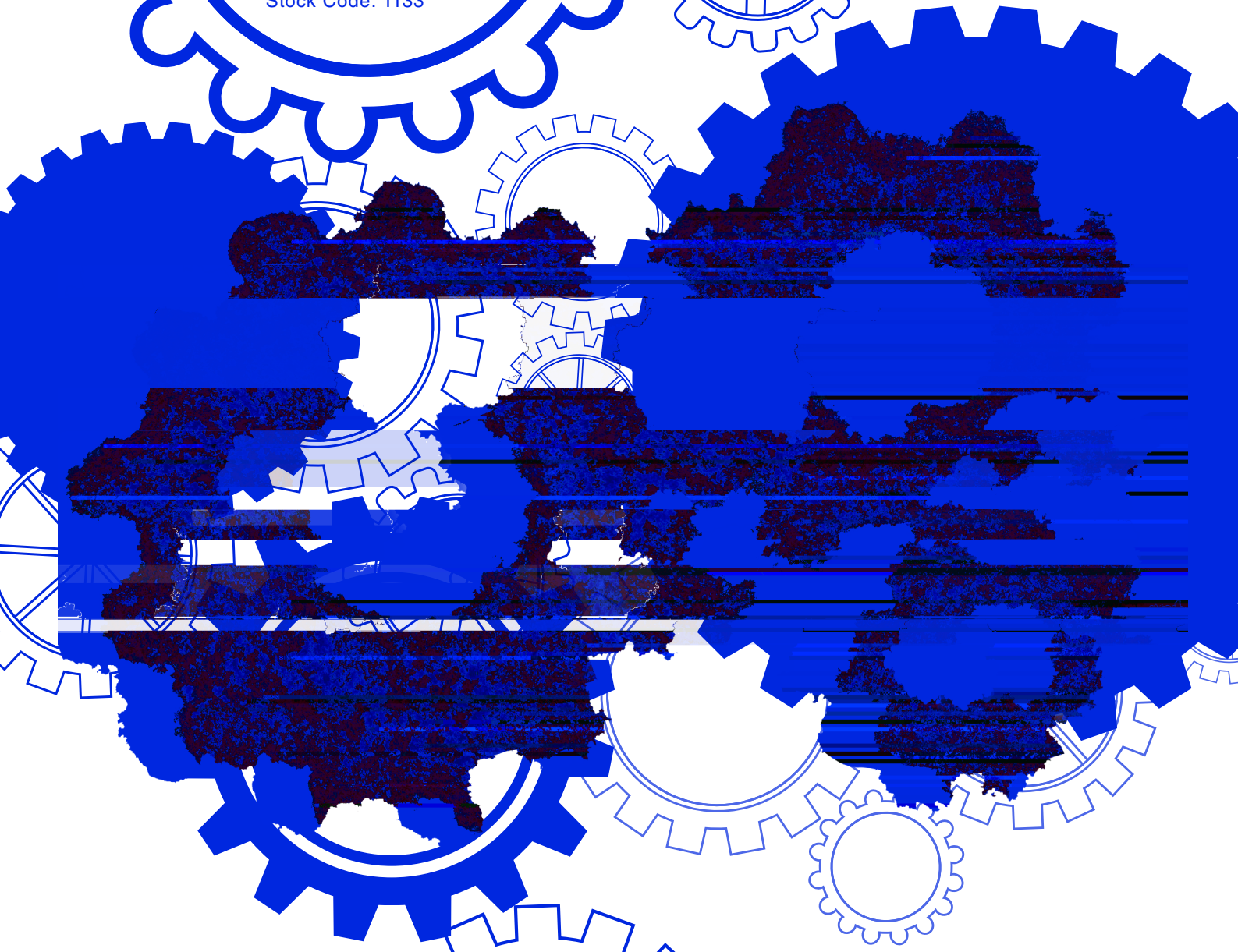
哈电集团
HARBIN ELECTRIC CORPORATION

哈尔滨电气股份有限公司
HARBIN ELECTRIC COMPANY LIMITED

Stock Code: 1133



2016
Environmental, Social and Governance Report

INTRODUCTION

This is the environmental and social responsibility report of Harbin Electric Company Limited (the "Company"), for the year ended 31 December 2016, which covers the Company and its subsidiaries (the "Group").

Focused on the construction of power station and integrated power station service, the Group is mainly engaged in the development of desulphurization and denitrification, desalination and solar power, and other new environmental protection projects mainly by coal and electricity, hydropower, nuclear power, gas and electricity, power kits and other energy power generation equipment. The Group has become the domestic power generation equipment, ship power equipment, electric drive equipment, an important driver of technological progress, and is stepping to it business vision of "building the world equipment manufacturing industry power carrier" gradually.

The Group strictly complies with the national laws and regulations and the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "Listing Rules"). In accordance with the Guidelines for Environmental, Social and Governance Reporting under the provisions of Appendix 27 the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "Listing Rules"), the Group assumes environmental and social responsibility while achieving values.

The Board of Directors of the Company assumes full responsibility for environmental, social and governance strategies and reporting.

The Group realized total operating revenue of RMB90.83 billion in 2016, an increase of 23.2% over the previous year, profit amounted to RMB681 million, an increase of 113.3% over the previous year. The performance of income and profit is good.

In 2016, the Company continued to realize its social responsibility of "Friendly environment, Warm Home", and initiated the development philosophy of "innovation, performance, service, openness and share". The Company made great efforts to implement "reduce capacity, reduce inventory, deleverage, reduce cost and improve weaknesses" and further implemented reforms of state-owned enterprises and supply-side reform. Amidst the main trend of implementation of social responsibility and the pursuit of customer satisfaction, the Company continued to increase economic benefit, strived to promote sustained and healthy development of enterprises, to maximize the interests of all stakeholders, and to promote the harmony between man and nature.

CONTENT

(1) VALUE OF OPERATION

1. Operating Results 3
2. Supply chain management 3
3. Product Liability 4
4. Anti-corruption 6

(2) WORKING ENVIRONMENT

1. Working Environment 7
2. Staff Health and Safety 9
3. Staff Development 10
4. Employee Care 10

(3) ENVIRONMENTAL PROTECTION

1. Emissions 12
2. Usage of Resources 14
3. Energy Saving and Emission Reduction Products 16

(4) SOCIAL PARTICIPATION

1. Responsibility management 17
2. Interested Parties 18
3. Community Contribution 21
4. Honour and Achievements 21

(1) VALUE OF OPERATION

1. OPERATING RESULTS

In 2016, the Group faced the challenging market environment head-on with its hardworking spirit and pragmatic attitude, and realized total operating revenue of RMB30.93 billion, an increase of 25.2% over the previous year, and monetary fund of RMB18.89 billion, a decrease of 0.8% over the previous year.

The Group mainly engaged in the domestic market to the main business, supplemented by the international market. International business is mainly distributed in countries like Pakistan, Ecuador, Turkey, Indonesia, the main assets are located in national regions, including the area of Heilongjiang and Qinhuangdao of Hebei, representing 98.33% of the total operating income domestically.

The Group realized RMB34.48 billion worth of duly signed contracts, an increase of 4.2%, of which international orders amounted to RMB16.87 billion (48.9% of all sales orders). In terms of Coal and electricity, we official signed with Shanxi Hua Ze Aluminum Co. Ltd construction, operation, transfer (BOT) project contract of 2 sets of 300,000 kilowatts of thermal power units environmental island ultra-low emission to achieve the integration of environmental protection island market development breakthrough; we continue to maintain plant hydropower units and pumped storage unit market competitive advantage; further consolidate the nuclear island evaporator market share of the leading position with the winning rate of 82.5%; in terms of gas, we signed Datang International Jinfan 2 sets of 9F B gas-steam combined cycle power station. We achieved remarkable results in the international market, Hassyan 4 × 600MW clean coal power plant project is the first time Chinese enterprises in the Middle East high-end market development investment projects. The signing of the general contract is another important milestone in the Group's entry into the field of electricity investment.

In 2017, the uncertainty of the international political situation increased, the global economic recovery was weak. China's economic situation slowed down steadily, making progress with stability, but overcapacity, demand structure upgrade contradiction is still prominent, supply side structural reform entered into the "deepening of the year". The state "three batches" and other policies continue to be introduced, the development of coal has entered into the winter. However, with the "Belt and Road" initiative, made in China 2025, development of new policies, new forms and new models, the fourth industrial revolution is coming soon, and the new development opportunities have been brought to the Group.

2. SUPPLY CHAIN MANAGEMENT

The supply chain management of the Group adopts a centralized and decentralized mode of operation. Some of the materials are purchased by the subsidiaries in accordance with the bidding and procurement procedures. Some of the materials are collected by the Group and gradually expanded to the properties of centralized purchasing. At the same time, giving full play to the functions of the tender center, we establish and improve the bidding system, and gradually expand the scope of the tender, standardize management and improve efficiency.

The Group has formulated the "Purchasing Authority Policy (Purchasing LEAF)", "Supplier qualification management approach" and other systems to standardize supplier management, adopt strict credit approval process, implement procurement tender transparency management, the employment of suppliers strictly follow the following processes:

(1) Strictly review the nominated suppliers' qualification, technical level, production capacity and other aspects according to the "supplier evaluation management control procedures", and include those passing the review in the list of qualified suppliers.

(1) VALUE OF OPERATION

(2) To select the qualified suppliers to purchase materials in the list of qualified suppliers, to fulfill the tender procedures, to issue a notice to than five qualified suppliers (special materials approved by the approval of the strategy, the bottleneck of the supply of materials can be more than three), to evaluate the organizational documents, to conduct tender review, and ultimately to determine the supplier based on a comprehensive review of the results and sign a procurement contract.

For some suppliers, the Group will review relevant information on its environmental and social responsibility. Review the process is as follows:

(1) It is necessary to provide the corresponding documents within one to three days in advance to review the requirements for the review of environmental management operations control procedures, social responsibility reports and their supporting documents. Those who fail to pass environmental certification or no social responsibility report require relevant documents on environmental management and social responsibility.

(2) Appointment of persons with environmental system qualification and business management experience to conduct onsite audits based on the documents they provide.

We held a supplier review meeting for 195 times and reviewed 967 suppliers. As at 31 December 2016, the Group had 4490 qualified suppliers.

Table 1 – The Group's suppliers divided by region

Region	Heilongjiang Province	North-east area	Other parts of the country	Overseas
Amount of Suppliers	1,155	451	2,577	357

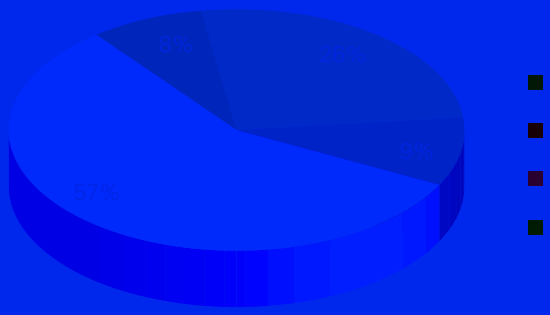


Chart 1 – The Group's suppliers divided by region

3. PRODUCT LIABILITY

With the rising demand for energy across the globe and the growing awareness of environmental protection, the promotion of clean energy has become a necessary trend, which has imposed new pressures and challenges on conventional power generating equipment manufacturing industry. In order to meet the target of reducing by the year 2020 the emission of carbon dioxide by 40%-45% as compared to 2005, developing power generating equipment running on high performance and clean energy has become a necessary trend for national power generating equipment. Among all the thermal power generating equipment in China, the coal-fired power generating equipment running on high performance and clean energy will be the mainstay in future while hydropower, nuclear power, hybrid power and wind power as well as solar power will enter a new development phase. The Group will adhere to the concept of sustainability and continue to step up its efforts in developing power generating equipment running on high performance and clean energy as well as new energy, synchronising the growth of the enterprise and the environment.

(1) VALUE OF OPERATION

The Group vigorously promotes the spirit of craftsmanship, encourages and reward technological innovation, skills innovation and service innovation. We signed a strategic cooperation agreement with a number of well-known domestic universities and research institutions. We increased funding and manpower input, worked together to develop the national power industry science and technology project, and jointly established a technological innovation system for the production of power plant equipment based on the combination of enterprises as the main body and the production and learning of research and development. In 2016, the Group applied for 515 patents and 416 patents, with a year-on-year growth of 19.2%, of which 149 patents were invented, up 41.84% year-on-year. Among them, the Company developed reheat boiler of 660MW ultra-supercritical secondary independent development of 300MW nuclear power plant reactor coolant pump and so on. Many scientific and technological achievements filled the domestic blank or got the international advanced level, making a positive contribution to the development of electric power equipment manufacturing industry.

Our customers are mainly power generation enterprises. The Group product generally go through 168 hours after the power plant installation is completed and put into commercial operation after being qualified. During the period of commercial operation, the Group will generally offer one year quality guarantee period. In 2016, zero quality accident occurred in the Group. No product was recovered for safety and health reasons. After receiving one complaint relating to product and services, the Group actively communicated with the customer to solve the problems existing in the products and services and obtains customer satisfaction.

The company will set up a special quality inspection department, which shall be responsible for the monitoring and measurement of incoming materials, processes and products including the monitoring and measurement of the supplier. Personnel engaged in surveillance and measurement must be trained and authorized. Results of the quality inspection department are prepared in accordance with the planning inspection and test procedures and test conditions, the provisions on inspection and testing program of each stage, should be a clear subject for inspection and acceptance of the project and the customer needs to establish records, etc., product design and process department should cooperate. The product shall be released to the customer and delivered to the customer after the product has been specified by all examinations and tests and the results comply with the requirements. The special circumstances must be approved by the authorized personnel and shall be approved by the customer to release the products and delivery services to the customer. Quality inspection department will establish and maintain records of monitoring and measurement, record can clearly show the product is in accordance with the requirements of all through the monitoring and measurement, record shows the right to release the product in order to delivery to the customer. When the product quality problems or quality accidents occur, the user service department immediately reports the relevant information back to the Group, and the technical professional division assessment and develops a corresponding technical program, the user service department will organize production, technical personnel to the site for repair, consultation or replacement.

The Group provides the products that meet the needs to users, and at the same time endeavors to provide them with timely and efficient services as well as solve their issues. To obtain first-hand information on the users' feedback, the Group paid its customers frequent visits in 2016. More than 240 feedbacks gathered from users were sorted out and analyzed in a comprehensive aspect to identify common issues. In this regard, the Group established measures for improvement to prevent recurrence of problems with an objective to ensuring that reply and solution were given against every single issue from users.

(4) VALUE OF OPERATION

4. ANTI-CORRUPTION

The Group has always attached great importance to strengthening the style of leading staff, and promoting the formulation or revision of 32 related systems by the respective enterprises. Combined of 1st discipline inspection of the same time, the Group always attaches great importance to the construction of anti-corruption system, strengthens the supervision within the party, adheres to the system of the right to put in express, revises 13 management system and the major decision-making and implementation measures for the supervision and accountability system, newly developed the discipline of the implementation of the regulation of party to build a clean government system of questioning "system of 8-items". In 2016, the Group carried out the special action to the grassroots level and ensured anti-corruption construction has been made clear about eight aspects of governance including "asking for financial support and labor from employees, assigning costs to them, demanding favors from them, withholding their money and stuff, intercepting their salaries and bonuses" by adopting the questionnaire, interview and discussion, individual conversation, introspection and a variety of ways, such as special inspection to promote the construction of anti-corruption to the side of broad worker masses, resolutely investigate and punish the crowd around the abuses and corruption "micro" problem.

In promoting system for punishing and preventing corruption, the Group carry out the honesty education for leading cadres and key positions and personnel, to advance the honest cultural construction, establish a commission for discipline inspection, lead participation of each department, supervising system and joint working mechanism, to integrate the anti-corruption work and operation management, and further improve the supervision system at the Company.

In 2016, there were zero cases of corruption in the Group.

(2) WORKING ENVIRONMENT

1. WORKING ENVIRONMENT

The Group adheres to its "people-oriented" principle of development, which emphasizes staff management, and has established various systems, including the "Staff Management System", "Labor Contract Management Measures", "Requirements on Labor Contract Termination" and "Implementation Measures for Paid Leave". It endeavors to create better working environment for its staff, and at the same time reduces exposure to labor employment risks, as well as efficiently eliminates the use of child and forced labor. For the irregularities, once discovered, all in accordance with the "company employee's reward and punishment system" and other relevant provisions for serious, 2016 the Group did not violate the situation. In the case of the violation, the Company has deal with it in line with Employee Rewards and Punishment System in 2016. There was no violation in 2016.

The Group is implementing the five-day week and eight-hour day working arrangement. Their staffs members enjoy all holidays set by the State and local governments and are entitled to paid leaves ranging from 5 to 15 days, depending on their years of service. Staff of the Group is entitled to "5 Insurances and 1 Fund" and other benefits. The Group has also established the supplementary pension system to provide better assurance to our staff.

The Group is implementing a master budget management regarding staff remuneration, which constitutes a performance-based reward system that can effectively motivate the staff to make positive contribution to the Group. The Group has established various systems whereby the remuneration of the management is linked to the Group's performance, forming a floating mechanism for the remuneration of the management.

As at the end of 2016, there were 16,363 employees in the Group, including 2,205 senior titles, 59 doctorate and postdoctoral students, 1,445 postgraduate students and 5,405 undergraduates. In 2016, the ratio of local managers to local managers is 100%, the proportion of women in management was 4.83%, ethnic minorities make up 3.3% of the workforce.

As the end of 2016, among the Group's 3,352 various types of professional and technical personnel, there were 2 with the Chinese academy of engineering, 4 "one thousand plan" experts, 4 "gaoeschen project" national person for people, 196 state council special government allowances, 19 provincial government special allowance experts, 11 ethnic autonomous experts, 36 technical experts, in 10,567 workers, past personnel, more than 6,244 skilled workers or higher skilled personnel 4,555 people, among them, 7 Chinese skills award, the national technical experts 18 people, 41 are highly skilled experts, 325 senior technicians, 1,051 technicians and 3,190 senior workers.

In 2016, the group has a total of 42 highly skilled experts and 3 other technical experts. Thirty people are rated as experts in the country's "plan for people", 1 person won the Chinese skills award for the first time, three people have won national technical experts. There are 270 students on campus, including eight from Tsinghua University.

(2) WORKING ENVIRONMENT

In 2016, the composition of the group is as follows:

Table 2 – Staff Situation of the Group (By profession and education)

By profession	Amount	By education	Amount
Enterprise management personnel	4,215	Doctor	50
Technical personnel	4,141	Master	5,445
Front-line production staff	5,109	Undergraduate	8,405
Auxiliary production personnel	4,736	Junior college	3,568

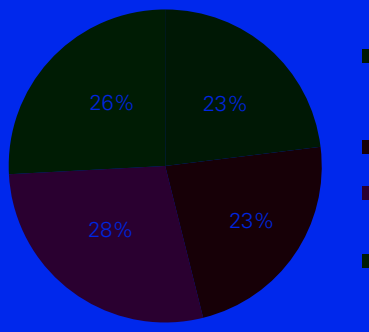


Chart 2 – Staff Situation of the Group (By profession)

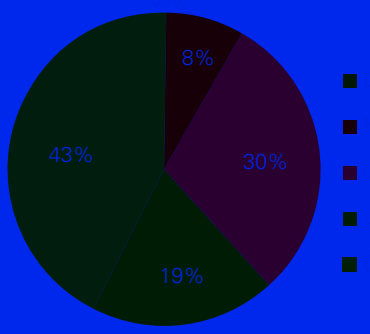


Chart 3 – Staff Situation of the Group (By education)

Table 3 – Staff Situation of the Group (By gender, age and district)

	By gender		By age			By district	
	Male	Female	Under 30	30 to 45	45 to 60	Heilongjiang Province	Other parts of the country
Amount of participation	14,611	5,456	3,761	7,665	8,635	12,153	7,857
Employee turnover	112	52	72	51	8	46	45

(2) WORKING ENVIRONMENT

In 2016, the Group lost 130 people, and the annual turnover rate of the enterprise was 0.71 percent, which was mainly the graduation of graduates within five years of graduation.

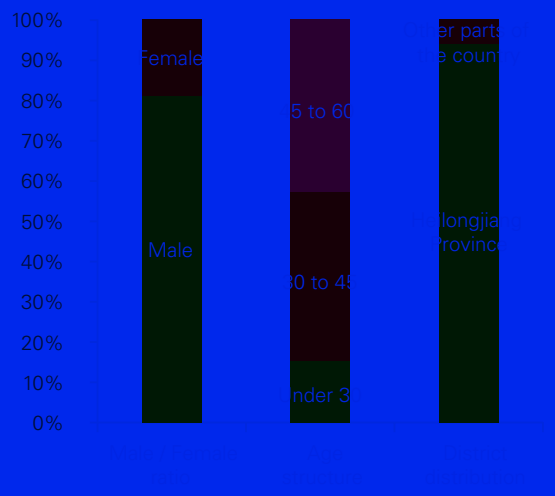


Chart 4 – Staff structure of the group

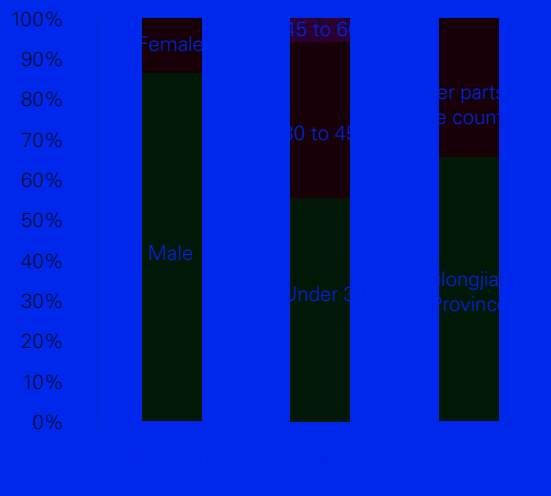


Chart 5 – Employee turnover of the Group

2. STAFF HEALTH AND SAFETY

The Group attaches great importance to the health and safety of our staff members. Each subsidiary has set up a regulatory system for production safety and occupational diseases prevention and control. Specific department is assigned to oversee the safety in production, striving to create a safe working environment for the Group's staff members and keep them out of occupational health hazard.

The Group is effectively operating the Occupational Health and Safety Management System (OHSMS 18000) and Environmental Management System (ISO14000), insisting on the policy of "placing safety at top of the priority list, taking precaution as the main task and providing comprehensive treatment". We continue to emphasize major responsibilities in ensuring production safety. Promotion, education and training on production safety were commenced extensively. News staffs will receive safety education and they join our Group. We continued to work on meeting the targets of standardization of production safety and established sound mechanisms on contingency and reaction for overseas safety issues for foreign investment cooperation. Comprehensive inspections on production safety are performed regularly to eliminate any potential hazards in a timely manner. Generally, the Group arranges regular medical checkups for staff members once every year. For those who work under harsher environment, the items checked and frequency of checkups will be increased accordingly and treatment are regularly organised to minimize occupational threat to their health. These have enhanced our level of occupational health and safety and environmental management.

In 2016, the Group inspected a total of 2,186 potential safety hazards, and the rectification rate reached 99.9%. All emergency drills were held with 2,931 attendances. The Group invested RMB14.16 million on safety investment and the amount of participants of safe safe production training reached 78,199. In 2016, no death and serious injury cases in relation to safe production occurred in the Group. There were 35 slight injury incidents with 35 employees suffering from slight injuries. Rate of work injury lowering a thousand workers was 0.75%. The status of production safety remained stable. The overall efficiency for safety and environmental protection was further enhanced.

(2) WORKING ENVIRONMENT

3. STAFF DEVELOPMENT

The Group attaches great importance to the professional development of employees and develops a series of systems, such as the staff training management system, to provide institutional guarantee for the development of employees and corporate growth. Employees can be developed in two ways according to their ability of work. One is to promote the management position, and the other is to improve the professional technical position. The Group has established the chief specialty division and director of the diverse employment, evaluation and management of the interim provisions on "technical experts (chief technical expert assessment, evaluation and management of the interim measures of the highly skilled experts to assess the assessment and management of the interim measures for the related system, encourage good employees to prefer official posts to a learning one.

In 2016, the Group continues to focus on building a high quality, high technology and skilled personnel, carry out various training for 80,212 persons, and have produced a large number of skilled, skilled talents.

Table 4 – Training of staffs of the Group

	By gender		By position level		
	Male	Female	Senior management	Mid-level management	General staff
% trained	99.5%	99.5%	100%	100%	99.5%
Average training hours completed	45	45	110	90	40

4. EMPLOYEE CARE

(1) Employee Remuneration

The Group adopts total wages budget management, and on this basis, intensifies efforts to design the reform, realize "available for increase and decrease", to motivate employees, stir staffs power and vitality, adheres to the performance evaluation, improves the total payroll regulation and management measures, and strictly implements the total wage and assessment benefits. We will deepen the compensation system, formulate and fully implement the reform plan for the distribution of remuneration and strive to tilt the key to technology, management and production. We will actively explore incentive mechanisms such as performance dividend, project dividend, equity incentive, etc. We will promote the reform of the personnel system, further reduce the total amount of labor and optimize the structure of the workforce, and comprehensively complete the total amount of labor and the target of labor cost control, so improve the compensation system of the responsible person to further study the new situation and new problems in the compensation of the responsible person in the return of the business plan, and to establish a corresponding standard mechanism for the distribution of compensation.

(2) Employee Benefits

According to the state regulations, the Group will implement paid leave related policies to encourage employees to take paid leave. The proportion of enterprises participating in unions employees is 100%. The enterprise is to pay for the personnel of all kinds of endowment, medical treatment, unemployment injury, childbirth and unemployment, being five social insurances. The social insurance coverage reaches 100 %. The Company has revised the occupational disease indicative management system and plan to fail and organized employees to carry out occupational health examinations, and the amount of occupational diseases in the whole year was zero.

(2) WORKING ENVIRONMENT

With a view to establishing a sound and well-structured pension system and providing better assurance to a quality retirement for our staff as well as enhancing the cohesion and competitiveness of the Group, the supplementary pension system has been established since 2007, with its investment operation commenced in October 2008. The Group earnestly performed its duties in the monitor and management of the supplementary pension system, which led to the satisfactory return of the overall operation and the better risk control of the pension system. As of 31 December 2016, the amount of personnel in the Group, who participated in the supplementary pension system has reached over 20,000 with nearly 5,000 staff entitled to the payment of the supplementary pension system.

(3) Employee Interests

(i) The Group effectively protected the lawful rights and interests of the staff. By strictly complying with the "Trade Union Law" and procuring the implementation of the "Factory Democratic Management Manual", two levels of staff representatives were able to fully perform their duties, which enabled the staff to bring the democratic rights into full play. We also implemented equal negotiation, collective contracts and labor disputes settlement system, and the signing of labor contracts with staff according to the laws and the performance of staff contracts. The staffs are entitled to the guarantee for "5 Insurances and 2 Pensions", with a 100% of both the signing rate of labor contracts and coverage of the collective contracts.

(ii) The Group carried out the quality staff project. It also increased the effort of staff training by extensively holding working skill competitions and on-job trainings. The Group also implemented strategic activities, such as the "Quality Staff Project" and the "Talking Scheme for the Blue-collar Workers", and also established the "Technicians' Association" and the "Study Group" platforms respectively for the staff.

(iii) The enhancement of safe production and protection of occupational health. The Group has a well-established system which strictly executes the national regulations and standards. We also educate our staff to ensure the effective implementation of quality and safety standardization and the occupational health and safety management system. The Group protects and cares for the health of our female staffs. We have medical insurance cover for female staff every year in have body check-ups. We also improved the staff's working and living environment and such that the annually loss of accidents has come down annually.

(4) Employee Care

The Group has made efforts to promote the social responsibility of enterprises in accordance with the law, to protect the legitimate interests of enterprises and employees, so that the decision-making, management is conducted orderly in line with business norms. The Group establishes a performance-oriented pay distribution mechanism to provide employees with competitive pay and pay attention to the protection of employees' privacy, information, adhere to the implementation of the staff systems, upheld democratic management. For the part-time, dormitory, labor dispatched workers and other employees, strictly abide by the relevant management according to law. All salaries are based and equal pay for equal work. At the same time, the Group focuses on guiding employees' healthy psychological patterns and behaviors, and practices the spirit of enterprise culture through organizing staff culture and arts festival. On 14 January, the Group held the 4th literary performances and the "Spring Cultural Art Festival". The Group held successively, first staff sports meeting on 26 August, from the special lectures on revolution, diversion, and a total of more than 10,000 entries and workers participated in the activities. In addition, the Group of workers related projects and related studies, body and mind, the related contractor, progress and the second venture.

(3) ENVIRONMENTAL PROTECTION

1. EMISSIONS

The Group strictly follows the Environmental Protection Law of the People's Republic of China, the Comprehensive Work Program for Energy Saving and Emission Reduction in the 13th Five-Year Plan Period and other national laws and regulations, always concerns itself with environmental protection and works on energy saving and emission reduction, and has formulated management measures concerning energy saving and emission reduction of Harbin Electric Corporation and relevant systems. We actively assume social responsibility to reduce water, air and noise pollution.

In 2016, the Group continued to proceed to the implementation of sound management of energy saving and emission reduction, and strengthen its own energy saving during the course of production and operation in an effort to reduce the energy consumption of the Group's production and operation.

In particular, the Group (1) continued to capture the implementation of construction projects of energy saving and emission reduction, and follow up the progress of the construction projects regularly in order to ensure the capital investment. We have effectively reduced the energy consumption and pollutant emissions through project implementation; (2) earnestly implemented the energy efficiency improvement plan for motors through the promotion of using motors with high efficiency and vigorously commenced the replacement of obsolete motors, so as to gradually carry out the upgrading proposals for energy saving of motor systems; (3) strengthened the establishment of management system. The Group passed the certification of environmental management system, which further enhanced the scientific and standardized management and thus the management level was effectively promoted; (4) by capitalizing on the opportunity from "Energy Saving Promotion Week" and the "Low-Carbon Day", carried out various promotional and training activities in respect of energy saving, which further increased the staff's awareness of environmental protection; (5) put more effort on energy management assessment through clearly setting up the distinct assessment indicators for different levels and monitoring the satisfaction level of such indicators strictly; (6) further carried out clear guardation activities such as providing maintenance and repair for equipment with high level of energy consumption to ensure the efficient operation of such equipment and enhanced its equipment's energy efficiency; (7) strictly complied with the wastewater discharge standards by adopting the water circulating technology to save water resources and reduce pollutant emissions for any production process involving vast amount of water; and (8) effectively carried out energy saving construction projects by applying the centralized energy management model to reduce its capital investment and save energy consumption.

(3) ENVIRONMENTAL PROTECTION

In 2016, the Group's prevailing environmental equipment operated stably, with a performance rating of over 98%. Calculated by the national standard for material balance, each of the annual emission of SO_2 (21 tonnes), COD (Chemical Oxygen Demand) (219 tonnes), nitrogen oxides (21 tonnes), ammonia nitrogen (18 tonnes), CO_2 (903,468 tonnes) and CO_2 per ten thousand Yuan output value (0.16 tonne) complied with the respective national standards.

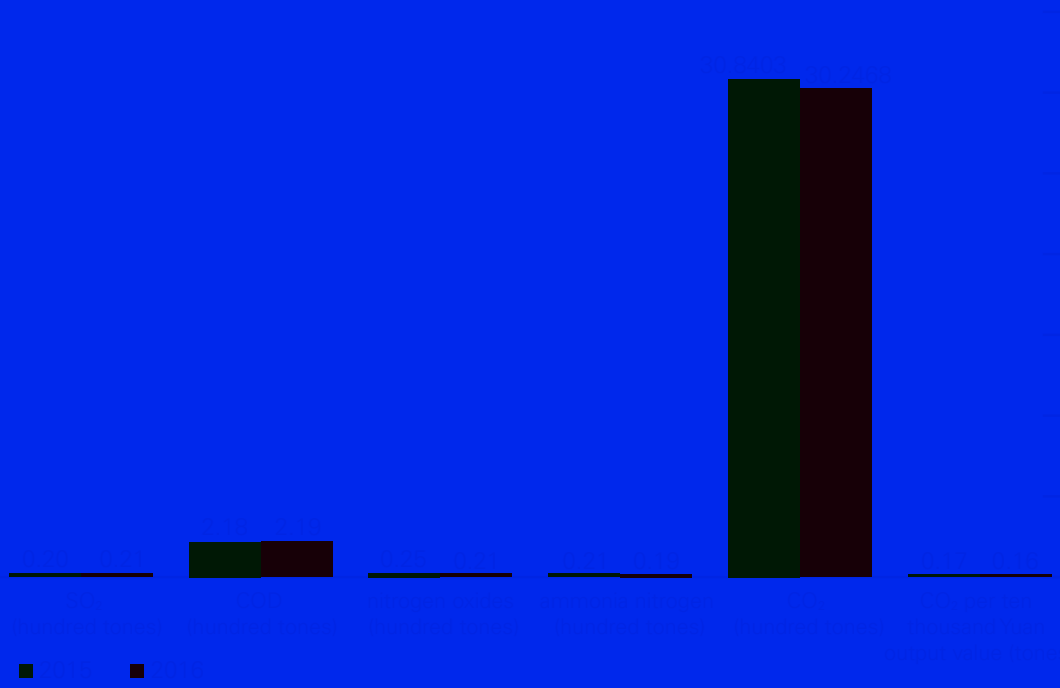


Chart 6 - Pollutant Emissions of the Group

Note: The Group's CO_2 emissions in 2016 was calculated with reference to the Measurement Method and Reporting Guide of Greenhouse Gases Emissions of the Thermal Power Industrial Enterprises (Trial Implementation) [2013] No. 1723 promulgated by National Development and Reform Commission of the People's Republic of China and the CO_2 emissions disclosed in 2015 Environmental, Social and Governance Reporting Guide. Specifically calculated based on the standard fossil fuel used, which is inconsistent with the methods set out in 2015 Environmental, Social and Governance Reporting Guide. Report as disclosed in 2015. For comparability purpose only, CO_2 emissions in 2015 was referenced by comparable latest measurement method.

The Group has rigorously complied with environmental protection regulations regarding the disposal on, transfer and disposal as well as contingency plan of hazardous wastes. It has standardized and enhanced the environmental management of hazardous wastes by engaging operators holding valid license for processing hazardous wastes and electronic wastes. In 2016, the aggregate amount of hazardous wastes produced by the Group was 2,091 tonnes with a 100% disposal rate.

The Group reuses non-hazardous wastes adhering to the principle of reusing the most use of them. In 2016, the aggregate amount of non-hazardous wastes produced by the Group was 5,063 tonnes with a 100% disposal rate.

The Group has always been paying close attention to the environmental protection issues. As the Group continued to put more effort on energy saving and emission reduction and strived for better protection of our environment, no environmental incidents occurred in 2016.

(3) ENVIRONMENTAL PROTECTION

2. USAGE OF RESOURCES

The Group strictly abided by the PRC laws and regulation regarding environmental protection and has established "Energy Management System", "Rewards and Punishment Assessing Measures for Single Major Energy-consuming Equipment", "System for Measurement Management", and "Energy Management System for Outsourcing Users", and strictly implemented the above-mentioned measures during our production process. Entities under the Group firmly carried out the "Three Simultaneously (三同時)" policy, focusing on the establishment of environmental system and standardization of the management of hazardous wastes by firmly deal with and rectified any behavior which was not in compliance with relevant regulations and laws and inspecting any potential environmental hazard. It controlled the source of pollutant and strengthened specially on the management of major source of pollutant by installing online automatic monitoring equipment on the source of water pollutant, as a result, pollutant discharge meets standard. The Group has rigorously formulated the non-hazardous treatment and the declaration, transfer and disposal of hazardous wastes. It has standardized the environmental management of hazardous wastes by engaging qualified units for processing hazardous wastes and electronic wastes. Environmental publicity and trainings have been actively carried out to raise the environmental protection awareness of our employees and form a sound atmosphere for protecting the environment. There were no environmental issues occurred in the Group in 2016.

The Group earnestly implemented its responsibility for energy saving and emission reduction, quickened the internal management and further explored internal energy saving potential and improved and promoted the implementation of Occupational Health and Safety Environmental Protection Management Scheme, Group Energy Plan Outline and Environmental Management and Operation Control Procedures. We gave publicity to the national energy saving and emission reduction policy and promoted advanced experience and practical technology. To popularize basic information of energy saving and emission reduction and form sound atmosphere within the Group, office automation system was used for the distribution, government review and approval and application for vehicles online to reduce carbon emission, measures such as turning off lights when leaving and saving water were taken to reduce energy consumption; besides, we followed "one vehicle day" actually and transported via rail as well as built Qinghuangdao Seaside Heavy Duty Workshop to reduce car external emission. Also environmental protection standards for technology of products and materials to be purchased could be clearly listed in the tender file of the central procurement projects, which emphasizes to give preference to products with efficiency label, green water-saving certification and environmental protection signs to effectively reduce the use of over packaged and disposable goods. The Group has no non-compliance regarding environmental protection in 2016.

The major raw materials required by the Group are steels and non-ferrous metals. By continuously improving our designs and techniques to increase utilization rate of materials, the Group's utilization rate of major raw materials was 89% in 2016. The Group's packaging materials vary with the size and transportation needs of our products and mostly are disposable goods. Due to the high recycling costs, their consumption cannot be measured by standardization.

(3) ENVIRONMENTAL PROTECTION

As regards energy consumption, water and resources used by the Group and industrial products which have no significant influence on the natural resources, hence there are no issues on water access. Located in Harbin, the Group has abundant access to water resources and other energy. Subject to energy saving and emission reduction and water saving, there are no other restrictions on the use of water and energy resources. Throughout 2016, the Group has consumed 5 thousand tons of raw coal, 147.54 million kWhour of electricity, 21.32 million m^3 of natural gas and 566 tons of petroleum. Thus, the aggregate amount of energy consumption was 15,795 tons of standard coal and the aggregate consumption per ten thousand Yuan output value was 0.03 tons of standard coal. The amount of new water for industrial use was 1,615,467 tones and the water consumed per ten thousand Yuan output value was 0.5 m^3 with a year-on-year decrease of 18%.

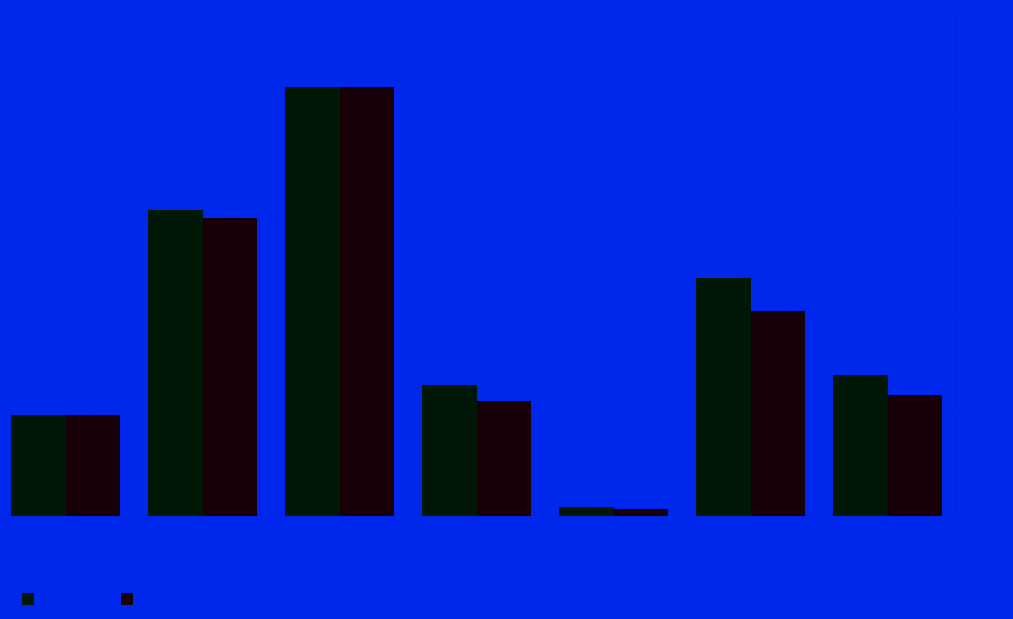


Chart 1 – Energy Consumption of the Group

The Group adheres to the social responsibility of maintaining a "harmonious environment and friendly relationship" and attaches high importance to the impact of our business on water, the environment and natural resources, striving for harmonious development of mankind and the nature and resolutely eliminating environment and resources pollution and destruction. In 2016, the Group did not incur any issues of environment pollution or accidents and the

(3) ENVIRONMENTAL PROTECTION

3 ENERGY SAVING AND EMISSION REDUCTION PRODUCTS

The Group focused on the establishment of a comprehensive and scientific research system and put more efforts into the implementation of scientific and a series of energy saving and emission reduction policies and measures by advocating green technology and energy saving philosophy, so as to enhance the construction of low carbon industrial chain and promote sound and sustainable development of enterprises. On one hand, we strive for the application of advanced technology, equipment and obsolete outdated production capacity; on the other hand, we optimize product mix, actively develop high efficiency, clean, energy saving and environmental power generation assembly to vigorously develop water, electricity and nuclear power and other clean energy. The Group's proprietary double reheat technology achieved remarkable results in term of energy saving and emission reduction. The power supply coal consumption of 1,000MW ultra-supercritical generating unit adopting this technology was approximately 272 g/kWh, representing a decrease of approximately 12 g/kWh as compared to the ordinary 1,000MW ultra-supercritical generating unit. Based on an annual utilisation of 5,000 hours, each 1,000MW generating unit can save standard coal of 72,000 tons per year and directly reduce carbon dioxide emission of nearly 200,000 tonnes, which represents prominent advantages in energy saving and environmental protection and sound economic efficiency, social efficiency and low carbon efficiency.

The Group's environmental protection business mainly includes centrification, dust removal and desulfuration business as well as low carbon flame and boiler optimization and upgrade. Centrification products cover 135MW to 1,100MW units with accumulated capacity of over 100 million kWh made by Tycoon enterprise of centrification industry in the PRC, which were highly appraised by users as each indicator of low nitrogen burners and boilers performance perfection and transformation project it undertaken was superior to the guaranteed value. In 2016, the Group won the bidding of 2×300MW generating units ultra-low carbon emission BOT project of Shanxi Huaze Aluminum & Power Co., Ltd., successfully signed the first comprehensive Environmental Protection Island BOT Project in the PRC and successfully achieved the first desulfuration ultra-low emission results for Taoluone 1×320MW+2×630MW desulfuration ultra-low emission reconstruction EPC project. Meanwhile, the Group has successfully entered into the ultra-low emission reconstruction market, which filled the performance gap of the desulfuration ultra-low emission reconstruction EPC project.

(4) SOCIAL PARTICIPATION

1. RESPONSIBILITY MANAGEMENT

The Group is progressively reinforcing its corporate responsibility management by adopting effective measures consistently to enhance corporate responsibility awareness. The Group also constantly disclosed relevant information to the public while performing its own social responsibilities. The Group endeavored to achieve its concept of "Friendly environment, Warm Home".

(1) The Group nurtured and gradually incorporated the concept of corporate social responsibilities into different areas of production and operation of the corporation. Over the years, the Group has made significant commitment in electric power construction of China. Meanwhile, it has also set a model of performing the corporate social responsibilities and its social responsibility management standard has continuously enhanced. The new concept of "Friendly environment, Warm Home" introduced by the Group provided principles to support the constant progress in performing corporate social responsibilities. The Social Responsibility Committee 社會責任工作委員會 was established to construct framework for the corporate social responsibility management system. Through organic integration of the concept of social responsibilities with corporate strategies, corporate culture and corporate operation, the framework became an important way to improve the capability of the corporate to perform social responsibilities.

(2) The Group established a fundamental platform for the communication with interested parties, which improved public image and presence of the corporation. The Group maintained instant communication with interested parties through issuing documents such as "Environmental and Social Responsibility Report", and timely disclosure of important information, to accomplish its social responsibilities giving to interested parties (such as shareholders, employees, users, media and the community) and natural environment. The above effort showed dedication of the Group to create "Friendly environment, Warm Home".

(4) SOCIAL PARTICIPATION

2. INTERESTED PARTIES

Table 5: Issues concerning interested parties of the Group and measures implemented

Interested Parties	Key issues of interested parties' concern	Response and measures of the Company
Shareholders	Persistently increasing profitability; Maintaining good credit rating; Enhancing core corporate competitive strengths;	Regularly disclosing relevant operational information; Convening regular general meetings
Regulatory bodies	Ensuring maintenance and appreciation of assets; Following macro-economic control policies of the state; Ensuring the observance of laws and integrity in operations	Interpreting, publicizing and implementing state policies and regulations; Implementing strict risk control and assessment; Achieving strategic operation goals
Government	Ensuring tax contributions; Creating job opportunities; Providing guarantee for equipment of significance that facilitates the development of industries in China	Paying taxes in accordance with laws; Providing job placement assistance to discharged soldiers and the disabled by organizing recruitment activities; Establishing specialized institutions to respond to environment policies and measures
Users	Timely delivery; Good performance and reliable quality of products; Good after-sales services	Conducting satisfaction surveys; Acting on the philosophy of "Quality Reigns Supreme"; Holding industry forums; Organizing seminars for users
Suppliers	Building a long-term and stable supply chain; Realizing a win-win situation	Building a long-term and stable supply chain; Realizing a win-win situation

(4) SOCIAL PARTICIPATION

Interested Parties	Key issues of interested parties' concern	Response and measures of the Company
Employees	Fully satisfying their rights and interests; Fully protecting their personal health and safety; Establishing systems for personal capability enhancement; Effectively implementing democratic management and enforcing democratic rights	Providing systematic general body check for employees and regular body check on occupational diseases; Standardizing the management of employment contracts, promoting an equality-based corporate culture, setting up a fair recruitment system and providing guarantee for employees' remuneration and benefits packages; Providing training programmes for staff at different levels and divisions and commencing technical challenging activities for different positions to offer opportunities and platforms of advancement for staff; Convening meetings for representatives from the Communist Party of China and staff and implementing the resolutions passed thereat, establishing Staff Day to safeguard the legal interests of the employees
Business partners	Exchanging ideas and cooperating mutually; Ensuring strategic cooperation; Complementing one another; Sharing information	Signing strategic cooperation framework agreements and strategic agreements; Arranging visits and exchanges between senior management of both parties; Holding conferences on specific subjects in the industry; Joining industry associations
Community	Supporting economic development and social advancement of local community; Supporting charitable activities of the community	Supporting community construction, initiating activities for the community, establishing community centres and serving the residents of the community

(4) SOCIAL PARTICIPATION

Interested Parties	Key issues of interested parties' concern	Response and measures of the Company
Society	Participating social activities; Supporting the establishment of a harmonious society; Building volunteer teams and performing relevant works	Employees of the corporate being elected as representatives of the Communist Party of China, National People's Congress and Chinese People's Political Consultative Conference; Actively procuring social responsibilities by actively performing social responsibilities in associations or organizations of various professional fields; Performing the duties of a founder when establishing non-governmental organizations; Releasing information regarding the performance of social responsibilities in a timely manner; Building volunteer teams to participate in community services; Maintaining national security and social stability
Environment	Reinforcing conservation of resources and environmental protection; Planning and implementing contingency plans for environmental incidents	Promoting self-initiated innovation and technology advancement, manufacturing and promoting the researches and development of highly efficient and environmental friendly products and clean energy; Conducting environmental assessment for new investment projects
Media	Supporting the media; Maintaining information transparency; Maintaining the communication with the media	Establishing a solid system of spokesman and behavior; Releasing information through the group's website; Providing information for the media actively

(4) SOCIAL PARTICIPATION

3 COMMUNITY CONTRIBUTION

Maintain community stability and promote community harmony. The Group consolidated internal resources in accordance with the national and local laws and regulations and carried out reform of collective enterprises and corporations with management difficulties orderly, which maintained the stability of the enterprise and the place in which it operates. Meanwhile, the Company pushed forward the construction and operation of union mutual funds and charity funds from Party members and encouraged our employees to participate in public welfare activities and contribute to the society, so as to enhance their recognition of the society and enterprise as well as sense of belonging. We have also driven harmonious and sound development of the community through voluntary activities such as kindergarten education, medical service and aiding the poor areas. For years, the Group actively cooperated with the air defense, armed forces, civil defense and the "two advocacies" of Harbin, Heilongjiang Province and strived for contributing to regional military and civilian developments, which were recognized by the Civil Affairs Bureau and Civil Air Defense Office of Harbin. The Group had no negative publicity regarding social community in 2016.

We achieved outstanding performance in poverty alleviation activities. In active support of the policy of the Central Government and the State Council, the Group has invested an accumulated amount of over RMB1 million to the poverty alleviation activities specially arranged for the residents in Wenshan City of Yunnan Province. Key projects for village construction with major contents regarding "Infrastructure, Four Supporting, Redevelopment of Endangered Houses" were organized and implemented in Xinping Xinchai Village under Xinchai Village Committee of Xigu Township of Wenshan City, which effectively improved the production and living environments of 52 families with a total of 222 poor villagers. In 2016, the Group selected two cadres to take temporary posts as the vice mayor of Wenshan City and the first secretary of Dayuan Community, respectively. Villagers "Wolong Street" respectively. Both cadres were committed to performing their duties and achieved sound results, making an important contribution to quickening the pace of poverty alleviation in poverty-stricken areas.

4 HONOUR AND ACHIEVEMENTS

On 30 March, the first 300MW nuclear power plant reactor coolant pump in the PRC, which itself developed by the Group, has successfully passed the China Machinery Industry Federation test.

On 7 June, China Machinery Industry Association of Safety and Health held the 7th session of the third representative meeting. Harbin Electric Machinery Company Limited, an entity under the Group, won the prize of "Safety Promotion Advanced Enterprise" in China Machinery Manufacturing Industry".

On 8 December, the 10th session of outstanding talents award ceremony was held at Beijing and 4 employees of the Group won a prize.

On 11 December, press conference of the highest award in industrial circle of the PRC - Fourth Session of China Industry Award was held at Beijing. "Guoneng Zhaoyang coal ultra-supercritical boiler research and engineering application demonstration" of Harbin Boiler Company Limited, an entity under the Group, won the champion in China Industry Awards, and was the only corporation winning the award in the industry, and topped the nuclear power equipment field again.