management ground work, and builds warning indicator system for major risks. By monitoring the indicators, the Company analyzes the current risk situation, predicts risk trends and submits periodic quality risk management reports. In 2016, the Internal Auditing Department, staffed with full-time risk management professionals, was officially launched for the completion of risk management system, further improving the Company’s risk management structure, and providing organizational and personnel guarantee for better development of risk management in the Company. Workshops on risk management were held within the Company to raise the heads of departments’ and branches’ awareness of risk and compliance.

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

#### 3.2.2 Anti-corruption

Chalco continues to improve the related regulations and supervisory mechanism on anti-corruption and work without corruption. The Company has done its job on anti-corruption to build a mechanism and system in which no one dares, can and wants to corrupt. Chalco starts with an education on clean governance culture with a focus on anti-corruption awareness rising. The Company intensifies its anti-corruption campaign by continuing to launch its Anti-corruption-themed Education Month, and send anti-corruption-themed reminders by texts and WeChat, watch anti-corruption-themed videos, visit anti-corruption-themed education bases, hold workshops on anti-corruption and its laws in the party school, print and distribute anti-corruption-themed case studies and sign letters of anti-corruption commitment, etc. to ensure the anti-corruption training reaches the grass-roots and covers all 797 anti-corruption-themed lectures had been held throughout the year with 35,089 people directly benefited.

##### Case: Figures of Anti-corruption Workshops in the Party School



Capacity Building for Secretary of Commission  
for Discipline Inspection



Team Leader Training in Branches of the Company

### 3.3 ADVANCING QUALITY AND EFFICIENCY

Chalco pushes forward the “improvement of weakness, reduction of un-functional business, development through innovation, and capitalization of resources” reform and achieves reducing costs and increasing benefits through precision management, which would be a modern management model and system that ranges from production process, finance, capital operation, investment proposals to internal coordination, marketing and logistics, safety and stability, etc.

### **3. Governance: Deepen Reform and Integrate Resources (Continued)**

In 2016, supported and coordinated by its branches and all the departments of headquarters, Chalco launched “Advancing quality and efficiency” special campaign in a comprehensive way as its main working idea, which led it to withstand market pressure, cool-headedly rise to all the challenges and finally realized its business goal of this year.

1. The launch of “advancing quality and efficiency” initiative across the company has led the overall development of the Company. In 2016, the initiative that is featured in all staff participation, whole process control and full efforts from all, further specified the objectives and responsibilities of the Company’s leaders, competent departments and business entities respectively. The Company optimized technology indicators, grasped the opportunity of electric power system reform, and worked on those restructuring and upgrading key projects in an orderly manner. In 2016, the Company beat the market due to its cost reduction and efficiency improvement, which savings and earned revenue have overall surpassed the amount of lost profit that was affected by the reduced products prices.
2. The Company grasped the opportunity of electric power system reform and reduced its electric power cost. Directed by the concept of building the large energy system for reducing costs, the Company grasped the opportunity of national electric power system reform and implemented fine management. As results, unplanned stopping operation of self-provided power plants were reduced, and correspondingly coal consumption and power generation cost were cut; some enterprises under Chalco realized the integration of aluminum and power as well as replacement of sustainable energy. In 2016, the reduction rate of the Company’s electricity cost is about 13%.
3. Chalco strengthened market research and optimized its marketing strategy. Relying on the collection and analysis of new trends of the industry, the Company grasped market principles and market opportunities and then developed a marketing strategy aiming at stabilizing clients by a rapid response, rapid decision-making, and change-to-change model. Based on the overall analysis of market supply and demand, the Company continued to intensify centralized procurement and adjust the inventory of the bulk of raw and auxiliary materials. The Company achieved good results of reducing costs and increasing benefits by selecting outstanding suppliers and enhancing their shares of direct supply.

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

4. Driven by the two wheels – investment and technology, the development of the Company was full of vitality. Following its concept – “investing one project, making it successful, and getting profit”, the Company accelerated restructuring and upgrading of mines and key projects, which enhanced the capability of mining security and making profits. In 2016, with implementation of technological R&D projects, breakthrough of several key technology, and demonstrative projects of new technology industrialization into service, technological innovation and theoretical achievements conversion provided strong technical support for the Company’s enhancing quality and efficiency as well as its restructuring and upgrading.
5. The Company continued to run precise management and optimize technical indicators. In 2016, the operation monitoring center and command system of safety production and emergency & rescue for coal mine and power plant were put into use. Based on daily morning meeting system, the Company closely combined management instruction with process supervision, and improved business efficiency by grasping the hot, key and difficult issues during operation. In addition, the Company started a mining improvement project to untangle and inspect problems for reducing costs and increasing benefits. Through multifaceted and whole process precise management, 19 key indicators were significantly improved and 634 rectification measures for “precise indemnification and elimination of waste” were completed, which significantly raised quality and efficiency.
6. Those companies in difficulty were reborn by creatively adopting “larger, efficient, stronger and dynamic” approaches. Chalco made “one policy for one company”, which vitalized those companies in difficulty through relocation and transformation. Meanwhile, by benchmarking advanced level of labor productivity in this industry, the Company further optimized allocation of employees and dramatically increased labor productivity. As results, labor productivity increased 56% and 20% in companies majoring in alumina and companies in aluminum respectively.

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

#### 3.4 RESPONSIBILITY MANAGEMENT

Chalco promotes its management level and continuously moves forward to fulfill its sustainable objectives by combining its management of Corporate Social Responsibility (CSR) with its main businesses and advancing the efficiency of resource utilization in its work.

##### 3.4.1 Social Responsibility

The responsibility concept with the social responsibility view of “turning stone into gold and benefiting mankind” at the core have won wide recognition in the Company and been treated as their objectives and pursuits by the Company’s staff. They put both the Company and the society on the path to the sustainable development by making unstoppable efforts to innovate and practice.

**Turning stone:** utilizing the resources in an ethical and equal way;

**Becoming gold:** utilizing the resources in a green, highly efficient, low-carbon and responsible way to create wealth and promote value;

**Benefiting mankind:** utilizing the global resources to serve the global economy and bringing benefits to future generations by means of creation;

**Turning stone into gold and benefiting mankind:** is the Company’s promise to smelt the ore into gold and turn the stone into treasure and bring benefits to the next generations of mankind.

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

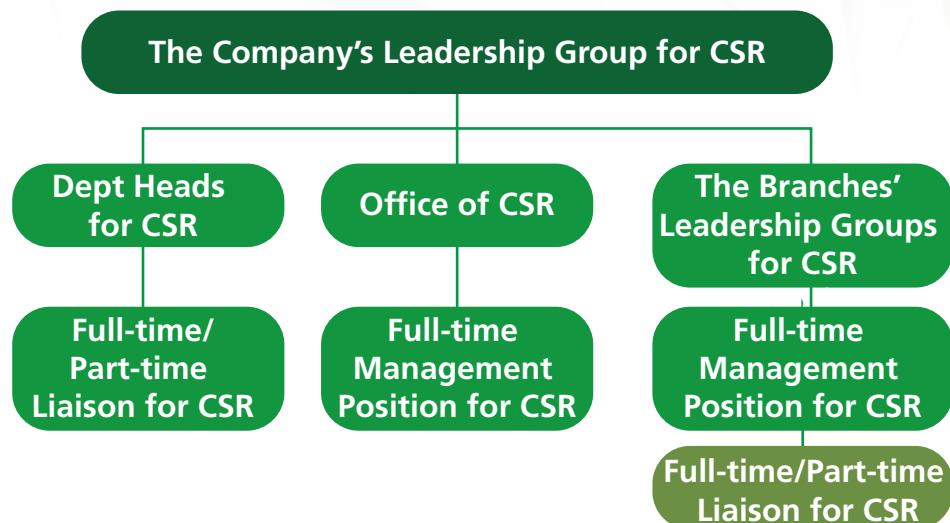
#### 3.4.2 Social Responsibility Management System

To guarantee that the Company meets its social responsibility's objectives and requirements, Chalco has established and improved its long-term working mechanism of CSR. Chalco classified the work content and duty according to the guideline of Hong Kong Stock Exchange and with the reference to ISO26000 international standard. It continues to improve the Company's social responsibility management system from three layers-strategy, operation and basis, while integrating its CSR into the Company's management system and making the relevant departments accountable for the results by forming five fields-company's governance, environment, employment and employee rights, operating practices and community as the main structure, therefore achieving the effective integration of social responsibility work and operating management.

<b>Responsibilities</b>	<b>Departments in Duty</b>
Governance	President's Office (Office of Board of Directors); Human Resources Department; Financial Management Department
Environment	Corporate Management Department; Energy Management Department; Sci-Tech Management Department
Employment and Labor Rights	Human Resource Department; Culture Department; Labor Union
Operating Practices	President's Office; Marketing & Procurement Department; Investment Management Department; Internal Audit Department; Supervision Department
Community	President's Office (Office of Board of Directors); Culture Department; Labor Union

Chalco set up a leadership group for CSR with Chairman of the Board of Directors as the group leader and President as the representative of the CSR management. The Company's leadership group has its own CSR office while all its branches set up their own leadership group and their offices of CSR correspondingly, in charge of their work in this respect.

### 3. Governance: Deepen Reform and Integrate Resources (Continued)



The Company's Leadership Group for CSR is a senior managing and coordinating body. It is in charge of the review of strategic CSR planning, making the Company's CSR policies and systems, releasing the Company's CSR reports and inspecting and supervising the implementation of the planning. The Company's CSR office is a daily office for the leadership group, whose responsibilities include: implementing the resolutions made by the leadership group, compiling the Company's planning and work plans for CSR, conducting training on social responsibility, coordinating the relevant work for social responsibility across the Company, managing the CSR on a daily basis, compiling and releasing CSR reports, doing research and surveys on social responsibility and practice, and strengthening communications among stakeholders.

#### 3.4.3 Stakeholders Communication

Chalco actively carries out social responsibility communication work in order to enhance the performance of social responsibility, improve the transparency of the Company and build a harmonious stakeholder relationship. It continues to improve stakeholder communication mechanism, communication channels, communication measures, and constantly improves

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

the effectiveness of communication by receiving visitors, answering the question of investors, overseas road show, displaying innovative results, etc.

<b>Stakeholders</b>	<b>Expectation and requirements</b>	<b>Communication channels</b>
<b>Government</b>	Tax payment Implement national policy Promotion of local economic development Promotion of employment	Participate in meeting Statistics report Routine communication Joint ventures
<b>Regulatory authorities</b>	Compliant operation	Information disclosure Standing member of Association of Listed Companies
<b>Shareholders</b>	Maintenance and appreciation of assets value	Results announcement Results roadshow Receiving investor visit Telephone communication Reverse roadshow Enterprise investigation Portal site
<b>Clients and Suppliers</b>	Sincere cooperation Honest operation Providing products and services with high quality Sharing the benefits	User forum Daily communication Regular visit Selection of outstanding suppliers and clients Wechat platform Key suppliers workshop Trade fairs

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

<b>Stakeholders</b>	<b>Expectation and requirements</b>	<b>Communication channels</b>
<b>Employees</b>	Protection of the legitimate rights and interests Protection of health and safety Employee training Employee development Compensation and benefits Humanistic concern	Company internal publications Company internal website Labor contract General Manager mailbox Employee Forum Lanxin/Wechat platform Reception day of manager Fitness activities Reemployment Center
<b>Industry</b>	Industry standard setting Industry leading Promotion of industrial management level	New technology seminar Technical training base A standing member of Nonferrous Metals Industry Association
<b>Environment</b>	Resource conservation Reducing consumption of resources Control of waste emissions Protection of the surrounding ecology Focus on global climate Biodiversity conservation	Environmental protection forum Information notification Technical seminar Media platform Regular meeting of Occupational Health, Safety and Environment Committee Participation of China Network for the UN Global Compact
<b>Community</b>	Civilized production Improvement of local environment Giving back to society Poverty alleviation and development Volunteer activities	Green Reclamation Joint construction by enterprise and local government Daily communication Wechat platform Counterpart poverty alleviation Poverty alleviation by staying at villages Selection of cadres to assist Tibet and Qinghai

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

#### 3.4.4 Materiality Analysis

Chalco collected stakeholders' concerns and topics by stakeholder interviews and online retrieval. With reference to the "*Environmental, Social and Governance Reporting Guide*" released by the Stock Exchange of Hong Kong Limited and *ISO26000 International Standards of Social Responsibility*, combining with the review of company's current operational management and development strategy, it evaluated the material issues of social responsibility, ensured that the Company can disclose the important information as accurately as possible in terms of stakeholders concern.

##### **Screening Flow on Material Topics of Environmental, Social and Governance**

###### **Sources of Topics**

- Corporate Development Strategy
- Corporate Management Suggestions
- Stakeholder Analysis
- Main Business Features of the Company
- *Environmental, Social and Governance Reporting Guide*,  
by the Stock Exchange of Hong Kong Limited
- ISO26000
- United Nations Millennium Development Goals –  
Industry Development Trends
- National and International Peer Companies Benchmark Study
- *Environmental Protection Law of  
the People's Republic of China*
- *Management Measures for Environment Monitoring*
- *Codes of the Aluminum Industry*, by Ministry of Industry and  
Information Technology



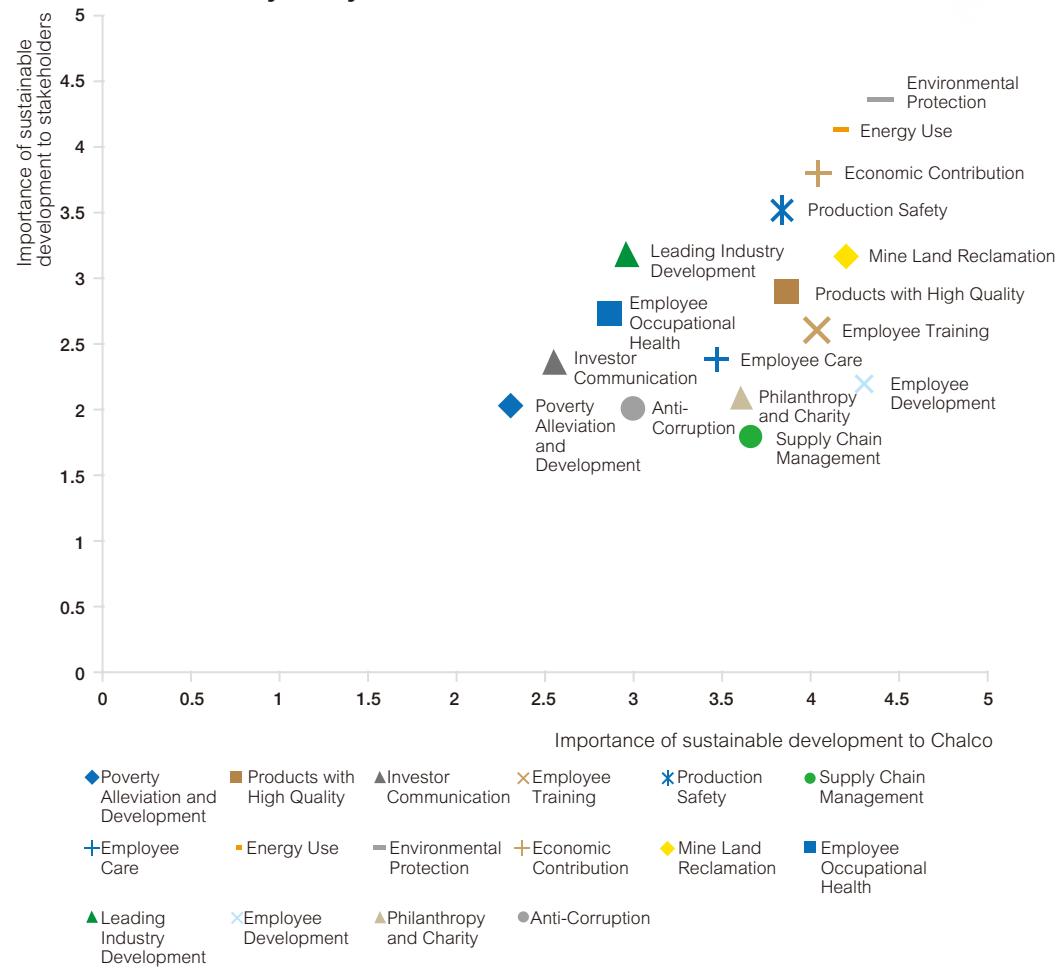
###### **Screening Standard**

- Contribution to Sustainable Development
- Stakeholders' Concerns
- Request by Social Responsibility Guidelines
- Accordance with the Needs of  
Corporate Strategic Development

### 3. Governance: Deepen Reform and Integrate Resources (Continued)

#### Screening Flow on Material Topics of Environmental, Social and Governance

##### Results of Materiality Analysis



## 4. Environment: Save Energy and Respect Nature

As a large-scale resource-based enterprise, Chalco pursues a coordinated development between business operations and environmental protection. Chalco implements sustainable development through every single link of its production and operation from four major aspects, including energy saving and emissions reduction, resource utilization improving, waste recycling and reusing as well as sustainable mining.

In order to reduce the environmental impact of the company's production and operations strengthen the protection of the environment, the company strictly abides by relevant state laws and regulations. It stipulated the relevant policies and regulations, such as "The internal safety and environmental protection responsibility system of Chalco (Trial)", "Environmental protection management measures in Chalco", "The disposal plan of Emergency Environmental Information Event in Chalco", "The contingency plan of Environmental Administrative penalty in Chalco", etc.

### 4.1 SAVE ENERGY AND REDUCE CONSUMPTION FOR GREEN PRODUCTION

Chalco has implemented environmental management responsibility system based on its environmental management system. Environmental protection indicators are introduced in Chalco's development planning and production & operation plans. It standardizes and normalizes energy saving and emissions reduction in a planned and targeted manner by implementing the three-step energy saving and emission reduction system. The three-step system includes "Layered target decomposition", "Reducing costs and increasing benefits for large-scale energy", and "Energy saving and consumption reduction by everyone".

## 4. Environment: Save Energy and Respect Nature (Continued)

<b>1. Classify and disassemble target</b>	<b>2. Carry out reducing costs and increasing benefits for large-scale energy</b>	<b>3. Implement energy saving and consumption reduction by everyone</b>
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Plans for energy saving and emissions reduction are developed annually with the overall target allocated to the entities. Each subsidiary and branch shall take measures based on its actual situation to decompose the tasks to ensure the successful completion of Chalco's energy saving targets.

Carry out reducing costs and increasing benefits for large-scale energy activities; reduce energy consumption by properly balancing the mediums of energy resources such as water, electricity, wind, gas, and oil and consumption control. Bridge the gap of insufficient essential energy factors by technical innovation, reform, and upgrading projects; Reduce energy consumption by improving the energy structure; and manage energy in all aspects for the purpose of sustainable reduction in energy consumption by standardization, supervision, and inspection of the management of energy-consuming units, and comprehensive use of energy base data, flow charts, data statistics and other means.

Carry out activities such as Energy-Saving Awareness Week and National Low-Carbon Day to disseminate knowledge of energy saving and emission reduction, such as energy-efficient "leader", energy saving technologies, energy performance contracting and carbon emission management; Organize energy saving inspection, including on-site energy use, "gas escape, water emitting, liquid dropping, and leakage" of energy mediums, irrational use of energy mediums, and idle running of belt, fan and pump and other equipment; and to guide employees to carry out the "five small activities" involving "small reforms", "small inventions", "small transformations", "small designs", and "small suggestions" by carrying out "fulfillment of new ideas and making achievements in the 'Thirteenth Five-Year Plan'" themed competition and other activities, for the purpose of achieving energy saving and consumption reduction by relying on employee's wisdom.

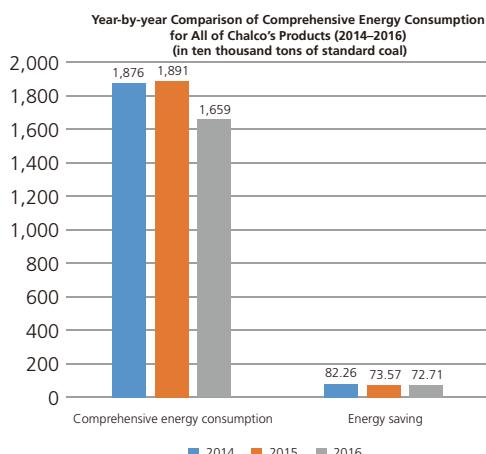
## 4. Environment: Save Energy and Respect Nature (Continued)

### 4.1.1 Energy Consumption Reduction

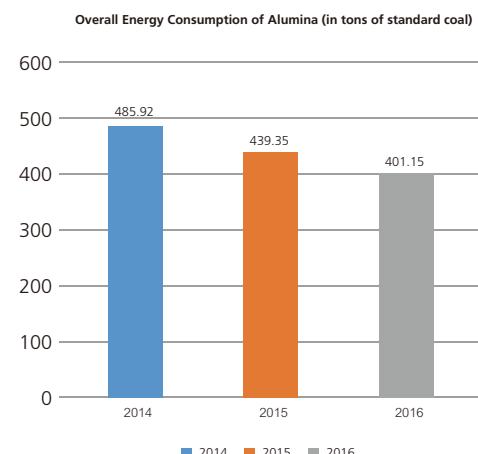
Chalco encourages (R&D), demonstration and promotion of new technologies to support energy saving and environmental protection. It focuses on energy consumption in all aspects of production, in order to reduce losses, eliminate squander and utilize energy effectively.

In 2016, the comprehensive energy consumption of all alumina and electrolytic aluminum enterprises was about 16.59 million tons of standard coal, the synthetic energy consuming per 10,000 Yuan of GDP was 2.71 tons of standard coal; purchase electricity was 22.3 billion degrees, the total coal consumption was 15.5 million tons.

In recent years, Chalco has made great progress by implementing its energy saving measures. From 2014 to 2016, Chalco's comprehensive energy consumption decreased successively year by year. In 2016, the year-on-year energy consumption (compared to 2014) decreased by 11.57%. By taking measures such as production equipment update and technical transformation, the energy savings totaled 2.2854 million tons of standard coal. The overall energy consumption of alumina also declined year by year with a cumulative reduction by 19.59%, reaching a leading level in the world.



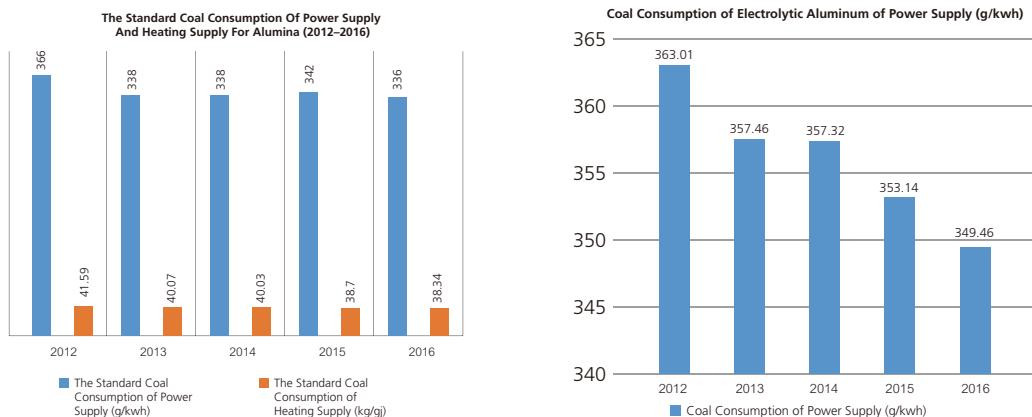
Note: comprehensive energy consumption = the sum of the actual consumption of various energy sources in industrial production activities (converted into standard coal) – the sum of the energy conversion process of the enterprise's energy output (converted into standard coal) – the sum of recycling energy (converted into standard coal)



Note: The comprehensive energy consumption data has been converted into standard coal

## 4. Environment: Save Energy and Respect Nature (Continued)

The energy consumption for the production of the two major products – alumina and electrolytic – decreased successively in recent five years. The coal consumed for power generation has been significantly reduced. The standard coal consumption of power supply for alumina, standard coal consumption of heating supply for alumina, and the coal consumption of power supply for electrolytic aluminum are also declining steadily.



### 4.1.2 High Thermal Efficiency of CHP

To improve the quality of heating, save fuel consumption significantly and reduce impacts on the environment, the Combined Heat and Power (CHP) mode is adopted in all of Chalco's heating and power plants for alumina enterprise. The high-pressure steam produced by boilers works through the stream turbine for energy consumption of production. In addition, the waste heat is re-used to provide heating for the living quarter of employees. It realized the gradient utilization (step-wise utilization) of energy. By this approach the heat efficiency reached more than 70%, far higher than that of traditional condensation thermal power plants.

### 4.1.3 Emission Reduction through Scientific Research and Technological Reform

Chalco has always valued the R&D improvement and application of environmental protection technologies in production processes to reduce production consumption, emissions, costs as well as the impact on the environment. In 2016, the Company totally had 45,075,090,000 cubic meters of emissions, 41,187 tons of sulfur dioxide, 1,140,781 tons of nitrogen oxides, and 180,906 tons of soot. In 2016, Chalco made great achievements in reducing emissions, including 254,441 tons of SO<sub>2</sub>, 44,062 tons of nitrogen oxides and 2,032,731 tons of soot.

## 4. Environment: Save Energy and Respect Nature (Continued)

### **Case: Research & Transformation of Desulphurization and Denitrification Technologies in Chalco**

Chalco has initiated the research on the integrated technology in flue gas desulfurization, associated denitration and mercury removal since 2013. A number of achievements have been made, such as the integrated wet desulfurization, associated denitration and mercury removal technology, the new dual-alkali desulfurization technology adopted in Shanxi Huaxing, and the dry non-catalytic reduction denitration technology. In addition, these achievements have been widely used in the flue gas control and treatment regarding circulating fluidized bed boilers (CFBBs), pulverized coal furnaces, coal-water slurry boilers (CWF boilers), chain boilers and daily glass furnaces. By doing so the flue gas treatment indicators have achieved China's requirements of ultra-low emissions and the investment and operating costs have been reduced by more than 20% compared with the existing conventional technologies, reaching an internationally leading level.



The New Dual-Alkali Desulfurization Technology Adopted in Shanxi Huaxing

### **Case: High Efficiency of Flue Gas Purification**

The flue gas of electrolytic aluminum plant is mainly produced by CO<sub>2</sub> based anode gas on the anode. The electrolytic pot emits flue gas which is mainly fluoride, dust, etc. They are collectively referred to as the main components of electrolysis flue gas. Fluoride and dust are harmful components. The company's electrolytic aluminum enterprises generally adopt dry purification technology, and it makes the total fluorine emissions of flue gas ≤1mg/Nm<sup>3</sup>, dust emission of flue gas ≤5mg/Nm<sup>3</sup>, much lower than the national emission standards (total fluoride emissions ≤3mg/Nm<sup>3</sup>, dust emission ≤10, key areas/20mg/Nm<sup>3</sup>).

Chalco's flue gas treatment technology has high purification efficiency and is featured by a simple process, no wastewater, and no secondary pollution. The technology not only allows Chalco to meet the national standards of dust emissions, it also recovers the water in flue gas as electrolytic raw materials in the electrolytic cell. It effectively turns the hazard into the benefit and achieves comprehensive utilization.

## 4. Environment: Save Energy and Respect Nature (Continued)

### 4.2 RESPECT NATURE AND IMPROVE RESOURCE USE

In line with the principles of economizing resources, Chalco transferred production modes fundamentally. It improved process technologies, the tailings recovery and comprehensive utilization ratio of ores for rational mining of resources and efficient use. At the same time, Chalco also actively researches on and develops new technologies regarding the recycling of renewable resources and reducing environmental pollution.

#### 4.2.1 Raising Mining Rate

In the process of resource mining, Chalco uses the smart mining platform for precise, dynamic, digital, and real-time management, which provides conditions for building resource-saving and environment-friendly green mines.

##### **Case: Online Mine Smart Mining System has improved the efficiency of resource utilization and effectively reduced the cost of mining**

Chalco's Online Mine Smart Mining System integrates resource dynamic management, resource mining planning, large homogeneous ore blending, mining design, centralized dispatching based on production visualization, safety supervising and monitoring and many other subsystems. It also integrates information digitization, real-time production process, management and control, and decision-making processing. The system has greatly promoted the comprehensive and precise management of mining, a traditionally complicated production system. It has enhanced the efficiency of resource utilization and effectively reduced the costs for mining. This technology was applied in the phase III mining of our Guangxi Branch. It has improved the production information level and the labor production efficiency, reduced the rate of ore loss by 0.20% and the dilution rate by 0.10%, lowered fuel consumption and achieved the goal of improving the efficiency of resource utilization.



Online Smart Mining System Applied in three phases Mining of Guangxi Branch

## 4. Environment: Save Energy and Respect Nature (Continued)

### 4.2.2 Comprehensive Reuse of Water Resources

Adhering to the water-saving principle of “water conservation and comprehensive utilization”, Chalco never stops to develop new technologies to reduce the consumption of new water from the source, to promote the construction of non-leaking plants, and to encourage the use of recycled water. Multiple measures have been taken to strengthen water conservation management. In 2016, total water consumption was 25.7 tons, and water consumption of ten thousand Yuan output value was 1.547 tons.

Currently, Chalco has 52 sets of wastewater treatment facilities with a daily wastewater treatment capacity of 362 thousand tons. All of Chalco's alumina and aluminum plants are adopting “zero” discharge of wastewater technology. In 2016 Chalco recycled 2.7 billion tons of wastewater.

#### **Case: Integrated Water Purification Plant Put into Operation in Zhongzhou Aluminum, Massive Industrial Wastewater Recycled**

Zhongzhou Company carried out scientific treatment of industrial wastewater and tailings backwater by means of the operation and control of the integrated water purification plant. In 2016, 6.7086 million tons of industrial wastewater was recycled. The Company carried out a number of labor competitions such as “water management by alkali test” and “improve boilers' consumption of backwater”. It had made a good progress and greatly reduced the pollution of “alkali leakage” accidents on water systems. The average consumption of backwater of boilers was increased to 500 tons per hour in 2015 from 276 tons per hour in 2015, which was a great breakthrough.



Reciprocating Flocculation Tank of Integrated Water Purification Plant in Zhongzhou Aluminum



Swash Plate Sedimentation Tank of Integrated Water Purification Plant in Zhongzhou Aluminum

## 4. Environment: Save Energy and Respect Nature (Continued)

### **Case: All-round Water-saving Initiatives in Chalco Shandong**

Chalco Shandong set up a water-saving team in which the Company's leader served as the team leader. In line with the principles of action – "make full use of condensate water, priority of using external drainage, reasonable control of new water, and reduce reverse osmosis water", it carried out a system-wide water balance test. A total of 35 improvement initiatives were prepared for alumina production process, such as improvement of the recycling rate and utilization of condensate water in evaporator, comprehensive treatment and utilization of industrial wastewater, control and treatment of gas escape, water emitting, liquid dropping, and leakage, and further improvement of pipe network facilities.

### **Case: Two Pronged Remediation of Illegal Water Consumption and Pipe Network in Guangxi Branch**

Guangxi Branch perseveres in inspection on water consumption in the surrounding area irregularly and more than twice a month. The branch carries out on-site inspection with the focus of the amount of consumed water and private or nonconformance water pipe pipes access. 14 illegal accesses to water were identified and removed in the year. The Company re-installed water meters and signed agreements with four villages which illegally used water. Guangxi Branch strengthened water supply pipe network management and set up a special team regarding "improve water supply stability and reduce the consumption of new water" to check, control and manage potential leakage of pipe network and to provide effective remediation to pipe explosion emergency response. In 2016, the Company identified a total of 5 severe potential leaks, 2 illegal overflow drainage; and carried out remediation accordingly. It saved new water consumption of about 6,000 cubic meters per day after remediation.

## 4.3 TURN TRASH INTO TREASURE AND ADVOCATE THE CYCLE MODE

In 2015, China put forward the "Made in China 2025" program aimed at creating an internationally competitive manufacturing industry. As one of the world's largest producers of electrolytic aluminum, China's electrolytic aluminum industry is one of the most important strategic industries in the "Made in China 2025" program.

## 4. Environment: Save Energy and Respect Nature (Continued)

Wastewater, waste gas and waste solid produced in the production process of electrolytic aluminum are the main factors imposing negative impacts on the environment. Chalco strictly abides by the relevant national laws and regulations. Under the premise of making its pollutants reach the standard of discharge, it also explores the methods and approaches to comprehensively utilize the “three wastes” to minimum the discharge of them. Chalco has developed a variety of technologies to advocate and practice the mode of industry recycling, such as establishing aluminum plants, purchasing and use of petrochemical wastes (such as petroleum coke) from CNPC and SNP, reducing the discharge of aluminum and alumina wastes, and implementing resource utilization. Chalco firmly believes that technological innovation is fundamental while innovative and high-tech production modes will become the fundamental driving force of green production for China’s electrolytic aluminum.

### 4.3.1 Electrolytic Aluminum Scrap Recycling

With years of accumulated technologies, Chalco has developed “Spent Potlining (SPL) Wet Processing Technology”. The traditional aluminum electrolytic pot has problems like occupying large space, threatening the surrounding environment, and causing a high maintenance cost. The “SPL Wet Processing Technology” not only improved the hazard-free treatment efficiency of aluminum spent potlining, but also realized the recycle of aluminum scrap. The waste residues from the hazard-free treatment are to be recycled as brick building and road fill materials.

**Case: In March 2017, this technology conducted an industrial “Spent Potlining (SPL) Wet Processing Technology” application test in Baotou Aluminum by constructing a production demonstration line which can process 10,000 tons SPL every year, it has demonstration significance of the hazard-free treatment of spent potlining in Chalco, even in China and abroad.**



The production demonstration line of “Spent Potlining (SPL) Wet Processing Technology” in Baotou Branch

### 4.3.2 Treatment of Bauxite residue Discharge

Chalco developed a number of innovative technologies for the soil treatment in terms of flue gas, sewage, and heavy metals and strives to realize safe storage and reuse of bauxite residue.

## 4. Environment: Save Energy and Respect Nature (Continued)

Along with reducing the discharge of bauxite residue and ensuring safe storage, Chalco is more active in exploring the effective utilization of bauxite residue resources, increasing the utilization amount of bauxite residue, expanding the applications of bauxite residue and tailings in soil improvement, industrial waste treatment, and industrial water purification agent and other fields. In 2016, Chalco achieved resource utilization with a total of 798 thousand tons of bauxite residue and developed four aspects of the utilization as a resource.

### **Four ways of red mud resources utilization in Chalco:**

#### **1. Boiler Desulfurization Applied to Bauxite residue**

- Zhengzhou Institute has completed the bauxite residue desulfurization industrial test for 5 tons per hour coal-fired boilers. Bauxite residue is used for desulfurization of coal-fired flue gas, greatly reducing the SO<sub>2</sub> concentration contained to the national ultra-low emission standards. The implementation of this technology can make 1 ton of dry bauxite residue to absorb 180–180kg carbon dioxide, and the bauxite residue utilization rate can increase to 10%–15%. It reduces the alkalinity of bauxite residue during the desulfurization. The pH value of the bauxite residue used for the desulfurization also meets China's requirements for industrial solid wastes. The desalination rate of bauxite residue desulfurization liquid is 70% or more, and meets national requirements after purification. The Company is currently working on a boiler of 75 tons per hour for industrial application of the technology.

#### **2. Industrialization of Selection of Iron Ore in Bauxite residue Project**

- In 2016, Guangxi Branch, Huaxing Aluminum and Shandong Branch, etc. recycled iron ore in bauxite residue by way of magnetic separation according to the characteristics of bauxite residue. In 2016, the three companies produced 660 thousand tons, 120 thousand tons and 18 thousand tons of iron ore concentrate, respectively. It reached recycling of resources.

#### **3. Industrial Wastewater Purification Agent Production**

- Shandong Branch adopts Bayer process for the development and production of industrial wastewater purification products with bauxite residue. In 2016 it produced and sold thousands of tons of such purification agent based on a pilot line. The 10 thousand tons liquid purification agent production line is about to be completed and moving into trial production and commissioning.

#### **4. Bauxite residue Soil Conditioners**

- Zhongzhou Aluminum has developed a bauxite residue soil conditioner. The product is a high molecular space material with stable structure that can reduce cadmium, lead and other heavy metals in the soil. A 20 thousand soil conditioner production line has been built and is to be put into trial production in June this year. It will reach the production requirements in August.

## 4. Environment: Save Energy and Respect Nature (Continued)

### 4.3.3 Fly Ash Recycling

Chalco adheres to the recycling of fly ash for the production of lightweight insulation bricks, turning waste into treasure. In 2016, Shanxi Branch comprehensively utilized 120 thousand tons of fly ash and slag with a total of 73,792.7 thousand bricks produced, including 59,769.2 thousand standard fly ash bricks and 140,235 thousand special-shaped bricks (converted into standard bricks).



Fly Ash Brick Production site of Shanxi Branch



Fly Ash Brick Production line of Shanxi Branch



Autoclaved Fly Ash Perforated Bricks  
Made by Shanxi Branch



Autoclaved Fly Ash Hollow Bricks  
Made by Shanxi Branch

## 4. Environment: Save Energy and Respect Nature (Continued)

### 4.3.4 Packing Materials Recycling

Chalco advocates reducing disposable packaging. Chalco Logistics recycles alumina packaging materials from the clients for reuse. In order to further reduce the consumption of disposable materials, such as plastics, Chalco starts to use recyclable aluminum packing container which suitable for short distance transportation in 2016. Except that it could be recycled and reused repeatedly, the aluminum packing container is easy for storage and inventory and greatly enhances the supply and transportation efficiency.

## 4.4 SUSTAINABLE MINING TO MAINTAIN THE ECOLOGICAL ENVIRONMENT

Chalco adheres to the concept of "responsible mining development" and adopts scientific and orderly mining for protection of mining ecology and reducing impacts of production on the mining and neighboring environment. Chalco has established a long-term mechanism for the ecological environment management and land reclamation in the mining area. The integrated "Separation-Mining-Reclamation" mining technology and "Ladder Leveling-Landfilling of Surface Tillage Soil", "Bulldozer-Front Loader-Car" and other land reclamation processes suitable to the actual conditions are used. These measures can simultaneously implement separation, mining and reclamation which effectively shorten the cycle of land reclamation and realize the effective combination of engineering reclamation and ecological reclamation. In 2016, a total of more than 8,000 mu of land in mining areas were reclaimed.

## 4. Environment: Save Energy and Respect Nature (Continued)

### Case: To Build “a National Green Mine”

Guangxi Branch adheres to building a green mine and comprehensively carries out the construction of a demonstration base for comprehensive utilization of mineral resources. In September 2014, the mine passed the acceptance inspection of green mine and was officially named “National Green Mine”. Guangxi Branch was also won several awards, such as the “Aluminum Corporation of China Limited President Special Award – Mine Demonstration Base Award” in 2016 and 2016 Aluminum Corporation of China Limited “Model Mine”.



Mining reclaimed by Guangxi Branch

### Case: Ecology Farm – Sprouting on the Reclaimed Land

Chalco's Xiangcaowa Mine has built more than 500 mu of ecological farms in the goaf. Walnut trees, poplar, vegetables, chrysanthemum and other cash crops are planted on the reclaimed land both to develop the local economy as well as improving the environment. On November 15 this year, the Xiazhou District TV Station of Sanmenxia City made a special report *The Green Farm in the Mine*. On December 14 China Center Television (CCTV) Financial Channel made a follow-up coverage, and on December 24, Fifth Edition of *Chalco Newspaper* also reported the story.



Ecological Farm in Aluminum Mine of Xiangcaowa,  
Mianchi, Henan



Soil Reclaimed in Aluminum Mine of Xiangcaowa,  
Mianchi, Henan

## 4. Environment: Save Energy and Respect Nature (Continued)

### **Case: Houwucheng Mine Built an Overall Reclamation System**

Houwucheng Mine adheres to paying equal attention to reclamation and mining production. It also established a supportive system for reclamation plan, technology, funds, and organization. It set up an integrated mine separation-mining-reclamation process system. Over the years, Houwucheng Mine has accumulated experiences in remedial works on waste dump, biological planting experiments, and planting land crops on reclaimed lands. Part of the land has been cultivated by local villagers with main species including corn, millet, wheat, beans and potatoes. Some land is for walnut trees and other cash crops. This contributes to promote local farmers to get rich and create a harmonious relation between the enterprise and the local community.



Reclaimed Houwucheng Mine area



Crop planting in reclaimed Houwucheng Mine area

## 4. Environment: Save Energy and Respect Nature (Continued)

### **Case: Joint Efforts in Land Reclamation with Gongyi Government**

On December 23, 2016, the *Land Reclamation Development Project of Fengmenggou Village, Xiaoguan Town, Gongyi City* jointly built by Xiaoguan Mine of Chalco and the government passed the acceptance of Gongyi City Government.

The reclaimed land was used for the construction of 12 multi-story residential buildings and 56 low-rise residences by the Company and the government, covering a total area of 75,000 square meters. The public facilities are readily available, including a large square, cultural center, nursing home, viewing pavilion, clinic, supermarket, fitness equipment, and stone stools and tables, providing a fresh environment surrounded by green trees and red flowers. The villagers living conditions have been significantly improved.



The comparison of reclaiming before and after

## 5. Collaboration: Win-win Journey and Achieve Joint Progress

With the development of the business and the expansion of the market, the environmental and social factors affected by Chalco's supply chain are also increasing. At the same time, Chalco is expected to take more necessary social responsibilities. Chalco also faces new opportunities brought by industrial upgrading and innovative development.

With the close communication with partners and assistance in regulating the social responsibility management of suppliers, as well as assistance in further optimization of the industrial supply chain by means of technological innovation, enhancing resource efficiency and reducing impacts on the environment, Chalco guides the upstream and downstream enterprises of the supply chain to understand and fulfill their appropriate responsibilities regarding the environment and society for mutual benefits, win-win cooperation, and common progress.

### 5.1 IMPROVE THE MANAGEMENT TO ESTABLISH A SUSTAINABLE SUPPLY CHAIN

In the course of its own development, Chalco strengthens the management of upstream and downstream suppliers and contractors of the supply chain. Chalco extends the management requirements of social responsibilities to the supply chain, and helps the supply chain grow stronger in the spirit of win-win cooperation for the purpose of creating a sustainable supply chain. By the end of 2016, Chalco has 4,204 domestic suppliers and 42 overseas suppliers.

#### 5.1.1 Well-Established Management Procedure

As for the selection of suppliers, the potential supplier not only need to meet the basic compliance requirements, but also required to have the qualifications regarding dangerous chemicals, special manufacturing industry. They need to provide proof of quality or production sales certificates granted by the manufacturer. They also shall comply with the requirements specified in *Confidential Terms of the Chalco Electronic Procurement Platform* and participate in the corresponding business skills training.

In addition, Chalco has a well-established supplier evaluation system: Chalco is responsible for establishing supplier files which regularly record suppliers' strength, supply share, performance of contract and supplier rewards and discipline. In the supplier annual evaluation report, it shows new suppliers and eliminated ones in the year, including suppliers' annual comprehensive evaluation results, rectification measures and recommendations, etc. Ultimately in accordance with the evaluation results, outstanding suppliers will be selected and withdrawn suppliers will be determined from the directory by the Company.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### 5.1.2 Suppliers Communication

Chalco has established three main ways of supplier maintenance when strengthening the daily communication with suppliers: 1) centralized purchasing from annual supplier meetings for raw and auxiliary materials, exchanging market information, and organizing market analysis of major products such as coal, caustic soda and petroleum coke; 2) selecting excellent suppliers on the basis of summarizing the procurement work in 2016 and consulting relevant opinions from them; 3) participating in the national coal trade fairs for thorough consultation and communication with coal enterprises.



"Seminar for Chalco Key Suppliers and Market" Held in Zhengzhou on December 9, 2016



Twenty-Three Companies Awarded to "2016 Chalco Outstanding Suppliers"

### 5.1.3 Suppliers Support

The supplier is an important partner to Chalco. In line with the purposes of "long-term cooperation, mutual support, complementary advantages, and seeking common development", Chalco carries out all-round and multi-angle cooperation with its suppliers. At the same time, Chalco ensures long-term stable supply of raw materials and reduces purchasing costs. We also provide support and assistance to suppliers who are faced with difficulties on the basis of win-win cooperation.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### **Case: Baotou Aluminum Gives Priority to Purchase Coal from Sujiagou Coal Mine**

In March 2016, because of the replacement of Sujiagou Coal Mine's replacement of its working area and the continuous slump in the coal market prices, Sujiagou Coal Mine faced poor production and management situations. In the understanding of its specific circumstances and according to the actual business development and the market-oriented principle, Baotou Aluminum, a subsidiary of Chalco purchased 60 thousand tons of coal from Sujiagou Coal Mine for two consecutive months. In addition to reducing the inventory pressure of Sujiagou Coal Mine and providing financial support for its replacement of working area, Baotou Aluminum also established a strategic partnership with Sujiagou Coal Mine. In August 2016, when Baotou Aluminum was facing a tight coal supply which might impose a serious threat to production safety, Sujiagou Coal Mine started a new working area and supplied 70% of its monthly coal production to Baotou Aluminum, which guaranteed the safe and stable production of Baotou Aluminum.

### 5.1.4 Supply Chain Management

In addition to strengthening the supervision and control of its own production and operation safety and environmental protection facilities, Chalco also set up requirements for the production and operation safety for the contractors of its construction projects. With the issuance and implementation of the *Measures for Production and Operation Safety* of Chalco and specific rules and regulations provided for the safety production management of construction projects, it has played a positive role in raising the safety and environmental awareness of suppliers, preventing occupational diseases and ensuring the safety and successful implementation of construction projects.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### Case: Chalco Trading Raw Material Center Promotes and Applies the Social Responsibility Management Module for the Supply Chain

Chalco Trading Raw Material Center affiliated to Chalco adheres to the implementation and promotion of the social responsibility management module for the supply chain to promote the supply chain members to jointly fulfill their social responsibilities. The module requires suppliers to include social responsibilities into their daily work, to sign the *Letter of Responsibility for Integrity*, to strictly abide by the social responsibility management system and Chalco's related management systems. At the same time, it also carries forward the spirit of the contract and actively promotes the business philosophy. It gives full play to the advantages of a centralized purchasing and ensures the stable operation of enterprises. It also regulates the supplier access mechanism and raises the awareness of the concept of social responsibilities.



The signing ceremony between Chalco Trading and Xinjiang Zhongtai Chemical Co. Ltd.



Suppliers site visit in Liancheng Branch

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### 5.2 STRENGTHEN CLIENT RELATIONSHIP

Chalco always adheres to the client-oriented principle and carries out in-depth and strengthened communication with clients to understand their needs and provide them with high quality and efficient services. At the same time, Chalco takes helping clients' development as one important goal of serving clients, facing the ever-changing market environment together with clients. It provides customized high quality products in accordance with client demands, jointly developing new aluminum products with products for mutual benefits and common growth.

Chalco conducts centralized and unified management to our main products such as aluminum and alumina, and separating management responsibility and operation responsibility for marketing. We strictly comply with the national product quality related regulations and our internal industrial standards for aluminum and alumina, to ensure our products quality. Our headquarters set up marketing & purchasing department to be responsible for making relevant guidelines of marketing, establishing marketing management system, making sales plan, risk control and coordination of marketing operations.

#### 5.2.1 Provide High Quality Products

Chalco has a well-established quality management system involving all links, including procurement of materials, production and manufacturing, and ex-factory and after-sale services to ensure reliable and high quality of products. In addition, Chalco also entrusts the National Light Metal Quality Supervision and Inspection Center to entrust the national quality inspection authorities to carry out field visit at production sites for equipment detection, implementation of standards, and integrity of original records, sampling and other aspects to verify the quality of products. The focus of the spot checks includes finished alumina, prebaked anode, cathode carbon block, remelting aluminum ingot, quality of aluminum and aluminum alloy ingot and alumina analysis and test capabilities of electrolytic aluminum companies. Twelve spot checks are arranged for alumina production companies, including 6 on-site checks at the production company and 6 at the user company. One spot check is arranged for other products.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

In 2016, Chalco's first-grade rate of alumina reached 96.72%, an increase of 5.81% compared to 2015; the second-grade rate reached 100%; the alumina-45um rate reached 15.86%, which has superior to the indicators of the first-grade metallurgical alumina in the nonferrous metals industry. In 2016, Chalco's 99.70% or above original liquid of electrolytic aluminum reached 96.67%, an increase of 2.11% compared to 2015. 99.9% above aluminum ingot reached 99.9%; Fe content of the original aluminum liquid was gradually reduced to 0.132%, which was 0.005% less than that in 2015.



A Discussion Meeting between Chalco and Yunnan Metallurgical Group



Alumina Contract Signing Ceremony for Chalco Trade and Yunnan Aluminum

### 5.2.2 Improve Client Service

Chalco pays high attention to strengthen and deepen the communication with clients. It is stably based on different needs and characteristics to deepen their awareness of our existing products and to better understand their needs for the purpose of improving client service experience. Chalco has established five online and offline client communication channels: regular holding of key client summit forum for alumina and aluminum products to understand customer needs, communicating how to respond to market changes and consolidate the relationship; setting up "Aluminum Daniu Offer" WeChat Public Account to push daily offers for aluminum ingot; relying on brand benefits of Chalco, it is to raise the public awareness of our products via Chalco's official website, the third-party platform websites, mailing of brochures, and promotional videos, etc; participating in professional exhibitions for thorough communication with upstream and downstream clients; to maintain client relationship by attending in specific business activities, telephone publicity, client visit, and field visits of downstream clients' production sites.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

At the same time, Chalco has set up pre-sale, sale and after-sales service management system to improve consumer complaints and solutions channels, working with clients to solve problems, and strives to enhance client satisfaction by providing good products and services. In addition, we also investigate client satisfaction in the form of questionnaires in line with ISO9001 management system. The enterprise and clients could have regular communication and exchange their opinions when they meet some problem during the cooperation. The feasible solutions and measures can be proposed by discussion. It also consolidates and develops cooperation between both sides, and builds a solid foundation for the development of enterprise.

### **Case: Baotou Aluminum Improved the Client Service Mode**

During the process of market development, according to a client's special demands, Baotou Aluminum improved its service mode, including removing rust of packing steel strip before product delivery, changing ingot shape for adapting to the fork truck, controlling trace elements (Mg), transportation cycle, delivery methods, etc. Multiple return visits after the sale of the product and timely on-site service had been highly recognized by users, The volume of monthly order increased gradually from 300 tons to 1,800–2,000 tons, it achieved win-win effect.



Client Communication in Baotou Branch



Client's on-the-spot investigation in Batou Branch's warehouse

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### 5.2.3 Grow with Clients

Chalco profoundly investigated client demands and jointly developed suitable products for clients in different fields. It continuously improves product technologies to meet market demands. At the same time of achieving sales growth, it also promotes the market to apply aluminum products for common development with clients.

#### **Case: Shandong Huayu and Suzhou Institute of Nonferrous Metals Co., Ltd. Worked Together and Successfully Developed the 6000 Series Aluminum Rod Products for Mobile Phone Shells**

Shandong Huayu and Suzhou Institute of Nonferrous Metals Co., Ltd. carried out a research on 6000 series aluminum alloy in 2016. They overcame the “black line” – an industrial difficulty and successfully developed the high-end 6000 series aluminum alloy including the surface material for mobile phones. It was put into mass production in April for supply. With continuous subsequent improvement, the conformance rate climbed and ultimately reached a stable rate of 95% or more. In 2016, a total of 4,713 tons was sold.



6000 Series Aluminum Alloy for Mobile Phone Shell Jointly Made by Shandong Huayu and Suzhou Institute of Nonferrous Metals Co., Ltd.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### **Case: Guizhou Branch and Shanxi Huaze Worked with Chalco-Sapa and Developed Large-Diameter Aluminum Rod Products for Track and Construction, respectively**

In 2016, Guizhou Branch and Shanxi Huaze made a breakthrough regarding the production of large-sized alloy rods upon the requests of Chalco Sapa Special Aluminum (Chongqing) Co., Ltd. They successfully developed the large-diameter aluminum alloy rods for track and construction, respectively. The new products have extended the industrial chain, improved the market competitiveness, and achieved common growth with clients. In 2016, 1,013 tons and 1,796 tons alloy were sold respectively by Guizhou Branch and Shanxi Huaze.



Products of Guizhou Branch



Products of Shanxi Huaze

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### 5.3 ENCOURAGE INNOVATIONS AND PROMOTE INDUSTRY DEVELOPMENT

In 2016, Chalco has achieved fruitful science and technology outcomes by insisting on the scientific and technological development as the driving force, continuing to improve the Company's science and technology innovation system, strengthening its independent innovation capacity, and improving its capacity to transfer its science and technology research results into actual practice. Although the Company has reached the international leading level in its production technologies in the field of aluminum smelt, the Company tries to make good use of technological innovations to support its industry upgrading, structural adjustment and strategy transformation, therefore laying a solid technological foundation for the Company to become a world's top-tier global company with innovative capability and international competitiveness.

#### 5.3.1 Participation in the Industry Standard Setting

Since Chalco was founded, Chalco has always deemed its duty to lead the industry to develop in an orderly and regular fashion, participating in the industry standard setting and amendments for many times. In 2016, Chalco has set and amended 37 standards and participated in the setting and amendments of 14 national and industry standards.

##### **Case: Chalco Participated in the Amendment of National Standard Aluminum Alloy Ingots for Casting**

As the only guiding fundamental standard in the casting aluminum alloy industry, the GB/T8733-2016 *Aluminum Alloy Ingots for Casting* could not meet the needs of the market in terms of its content and varieties covered due to the development of foundry industry and higher market demands. In 2016, Chalco led other domestic institute to make amendments to the GB/T 8733 *Aluminum Alloy Ingots for Casting* and set the new standard GB/T 8733-2016. The new standard, which had been promulgated and implemented, has strengthened requirements for performance of casting aluminum alloy in China, improved the quality, mechanical properties, and test level of aluminum alloy ingots for casting, as well as expanded its use in the automobile industry, therefore promoting China's international status in the casting aluminum alloy industry, and the competitiveness of China's casting aluminum alloy companies and their relevant companies.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

### **Case: Chalco Participated in Amending the Industry Standard The *Test Methods of Carbon Materials for Aluminum***

Chalco led and completed the amendment to the original YS/T63.3-2006 *Test Methods of Carbon Materials for Aluminum Part 3: Comparison of Determination of Thermal Conductivity* and set the new standard YS/T63.3-2015. The new standard, which had been promulgated and implemented, has expanded the scope of determination of thermal conductivity in carbon materials for aluminum, as well as been applied in the determination of thermal conductivity for common carbon block, high graphite and graphitized cathode carbon block, therefore meeting the needs of our nation's electrolytic aluminum companies, carbon production and trade, and promoting the product upgrading and technological progress in the carbon industry.

### 5.3.2 Achievement of National Major Science and Technology Awards

Chalco has made a range of major science and technology achievements with independent intellectual property rights by improving its science and technology innovation system, and strengthening its independent innovation capacity. In 2016, the Company has filed 109 patent applications, 41 of which belonged to major projects and 88 were granted. By the end of 2016, the Company had possessed 1,472 granted patents. In the meantime, the Company has won multiple national and the industry's major science and technology awards. In 2016, the Company has been awarded one China Patent Award, one first prize, four second prize, five third prize of the China Nonferrous Metals Industry Science and Technology Award. It also has won 11 Science and Technology Progress Awards as a cooperation unit by the same industry above.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

**Case: "The Development, Spread and Application of New Type Constant-Current and Well-Insulated Energy Saving Technology for Aluminum Electrolytic Cells" Has Won The First Prize of the 2016 China Nonferrous Metals Industry Science and Technology Awards**

This newly-developed technology established the constant-current model of aluminum liquid, cathode block, steel bar and their assembly's synchronized and optimized combination, created a new design thinking for electrolytic cells' energy balance, developed a constant-current high conductivity steel bar for the first time, and solved the technological problems in that 1) aluminum electrolytic cells are hard to arrive at high current efficiency at low voltages; 2) electrolytes are difficult to maintain and operate with high probability of early damage and short live of cells. In addition, this technology has achieved excellent energy-saving results in a variety of aluminum electrolytic cells with technological maturity and strong applicability, therefore having a high application value. This technology has significantly reduced not only the DC power consumption of aluminum liquid, but also the emission of carbon dioxide, further promoting our nation's energy-saving and environmental protection technical level, and the international competitiveness of Chalco. Having been applied in the entire industry with capacity at 32 million tons, it could directly produce the energy-saving benefit at 7.68 billion Yuan per year with the CO<sub>2</sub> emission reduction equivalency at the amount of 16.8 million tons per year, which would be of strategic significance in terms of the nation's energy conservation and emissions reduction, environmental protection and science development.

## 5. Collaboration: Win-win Journey and Achieve Joint Progress (Continued)

The technology has formed 12 patents, 10 of which are patents for invention, and the remaining two are utility model patents. Nine research papers have been published in the core journals. The Company's chief engineer team led more than 40 researchers to work on this new technology with more than 30 million Yuan spent on it.

This technology has spread and been applied in the Company's electrolytic aluminum branches and other companies such as Henan Zhongfu Aluminum Co., Ltd, Yongdeng Aluminum Co., Ltd, and Linzhou City Linfeng Aluminum Co., Ltd with the average DC power consumption of aluminum liquid at less than 12,300kWh/t-Al, which results in an energy-saving of electricity at 700kWh/ton of aluminum.



"New Type Constant-Current and Well-Insulated Energy Saving Technology for Aluminum Electrolytic Cells",  
Developed by Zhengzhou Institute



"New Type Constant-Current and Well-Insulated Energy Saving Technology for Aluminum Electrolytic Cells",  
Adopted by Shanxi Huasheng

## 6. Employees: Caring for Employees and Grow Together

Employees are our most cherished resource and wealth. Chalco is committed to its talent philosophy of “people-oriented, cherishing talent and caring for employees” by giving respect and guarantee to their legitimate rights and interests, building career development channel for employees, offering competitive remuneration and good welfare and benefits, creating a comfortable working environment so that the Company can grow with employees together with efforts. During the progress of enterprise development, we strive to provide a fair, equal and value-sharing talent development platform by various approached like internal training, external recruitment and optimizing personnel configuration.

### 6.1 OPTIMIZE MANAGEMENT AND MAXIMUM TALENTS OF EMPLOYEES

Chalco strictly complies with the labor laws and related regulations, signing labor contracts in accordance with the law, pursuing an employment policy of equality and non-discrimination. Meanwhile, it prohibits child labor or forced labor and supports equal pay. It assures female employees and disabled employees to be entitled to have a fair, equitable working opportunity. Chalco shall strictly implement the Labor Law of People's Republic of China and relevant regulations of corresponding punishment measures in case of a violation. By the end of 2016, Chalco has a total of 65,755 employees.

#### ■ Employee Distribution

Gender Distribution:

Gender	Number of employees	Proportion
Male	52,056	79.17%
Female	13,699	20.83%
Total	65,755	100%

## 6. Employees: Caring for Employees and Grow Together (Continued)

Age Distribution:

Age	Number of employees	Proportion
20 and below	29	0.04%
21–30	8,022	12.20%
31–40	14,729	22.40%
41–50	31,891	48.50%
50 and above	11,084	16.86%
Total	65,755	100%

### 6.1.1 Improving the Training and Incentive System

Chalco adheres to implement the strategy of “developing enterprise by talent management”. In 2016, we optimized the performance management system which uses cost evaluation as the main measure and the profit evaluation as a complement. By implementing the 360-degree performance appraisal, “Tracking analysis monthly, admonishing conversation quarterly, accumulative evaluation half a year, summary evaluation annually”, we improved the progress management, formed a responsibility-sharing talent platform.

## 6. Employees: Caring for Employees and Grow Together (Continued)

In 2016, we aimed at constructing a learning-type enterprise and set up a professional training system that could train employees according to their levels and specialties. To solve difficult and front-burner issues arising from the work is the focus of our training. We put emphasis on those core talents at key positions and pay attention to the development and innovation ability in technology researches in order to improve staff's professional qualities and competence, and push forward the healthy growth of employees. For instance:

- **Advanced Seminar:** invited "the Thousand Talents Plan" experts from domestic universities and industry to provide training for the backbones of non-ferrous metal related technology and research of the company's subsidiaries;
- **International Talent Exchange and Cooperation:** organized 2 delegations, mainly outstanding young cadres, went to North America and Australia for study and communication;
- **Leadership Development Training:** cooperated with Dalian Institute of advanced management, organized 2 special training of leadership development for enterprise's leading group, more than 60 people attended the training;
- **Reserve Cadre Capacity Training:** cooperated with the school of management, Zhejiang University held 2 special training of capacity development (practice part) for nearly 100 outstanding young cadres;
- **Grassroots Shift Boss Training:** organized more than 100 team leaders to participate in the qualification Certificate of Shift Boss management capacity Training of Central government owned enterprises, Tsinghua University.



Chalco Advanced Training of Energy Efficiency and Environment Protection Technology and Application



Leadership Training for Senior Managers in Chalco

## 6. Employees: Caring for Employees and Grow Together (Continued)

### 6.1.2 Broadening the Profession Development Channel

We ensure an unimpeded company promotion channel, and meet the demands of different position development while setting up a corresponding employee career development and promotion mechanism. For managers, technical professionals and production operators, we set up different career paths. Through a variety of skills competition, providing opportunities for staff to show their expertise and personal abilities as well as meeting their professional interests, ensure the career development paths for different people, Chalco helps employees to choose their optimal paths fairly.

#### **Case: "The Most Lovely Chalco-er" – Creating millions of Value, Wang Yongwei, the "Inventor"**

Wang Yongwei, the Henan Branch alumina plant senior technician, is one of those who won the title of "Chalco's most lovely people". He has been in this industry for more than 20 years. Believing in "love what you do", Wang grows up from a technical school student to a veritable mill expert. According to the experience, data and criteria obtained from his alumina plant grinder work for over 20 years, Wang formulated corresponding operation parameters and template. In recent years, he put forward several appropriate suggestions which created millions of profits after the implementation. The meticulous spirit and the pursuit of excellence of Wang is a perfect reflection of Chalco's values, which is "responsibility, integrity, openness, and excellence".



The Most Lovely Chalco-er"  
– Wang Yongwei

## 6. Employees: Caring for Employees and Grow Together (Continued)

### 6.2 Ensure the Occupational Health and Safety

Chalco strictly follows the occupational health and safety laws and regulations, and seriously implements the relevant policies. We also work on strengthening the hazard prevention and ensuring the investment for safety of health to improve employee safety awareness.

#### 6.2.1 Production Safety

In 2016, with policy guarantee and active practice, we stipulated an effective prevention and coping mechanism according to the Safety Production Management Measures of Chinalco. Chalco improved its own rules and regulations and post operation procedures in various ways, including comprehensive safety management, operational safety management, equipment management, working environment and occupational health management. We also invited external experts to conduct EHS risk investigation, protecting each employee's safety and health from all aspects.

##### **Case: Inviting External Experts to Conduct EHS Risks Investigation**

In 2016, the Chalco invited external experts to conduct safety risk control evaluation on its aluminum thermal power plant, Chalco Shandong and other enterprises. By conducting the plant safety risk control evaluation, it significantly pushed forward the administration of production safety of self-provided power plants and improved the level of Chalco's electric power management.

#### 6.2.2 Guaranteeing Occupational Health

In 2016, 7 accidents occurred in Chalco. 2,089 security drills were conducted with a total of 48,400 employees' participation. The safety training coverage reached 100%.

Chalco established and improved the system of occupational health management, and gradually carried out the occupational health and safety measures. In 2016, each company has built corresponding emergency rescue command center and compiled comprehensive emergency coping plans, special contingency plans and site management plans. Meanwhile, Through providing regular physical examination, labor insurance supplies and the allowance for high temperature, Chalco ensured the health of the employees.

## 6. Employees: Caring for Employees and Grow Together (Continued)

### 6.3 Care for Employees and Their Happiness

Chalco advocates the idea of “vibrant Chalco, healthy life”. In 2016, through the construction of democratic management system, occupational health management, recreational activities and other approaches, from life, growth, and emotional aspects, Chalco cares for the happiness of every employee, especially the rights and interests of female employees and employees in need.

#### 6.3.1 Protecting Employees' Rights and Interests

In order to promote employees participate in the democratic decision-making, democratic management and democratic supervision better, Chalco regularly holds workers congress. The corporate trade union is also gradually growing. By the end of 2016, there are 437 primary-level (branch) trade unions with 65,755 union members, covering 100% of the employees. The coverage of wage collective bargaining in the second grade enterprise under the Company reached 93.55%. The organization and the system shall ensure that employees exercise their rights of democratic management better.

#### **Case: Workers' Congress of Chalco Called for Proposals and Gave relevant Feedback**

In 2016, Chalco held the first meeting of fourth session of the Workers' Congress, and called for 19 proposals, including 17 handling proposals and 2 recommendation. 36 employee representatives from 9 proposal units gave the satisfaction feedback about the proposal handling process, including 94.7% satisfaction and 5.3% basic satisfaction.

In 2016, we held various events such as rope skipping competition, “Labor Day” fun sports festival, “vibrant Chalco, ten-thousand-step walking” and health lectures, etc. We actively promote a healthy lifestyle, guiding employees to pursue a better life through sports and recreational activities.



The “May 1st Labor Day” Fun Sports Festival



Rope-Skipping Competition for Celebrating the “March 8th Women's Day”

## 6. Employees: Caring for Employees and Grow Together (Continued)

### 6.3.2 Caring for Female Employees

Chalco stipulated the “*Labor Protection measure for Female Employees*” and “*Child-Bearing Period Compensation Regulation*”, established female employee protection register form level by level, and monitored the implementation progress of the protection for female employees. At the same time, the trade union organized women employees to sign the “*Special Collective Contract for Female Employees’ Special Rights and Interests Protection*”. The contract-signing rate of the primary-level female employees reached 100%.

#### **Case: Providing Special Protection and Services for Female Employees.**

Chalco conducts regular female employee health examination, “love for female employees” health care knowledge training. We procure health insurance and other relevant measures for female employees with special diseases to ensure the physical and mental health of female employees. In addition, the Company established the caring room for female employees. It provides a nursing place to breastfeed babies during lactation. The Company provides a more comfortable working environment for female employees in different stages.



Female “Love Room”

## 6. Employees: Caring for Employees and Grow Together (Continued)

### 6.3.3 Caring for Employees in Need

We try our best to solve employees' problems. By helping low-income families in pair, financial aid for education, Chalco strives to alleviate the living pressure for employees in need. In 2016, Chalco spent 15.6097 million Yuan and helped 14,289 low-income employees. Moreover, the youth league organization at all levels assisted to solve more than 1,200 practical difficulties at the aspects of work, study and living. More than 400 most needy youth were supported. The organization also conducted psychological counseling, law consulting for more than 230 times.

The Company highly values the rights and interests of disabled employees, and constantly increases the protection of disabled employees. Based on age, disability, expertise and other circumstances, the subsidiaries of the Company make the appropriate arrangements about the posts for disabled employees. The Company offers special allowance annually to disabled employees who have the disability certificates, provides reasonable facilities for disabled employees in the workplace and ensures the convenience of their work and life.

#### **Case: Shanxi Branch Held "Autumn Education Aid" Visiting Activities**

Shanxi Branch, for the past ten consecutive years, has been holding the "Autumn Education Aid" event during the summer break. It sponsors the employees' children in need to finish school. On August 18, 2016, the representatives of Shanxi Branch visited the home of employees in need. On behalf of the Company, they helped those employees' children to get into school. This event helped 36 children of our employees and granted more than 60,000 Yuan education financial aid.

## 7. Community: Contribute to Harmonious Community

Chalco, based on its local strategies and its own characteristics, aims to support the construction of local community where the Company and its projects are located. In order to realize the mutual development with community, it has made donation to local education and improved people's livelihood. We continuously carry out public welfare activities and projects, support our employees to participate in public welfare activities, and encourage long-term and institutionalized mechanism for public welfare activities. In 2006, we have donated 8.048 million in total. Through fixed-point poverty alleviation and volunteer activities, people's livelihood in many places has been promoted, which helped to win the local community and public's trust and supports.

### 7.1 FIXED-POINT POVERTY ALLEVIATION

For the sake of active response to our nation's policy of targeted poverty alleviation, we have implemented the *Administrative Measures on External Donation of Chalco*. According to the plan of continuous developing fix-point poverty alleviation work, Chalco helps to shake off poverty, it is more like "generating blood" by participating in the establishment of "Chalco's poverty alleviation demonstration base", exploring the new path of fighting poverty by E-commerce, and funding the construction of people's livelihood projects, etc.

In 2016, Chalco invested 7.5 million in assisting Qinghai Province and selected 4 cadres to Tibet and 2 to Qinghai, which promoted the economical and social development of local areas and their lasting stability. In 2016, we have set up a special fund for fixed-point poverty alleviation with about 7.81 million Yuan to support Tibet, Qinghai and Dahua Yao Autonomous County in Guangxi. Detailed information is shown as follows.

## 7. Community: Contribute to Harmonious Community (Continued)

Poverty Alleviation Area	Donation Amount (in ten thousand Yuan)
Chaya County of Tibet Autonomous Region	600.00
Haiyan County of Qinghai Province	150.00
Dahua Yao Autonomous County of Guangxi Province	31.00

The investment was arranged by the people's governments at or above county level, mainly used to local village development and infrastructure construction, as to help local people shake off poverty and get rich as soon as possible. Meanwhile, Chalco selected group of cadres to go to Tibet and to actively get involved in local economic and social development. By using Chalco's advanced experience of management, it helped local enterprises to improve their governance level. Some employees of Chalco and 101 students from poor families which were registered and filed as poverty householders in Haiyan County of Qinghai Province formed "one-on-one aid" helping pair. Those students shall receive a grant from 1,000 Yuan to 3,000 Yuan each year for study and living expenditure. The county education department manages the funds unified.

### 7.2 VOLUNTEER ACTIVITIES

Chalco has built up 313 "Guo Mingyi Volunteer Teams". There are more than 4,400 registered volunteers, whose voluntary services are over 9,000 hours in a year. They have carried out various kinds of activities, such as protecting environment, visiting the elderly, providing convenient service for the public in community and so on.

#### **Case: "Learning from Leifeng", An Art Exhibition for Philanthropy to Support Orphans' Medical Expense Who Have Visual Impairment or Leukemia**

Chalco held an art exhibition for philanthropy with the theme of "Learning from Leifeng" in April, 2016 and raised 12,700 Yuan to support orphans' medical expense who have visual impairment or leukemia.



The Art Exhibition for Philanthropy to Support Orphans

## 7. Community: Contribute to Harmonious Community (Continued)

### Case: Pay Attention to Visually Impaired Orphans of Bethel China

Chalco Trading has set up a youth volunteer service team by the name of "volunteers in action, including you and me". It provides services and help to visually impaired orphans of Bethel China with daily nursing, special skills training and personality education etc.



Volunteers of Chalco Trading Visited Visually Impaired Orphans of Bethel China



Volunteers of Mariantai Power Plant



Employees of Chalco Ningxia Energy are donating blood in a blood donation vehicle which was driven into factory as required



Volunteers of Chalco Ningxia Energy are serving the elderly in a nursing home

## 8. Outlook of 2017

In 2017, we are full of confidence for a bright future though still face many challenges. As leader and the backbone of the aluminum industry, Chalco will continuously implement "Five Concepts for Development" as core of the opportunity for transformation and upgrading. We will develop forward by converging new momentum, creating new strengths, solving problems and proactively adapting to new changes. We will also continue keeping high morale, focusing our efforts, maintaining composure, adapting to the new normal and setting new directions, in order to reduce the cost, strengthen competitiveness and grasp firmly initiative of development. By vigorously promoting technology as driving force and intelligent manufacturing, we will promote the "use of aluminum instead of wood and steel" and speed up the transformation of major science and technology achievements. We will strive for making Chalco a "front-runner" in the nonferrous metals transformation and upgrading progress. To ensure fulfillment of efficiency improvement, creating more values to shareholders and increasing income of our employees.

As the leader of nonferrous metals industry in China, Chalco will press forward with indomitable will in 2017, and shoulder the responsibilities as "the eldest son". We will continue to reform, conquer challenges and breakthrough barriers with spirit of persistent and adulthood. By following development trend, setting clear strategies and directions, and advancing our capabilities, we will use advantages in both the industrial chain and science and technology research, lead the industry to lay out its landscape. With determined mind, we believe we will overcome all the difficulties, address issues one after another, and achieve success step by step. In spirit of persistence, constancy, tenacity, we will strive for the rise of China Aluminum industry against challenges, and for the goal of writing a new chapter of Chalco to add in "Chinese Dreams".

**Ao Hong**

*Secretary of Party committee and Chairman  
Chalco*

# HKEx Guide ESG reference

<b>KPIs</b>	<b>"Comply or explain" Provisions</b>	<b>Page</b>
General Disclosure	Information on the policies and compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation	
A1.1	The types of emissions and respective emissions data	4.1.3
A1.2	Greenhouse gas emissions in total (in ton) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	–
A1.3	Total hazardous waste produced (in ton) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	Not applicable
A1.4	Total non-hazardous waste produced (in ton) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	4.3.2
A1.5	Description of measures to mitigate emissions and results achieved	4.1.3
A1.6	Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved	4.3.1 4.3.2 4.3.3
General Disclosure	Policies on the efficient use of resources, including energy, water and other raw materials	
A2.1	Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility)	4.1.1
A2.2	Water consumption in total and intensity (e.g. per unit of production volume, per facility)	4.2.2
A2.3	Description of energy use efficiency initiatives and results achieved	4.1.1
A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved	4.2.2
A2.5	Total packaging material used for finished products (in ton) and, if applicable, with reference to per unit produced	–
General Disclosure	Policies on minimizing the issuer's significant impact on the environment and natural resources	4 4.1
A3.1	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them	4.2 4.3 4.4

# HKEx Guide ESG reference

KPIs	"Comply or explain" Provisions	Page
General Disclosure	Information on the policies and compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare	6.1
B1.1	Total workforce by gender, employment type, age group and geographical region	6.1
B1.2	Employee turnover rate by gender, age group and geographical region	–
General Disclosure	Information on the policies and compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards	6.2.1
B2.1	Number and rate of work-related fatalities	–
B2.2	Lost days due to work injury	–
B2.3	Description of occupational health and safety measures adopted, how they are implemented and monitored	6.2
General Disclosure	Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities	6.1
B3.1	The percentage of employees trained by gender and employee category (e.g. senior management, middle management)	–
B3.2	The average training hours completed per employee by gender and employee category	–
General Disclosure	Information on the policies and compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labor	6.1
B4.1	Description of measures to review employment practices to avoid child and forced labor	–
B4.2	Description of steps taken to eliminate such practices when discovered	6.1.1
General Disclosure	Policies on managing environmental and social risks of the supply chain	5.1.4
B5.1	Number of suppliers by geographical region	5.1
B5.2	Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored	5.1.4

# HKEx Guide ESG reference

<b>KPIs</b>	<b>"Comply or explain" Provisions</b>	<b>Page</b>
General Disclosure	Information on the policies and compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labeling and privacy matters relating to products and services provided and methods of redress	5.2
B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons	Not applicable
B6.2	Number of products and service related complaints received and how they are dealt with	5.2.2
B6.3	Description of practices relating to observing and protecting intellectual property rights	5.3.1 5.3.2
B6.4	Description of quality assurance process and recall procedures	5.2.1
B6.5	Description of consumer data protection and privacy policies, how they are implemented and monitored	Not applicable
General Disclosure	Information on the policies and compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering	3.2
B7.1	Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases	3.2.2
B7.2	Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored	3.2.1
General Disclosure	Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests	7.1
B8.1	Focus areas of contribution (e.g. education, environmental concerns, labor needs, health, culture, sport)	7.1 7.2

## 9. Your Feedback



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