

HUANENG POWER INTERNATIONAL INC  
Form 6-K  
April 19, 2018  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

Report of Foreign Private Issuer  
Pursuant to Rule 13a-16 or 15d-16 of  
The Securities Exchange Act of 1934

For the month of April 2018

(Indicate by check mark whether the registrant files or will file annual reports  
under cover of Form 20-F or Form 40-F.)

Form 20-F  Form 40-F

(Indicate by check mark whether the registrant by furnishing the information  
contained in this form is also thereby furnishing the information to the  
Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.)

Yes  No

(If "Yes" is marked, indicate below the file number assigned to registrant in  
connection with Rule 12g3-2(b): 82-\_\_\_\_\_.)

N/A

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This Form 6-K consists of:

1. A copy of environmental, social and governance report of Huaneng Power International, Inc. (the “Registrant”);  
and
  2. A copy of 2017 annual report of the Registrant filed with the Hong Kong Stock Exchange.
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## Report 1

## CONTENTS

1	Chairman’s Statement	02
2	About Us	03
2.1	Company Profile	04
2.2	Corporate Governance	04
2.3	Development Strategy	05
2.4	Company Philosophy	07
2.5	ESG Responsibility Management	07
2.6	Table of Key Performance Indicators in 2017	10
2.7	Stakeholder Engagement and Identification of Material Issues	13
	2.7.1 Information about and Communication with Stakeholder	13
	2.7.2 Processes of Identification of Material Issues	14
3	Industry Hotspot	15
4	Stable Supply and Regulated Operation	17
4.1	Intensive Guarantee of Power Supply Stability	18
4.2	Lawful Enterprise Management	20
	4.2.1 Reinforcement of Anti-corruption	20
	4.2.2 Protection of Intellectual Property Rights	21
5	Environmental Protection and Green Development	22
5.1	Speeding Up the Development of Clean Energy	23
5.2	Unwavering Commitment to Scientific and Technological Innovation	26
5.3	Energy Conservation and Emissions Reduction	29
	5.3.1 Overall Planning	29
	5.3.2 Energy Consumption Management	29
	5.3.3 Water Resources Management	31
	5.3.4 Emissions Management	35
	5.3.5 Noise and Other Environmental Impacts	42
6	People-Oriented Safe Production	43
6.1	Promoting the Intrinsic Safety System	44
6.2	Establishing a Sound Safety Management Mechanism	46
6.3	Implementation of Effective Safety Measures	46
6.4	Protecting Occupational Health and Safety	50
6.5	Continuously Improving Safety Awareness and Skills	50
6.6	Comprehensively Regulating Outsourcing Management	51
7	Fostering Solidarity and Growing Together	52
7.1	Equal Employment and Equity Protection	53
7.2	Employee Training and Career Development	55
7.3	Happy Work and Happy Life	57
8	Creating a Win-Win Situation and Giving Back to Society	59
8.1	Continuously Enhancing Supplier Management	60
8.2	Building Harmonious and Stable Relationships with Clients	61
8.3	Fulfilling Corporate Social Responsibility	62
9	Going Global and Moving Forward	66
10	Looking Forward and Overcoming Challenges	71
11	Appendix	73
	11.1 About this Report	73
	11.2	74

Contents Index of Environmental, Social and Governance  
Reporting Guide of Hong Kong Exchanges and Clearing  
Limited

11.3	Contents Index of G4 Sustainability Reporting Guidelines of Global Report Initiative	77
11.4	Readers' Feedback	82

#### Chairman's Statement

2017 has seen the deepening of supply-side structural reform and was an important year for China's 13th Five-Year Plan at a time when Huaneng International has developed itself into a global leading public power company.

As a responsible enterprise citizen, Huaneng International has persisted in the environment protection concepts of "energy conservation, emission reduction, and clean development", initiatively practice national target responsibility of energy conservation and emission reduction, consolidated its leading position in clean and efficient conventional energy, vigorously developed new energy, persistently reduced resource consumption and pollutant emission, and enhanced efficiency of energy use, put the concept of "focus on science, technology, and environment protection" into all aspects of our work. In 2017, Huaneng International has continued to intensify its energy conservation and emission reduction, fully implementation the ultra-low emissions and exceeded our target for reducing unit power consumption in power generation, uninterruptedly diminished emissions of sulphur dioxide, nitrogen oxides, soot and other pollutants, and made due contributions for the environmental, social and economic development.

As a responsible enterprise citizen, Huaneng International always adheres to the production safety principles of "people first, safety first, prevention first, comprehensive management", conscientiously implements state policies on enhancing production safety, rigorously complies with policies and measures relating to the reform and development of the production safety field, and proactively practices the responsibility system for safety in production to cement the foundation for strengthening responsibilities. In 2017, we successfully delivered on our service guarantee promises during the 19th National Congress of CPC, the "two sessions" and the Belt and Road Summit.

As a responsible enterprise citizen, Huaneng International has insisted on harmonious development concepts of "serve the Country, benefit society, seek multilateral benefits and develop together", and is committed to working with stakeholders to promote economic and social development. In 2017, through close cooperation with stakeholders, as well as thorough consideration of and effective response to their demands, Huaneng International has strived to bring about mutual benefit, create shared values, enhance our operating capacity and contribute to society.

2018 marks the 40th anniversary of the reform and opening up of China and represents an important nexus stage for securing decisive victory in building a moderately prosperous society as well as for implementing the state's "13th Five-Year Plan". Huaneng International will continue to insist on new development concepts, stick to our core values of "upholding integrity, emphasizing cooperation; innovating constantly, progressing proactively; creating achievements, serving the Country", further enhance our operating capacity by pushing ahead with quality development and facilitating the supply-side structural reform, and contribute to promoting the sustainable and healthy development of the economy and our society, thereby helping to secure decisive victory in building a moderately prosperous society.

Chairman of Huaneng Power International, Inc.

02  
About Us

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## 2.1 Company Profile

Huaneng Power International, Inc. (“Huaneng International”, “the Company” or “we”) was incorporated on 30 June 1994, the core business is to develop, construct and operate large-scale power plants throughout China by making use of modern technology and equipment and financial resources available domestically and internationally. It is one of China’s largest public power generation companies, as well as the first domestic power company that goes public in New York, Hong Kong and Shanghai.

As the core enterprise of China Huaneng Group Co., Ltd.’s (“Huaneng Group”) central industry, Huaneng International always committed to build into a global leading power generation listed company, devoted to providing sufficient, reliable and eco-friendly energy to the community and provide quality energy services. The Company has been committed to system, technology and management innovations. The Company has been the pioneer and has created various milestones within the domestic power industry in areas such as power technology advancement and power plant construction and management, which dramatically facilitated the great-leap forward development of the power business and technological advancement of the power station equipment manufacturing industry in China, and also greatly contributed to the improvement of technical and management standards of domestic power generation enterprises.

Throughout the years, with efforts in seeking expansion and operating our business in a prudent manner, the Company has expanded successively with steady growth in competitive strengths. The success of the Company is attributable to its various advantages, including advantages in scale and equipment, advantages in geographic layout of power plants, strong support from major shareholders, sound corporate governance structure, advantages in market reputation, extensive experience in the capital markets, advantages in overseas development, staff with high calibre and professional management.

As at 31 December 2017, the Company is one of China’s largest listed power producers with controlling generation capacity of 104,321 MW and equity-based generation capacity of 92,003 MW, and its domestic power plants are located in 26 provinces, autonomous regions and municipalities. The Company also has a wholly-owned power company in Singapore.

The Company was awarded “The Best Listed Company” and “The Best CEO of Listed Company” awards in the 2017 China Securities Golden Bauhinia Awards Competition, and the “2017 Outstanding Issuer of Corporate Bonds on Shanghai Stock Exchange Bond Market” award. Besides, the Company was on the list of “Platts Top 250 Global Energy Listed Companies Award” for nine consecutive years and ranked 59th in 2017.

## 2.2 Corporate Governance

As a public company listed in three stock exchanges both domestic and overseas, the Company has been subject to regulation by securities regulatory authorities of the three domestic and overseas places of listing, and supervision from its vast shareholders. The Company has highly valued the importance of corporate governance by enhancing its corporate governance system, which comprises the general meetings, the Board, the Supervisory Committee and the operation team. It has established an operating mechanism with clear terms of reference among decision authority, supervisory authority and operation authority to enable each of them to perform their respective liabilities subject to balance and coordination among the same parties, so that the right of the Shareholders’ meeting and Board to make decision over material issues and the right of the Supervisory Committee to supervise relevant matters can be effectively exercised to ensure the operation team can deal with operational issues in an effective and regulatory way.

Through years of exploration and practices, the Company has gradually formulated a regulated, efficient and enhanced corporate governance structure, and also established a sound and effective system that suits the own development needs of the Company. The Company has assessed the applicability and effectiveness of the management system on a regular basis, carried out revision and improvement thereof timely, and has thus achieved the dynamic maintenance of

the system.

04

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### 2.3 Development Strategy

Huaneng International is committed to implementing new development initiatives in line with the general trend of China's economic and energy reform and development in the new era. The Company will adhere to the objective of establishing first-class company with international competitiveness, focus on improving the quality and performance of its development, and seek to accelerate transformation and upgrade in accordance with the requirements of market-oriented electricity reform and supply side structural reform. The Company will also put in place a new mechanism under the principle that management shall be centered on competitiveness improvement, operations shall be centered on customers, development shall be centered on market demands, so as to strengthen the strategic leadership and continuously improve its core competitiveness. The Company aims to consolidate its leading position in the conventional energy sector, speed up the new energy development, improve the synergy within the industry, expand sales and services presence, maintain steady expansion in overseas market, achieve all-around improvement of the Company's operating results, quality performance and corporate vitality, and build the Company into an internationally leading public power producer with standardized management, advanced technologies, energy saving and environment-friendly, reasonable operating structure, outstanding operations, sound corporate governance and superior market value.

The Company is committed to safe, green, efficient and sustainable growth. With insightful understanding of macro-economic environment, systemic reform development, industrial growth and other market trends, the Company aims to grow strategically with innovative initiatives and sound management. It will employ development, mergers and acquisitions and access to capital market and strategic investors at domestic and international markets to consolidate its leading position in clean, efficient conventional energy sector and to accelerate its development in new energy sector. The Company also aims to further enhance its key competitiveness, industry leadership, market influence and risk control with improved integration of resources, logistics, power generation and distribution system that draws strength from its organization, security, management, information and human capital, and strive to build up its modern energy sector system.



2.4 Company Philosophy

2.5 ESG Responsibility Management

The Board of Directors assumes the overall responsibility for the Company's tactics and reports on environmental, social and governance ("ESG") as well as for the assessment and determination of risks concerning ESG, and ensures for the Company the establishment of a proper and effective system of risk management and internal supervision thereto. The Company's management provides information to the Board of Directors to assess the effectiveness of the system. The requirements of ESG play a catalytic role for the improvement of operation and management level of Huaneng International.

07

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### Situations Faced with the Company's ESG

In 2018, China's economy will enter a new era which would profoundly affect the energy supply and demand situation. China's economy is expected to move to quality growth from high-speed growth with upgraded economic structure driven by innovation rather than factors and investment. Industrial restructuring and upgrading, gradual reduction of energy demand, and supply-side structural reform will play the leading role in China's efforts towards new development and construction of modern economic system. The tasks to address overcapacity, deleverage and prevent risks still loom large. Continued development of an environmental-friendly civilization presents new requirements for energy production. Accelerated eco-system reform and building of a market-oriented and diversified environmental compensation mechanism will impose stricter environmental protection standards on energy development which will result in continued increase of coal-fired power generating costs and investment in environment protection oriented initiatives. Energy restructuring will maintain fast track development as the government issues policies and regulations on carbon trading, non-hydro renewable energy quota, and solar energy development to guide businesses towards green growth. China will deepen reforming efforts to make state-owned businesses competitive and extensive, improve the top-level design of state-owned enterprise, improve the corporate governance structure of state-owned enterprises, and enhance the competitiveness of enterprises. China will continue to push forward power sector reform and evolve towards a liberalized and competitive power market with market-based power generation, increased power transaction and extensive inter-provincial power exchange. Sectoral boundary and competition landscape are redefined by the ever competitive power sales, expanded reform of power distribution market, and accelerated construction of pilot spot market, which engenders new business models and profit-making models urging enterprises to be more market oriented, thus enhancing overall efficiency of the industry. The national initiative of "The Belt and Road" lend efforts for enterprises to deepen their cooperation with foreign countries and innovate their foreign investment mechanism, and also provides enterprises with ample opportunities for infrastructure investment and asset allocation, including energy and power sectors.

In the electricity market, with consistently favorable economic growth in China, the demand for electricity in 2018 is expected to maintain rapid growth continually. It is predicted by China Electricity Council that in 2018, total electricity consumption nationwide will grow by 5.5%, with newly installed generation capacity of approximately 120 million kW, of which thermal generation units will represent a reduced percentage from last year. In 2018, annual power generation utilization hours nationwide are expected to be 3,710 hours, and utilization hours of thermal generating units are estimated to be 4,210 hours, generally the same with 2017. Curtailment of hydro, wind and solar generated power is expected to be gradually addressed. The State Electricity Reform will progress steadily, power generation market is in the process of steady and planned liberalization, and medium-to-long term market transactions, cross-provincial and cross-regional transactions, spot transactions of clean energy are further expanded. The five-year winter clean heating initiative in northern China promoted by the government will have considerable power substitution effect.

In the fuel market, China will continue implementing policies to phase out obsolete production capacities and release advanced production capacities. It will speed up construction of the northern coal transportation corridors, coordinate efforts on capacity reduction and supply protection, and maintain coal supply and demand balance and price stability. The government will also strive to restore coal price to reasonable range with multiple efforts including accelerated increase of advanced coal production capacities, enhanced enforcement of medium-to-long coal contracts, execution of mutual guaranty agreement among coal producers, transporters and users, and setting up the regulatory system to control minimum and maximum coal inventory.

In the capital market, China has put more emphasis on risk prevention. Prudent monetary policy will have a stabilizing effect on the overall money supply. The credit and capital market will grow at a stable and reasonable pace. China will also strengthen the asset-liability ratio and capital requirements to urge deleveraging by state-owned enterprises. The capital market is expected to see a tight balance, potentially leading to an increase in the cost of capital.

The Company will comply with the overall trend of national economic and energy development in the new era, implement new development concept, pay close attention to policy and market changes, effectively control risks and improve its core competitiveness in line with the requirements of market-oriented electricity reform and supply-side structural reform and achieve the goals of safe, green, efficient and sustainable development.

08

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### ESG Management

In addition to providing supervision and guidance, the Company's Board of Directors hold regular meetings at which management teams present their reports on production safety, operation and management, internal controls, and corporate social responsibility. There are four committees under the board, namely strategy, audit, nomination, and remuneration and evaluation. The strategy committee is in charge of the Company's decision making in comprehensive risk management and regularly reviews reports on the Company's risk management work. Its responsibilities include, but are not limited to, risk rating, risk management effectiveness evaluation, and approval of the Company's comprehensive risk management annual report as well as risk assessment reports on important decisions. The audit committee is responsible for identifying and assessing the risk of fraud committed by senior executives and board members of the Company, and compiles independent fraud risk assessment reports. It also regularly reviews reports on the Company's internal controls and evaluates the effectiveness of the internal control system, as well as communicating with the human resources department on issues concerning recruitment and code of conduct. All members on the audit committee are independent directors of the Company who carry out on-site inspection every year to monitor and make recommendations on production safety, operation and management, internal controls, and corporate culture. The management of production safety, employee health, energy conservation, fraud risk, internal controls and corporate culture has already been incorporated into the daily work of the board and its various committees.

To ensure that the requirements of Environmental, Social and Governance Reporting Guide ("ESG Reporting Guide") issued by Hong Kong Exchanges and Clearing Limited (HKEx) are effectively implemented, the Company has established ESG work leading group. A dedicated principal of the Company has been assigned as group leader, with principals of different departments and offices being vice group leaders. They make decisions on major issues during the process of the guidelines' implementation. Meanwhile, different departments also have assigned certain relevant personnel as group members to take charge of daily communication and detailed implementation of ESG management. With the establishment of ESG work leading group, the contact mechanism of ESG management has made its appearance in the Company. This has established a work model of ESG management, which is guided by heads of Boards of Directors, led by the Company's managements and participated by many departments together, and comprehensively guaranteed the effectiveness and applicability of the Company's ESG management.

## 2.6 Table of Key Performance Indicators in 2017

Based on requirements from HKEx's ESG Reporting Guide and Global Reporting Initiative (GRI)'s G4 Sustainability Reporting Guidelines, Huaneng International has analysed the Company's environmental, social and governing status, carried out the standard analysis with respect to guidelines' requirements and peer companies' situations, and finally laid down key performance indicators of year 2017. Please see the table below.

Performance Categories	Performance Indicators	2017
Economy	Operating revenue <sup>1</sup> (100 million RMB)	1,524.59
	Sales of power and heat <sup>1</sup> (100 million RMB)	1,489.25
	Sales of coal <sup>1</sup> (100 million RMB)	11.43
	Port service <sup>1</sup> (100 million RMB)	2.32
	Transportation service <sup>1</sup> (100 million RMB)	0.74
	Others <sup>1</sup> (100 million RMB)	20.85
	Operating expenses <sup>1</sup> (100 million RMB)	1,419.00
	Net profit <sup>1</sup> (100 million RMB)	15.84
	Donation in the Company's name <sup>1</sup> (ten thousand RMB)	1,000.18
	Controlling generation capacity <sup>1</sup> (MW)	104,321
	Equity-based generation capacity <sup>1</sup> (MW)	92,003
	Average annual unplanned outage (times/unit•annum)	0.30
	Average coal consumption rate for power sold (g/kWh)	306.48
	Year-on-year decrease of average coal consumption rate for power sold (%)	0.39
Environment	Consumption of standard coal (ten thousand tons of standard coal)	10,885.99
	Oil consumption in production (tons)	29,951.27
	Natural gas consumption (ten thousand of standard cubic meters)	340,735.00
	Weighted average house consumption rate (%)	4.66
	Overall water consumption (million tons)	19,344.24
	Fresh water consumption in power generation (million tons)	423.42
	Water consumption in open cooling circulation (million tons)	18,920.82
	Performance value of consumption of fresh water in power generation (kg/kWh)	1.07
Performance value of emission of sulphur dioxide (g/kWh)	0.11	





Performance Categories	Performance Indicators	2017
	Performance value of emission of nitrogen oxides (g/kWh)	0.15
	Performance value of soot emission (g/kWh)	0.02
	Sulphur dioxide emissions (tons)	43,392.91
	Nitrogen oxides emissions (tons)	59,789.73
	Soot emissions (tons)	6,247.77
	Total amount of energy-related direct greenhouse gas emissions (ten thousand tons of carbon dioxide equivalent)	33,559.30
	Greenhouse gas emissions generated by coal consumption (ten thousand tons of carbon dioxide equivalent)	32,629.28
	Greenhouse gas emissions generated by natural gas consumption (ten thousand tons of carbon dioxide equivalent)	743.96
Environment	Greenhouse gas emissions generated by fuel consumption (ten thousand tons of carbon dioxide equivalent)	9.27
	Greenhouse gas emissions generated by desulphurization (ten thousand tons of carbon dioxide equivalent)	176.79
	Energy-related direct greenhouse gas emission intensity (grams of carbon dioxide equivalent/kWh)	770.09
	Total amount of energy-related indirect greenhouse gas emissions (ten thousand tons of carbon dioxide equivalent)	38.42
	Energy-related indirect greenhouse gas emission intensity (grams of carbon dioxide equivalent/kWh)	0.88
	Total water discharge (million tons)	18,449.64
	Total discharge of sewage (million tons)	34.34
	Total discharge of open cooling circulation water (million tons)	18,415.30
	Hazardous liquid waste production (tons)	959.04
	Production of denitration catalyst (tons)	1,358.99
	Production of other hazardous solid waste (tons)	128.24
	Production of general solid waste (ten thousand tons)	4,002.46
	Production of fly ash and cinder (ten thousand tons)	3,289.62
	Production of desulphurised gypsum (ten thousand tons)	712.84

Comprehensive utilization rate of fly ash and cinder (%)	91.40
Desulphurization gypsum disposal utilization rate (%)	100
Amount of grievous (and above) environmental accidents (times)	0

Performance Categories	Performance Indicators	2017
	Total amount of full-time contractual employees <sup>1</sup> (persons)	53,962
	Number of employee deaths due to duty <sup>2</sup> (persons)	0
Society	Number of contractor and subcontractor deaths due to duty <sup>3</sup> (persons)	0
	Grievous personal injury and death accidents(employees) (times)	0
	Personal injury and death accidents during the power production (times)	0
	Accidents that endangered safe operation of power grid (times)	0
	Lawsuits on corruption raised and concluded against the Company or its employees (items)	0
	Average equivalent availability factor of coal-fired power units (%)	94.55

The scope of statistic of Operating revenue (including Sales of power and heat, Sales of coal, Port service, Transportation service and Others), Operating expenses, Net profit, Donation in the Company's name, Controlling generation capacity, Equity-based generation capacity and Total amount of full-time contractual employees, takes

<sup>1</sup> Singapore Tuas Power Ltd., the wholly owned subsidiary of Huaneng International, into consideration. Of which the Operating revenue (including Sales of power and heat, sales of coal, Port service, Transportation service and Others), Operating expenses and Net profit are published in accordance with the International Financial Reporting Standards.

<sup>2</sup>Number of employee deaths due to duty: the number of employees who died from production safety incidents.

<sup>3</sup> Number of contractor and subcontractor deaths due to duty: the number of deaths of contractors and subcontractors during production for which the Company is responsible.

2.7 Stakeholder Engagement and Identification of Material Issues

2.7.1 Information about and Communication with Stakeholder

Huaneng International has always been adhering to concepts of harmonious development of “serve the Country, benefit the society, seek multilateral benefits and develop together”, worked together with all stakeholders to promote economic and social development and share corporate development achievements.

Stakeholders	Expectations of Stakeholders	Mechanisms of Communication and Participation	Responses from the Company
Investors	Increase of the Company’s market value and profitability	Shareholders’ meeting; information disclosure; company website.	Truthful and thorough disclosure of information; investment of effort in the improvement of achievements and creation of profits; absorption of market opinions for amendments to operating behaviours.
Clients	Assurance of high-quality products; guarantee of good service.	Making contracts and agreements	Supply of sufficient, reliable and eco-friendly energy and services; guarantee of safe stable delivery of power and heating.
Employees	Guarantee of welfare, health and security; improvement of communication mechanism; impartiality concerning in chances of promotion and development.	Employment contracts; employees’ assembly; employee’s satisfaction survey.	Strict observance of provisions within employment contracts; improvement of the institution of employee’s assembly; improvement of administration of salary and welfare; provision of avenues for vocational advancement and training.
Suppliers	Honest, fair and just cooperation; mutual benefits and win-win scenarios.	Making contracts and agreements; regular communication through mutual visits; correspondence through files, letters and telegraphs.	Adherence to open and transparent business principles and processes; active fulfilment of contracts and agreement; promotion of mutual visits.
Communities	Joint cultivation of communal civility; support for public welfare; focus on social development.	Promotion and organization of public welfare activities; participation in volunteer activities; guarantee of employment.	Extensive organisation of and active participation in public welfare undertakings; cultivation of harmonious and civilized communities; attempts at growth of local employments.
Regulatory authority	Observance of disciplines and laws; compliance with operation; green energy; energy conservation and emission reduction.	Participation in relevant meetings and work report on energy.	Strict observance of relevant laws and stipulations; vigorous advocate of energy conservation and emission reduction.

Competitors	Fair competition; honest cooperation; joint development; safe production.	Participation in industry associations, policy studies, daily meetings and business exchanges. <sup>4</sup>	Competition and cooperation with competitors; jointly creation of a healthy and orderly competitive environment; mutual benefits and joint progress.
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<sup>4</sup>China Electricity Council, Chinese Society for Electrical Engineering and etc.

### 2.7.2 Processes of Identification of Material Issues

According to requirements of HKEx's ESG Reporting Guide, Huaneng International refers to relevant procedures for substantive analyses from Global Reporting Initiative, collects issues at the heart of key stakeholders' interests by way of questionnaires, interviews, etc. Huaneng International analyses and prioritizes collected information and determines the Company's material issues with respect to ESG, which are disclosed in report.

The process of identification of material issues is divided into four steps:

**Identifying relevant issues:** sources of issues include Environmental, Social and Governance Reporting Guide of HKEx, G4 Sustainability Reporting Guidelines of Global Reporting Initiative (GRI), and issues disclosed by domestic and international peers;

**Prioritising issues:** internal stakeholders, when it comes to prioritisation, mainly consider impacts on the Company's strategies, policies, processes and commitments, on the Company's competitive advantage and management excellence, and on the Company's current and future financial status; external stakeholders, with respect to prioritisation, largely focus on the extent to which a certain issue has impact on assessment and decision-making of the Company as well as on its own interests;

**Verifying:** the Company management assesses and approves identified issues and their prioritisation;

**Reviewing:** after the end of one reporting period, the Company will organize internal and external stakeholders to provide feedbacks on contents of this report in order to prepare for the next one.

In 2017, the Company has further deepened analysis on material matters, expanded the scope of interviews with external stakeholders and fine-tuned the materiality matrix according to interview responses, which are similar to those of last year.

03

Industry Hotspot

In March 2015, Several Opinions on Further Deepening the Reform of the Electric Power System was published by the CPC Central Committee and the State Council. As one of the most influential enterprises in the electric power industry, Huaneng International will lend its full support to national policies by enhancing business communication with electric power end customers and jointly promoting the structural transformation and industry upgrading of the electric power industry.

15

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### Our Targets

Against the backdrop of the reform of the electric power system, the scope of business of Huaneng International has been expanded to cover generation and sale of electricity and the Company will strive to create a healthy and sustainable market environment. On the generation side, our specific targets are to maintain a traded amount of electricity no less than the generation capacity and keep electricity trading prices as high as possible and no lower than the market average. On the sale side, our specific targets are to sell all electricity generated and keep electricity selling prices as high as possible and no lower than the market average.

### Management Mechanism

To meet the requirements of the electric power market reform, the Company has further improved its 1+N marketing administration system by revising “Marketing Administration Regulations” on the basis of actual circumstances, formulating the “Measures for Individual Rewards of Marketing Business” and “Measures for the Administration of Electric Power Trading”, continuing with the monthly assessment, and enriching the annual assessment with the addition of criteria like “company market share for electricity retailers” and “electric power recovery” to strengthen marketing assessment and incentives. At the same time, the Company has conducted surveys and research on relevant subjects whose results translate into the formulation of “Measures for the Administration of Company Operations Relating to Energy Retailers”, “Measures for the Administration of Transactions in the Ancillary Services Market” and “Measures for Electric Power Recovery Administration and Assessment”. In response to the state pilot program of spot markets, “Guiding Opinions on Promoting the Work on Spot Markets” has been published.

To gain greater access to the end customer market, the Company has adopted a three-pronged approach to improve customer service quality and customer satisfaction: First, operate with integrity in electric power trading to establish customer trust in the Company; second, maintain good relationships with customers to deepen mutual trust and understanding; third, further improve user satisfaction through electric power value-added services. The Company has 19 registered provincial-level electricity retailers and 13 registered regional electricity retailers.

### Information System

The Company is proactively promoting the establishment of a marketing information system, which makes use of Internet, big data and cloud computing technologies to provide a platform for trading support and decision making relating to marketing informatization. After conducting surveys and research on the needs of the Company’s headquarter and regional branches, a blueprint of the marketing information system has been drafted.



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Stable Supply and Regulated Operation

17

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#### 4.1 Intensive Guarantee of Power Supply Stability

Huaneng International strives to become a global leading public power company and provide users with safe, efficient and clean energy as well as quality services. Each of the Company's power plants has put in place contingency plans and response measures to ensure safe and stable power supply even in case of emergency.

#### Safeguard Policies

Based on Huaneng Group's Emergency Management Measures for Major Incidents (Accidents) and Emergency Plan for Thorough Power Failure, all departments of the Company, in view of possible large area power-off and other accidents caused by the trip of all power units, alternating current and direct current power outage, busbar outage and system disruption, has jointly composed Emergency Plan for Thorough Power Failure, Emergency Plan for Black Start, Plan for Island Operation and other preparatory measures and established corresponding emergency handling organizations in order to minimize negative impacts on society, upon occurrence of accidents, by unified leadership, clear division of labour, rapid response and fluent communication. Besides, the Company will also manage accident report to power dispatch department and due offices of local governments, handle examination and approval of information disclosed to the public, start emergency measures, and be attentive to public concern, in order to reduce adverse impacts on society. Meanwhile we will do well in check and preparation for restart in the aftermath of power outage, making sure that after troubles hooting we can timely restart power units to resume power supply.

The Company always seeks to tackle the roots of problems, identify potential risks and remedy deficiencies with a view to further improving equipment reliability through standardized management, quality assurance and technical supervision. On-site analysis and work supervision are carried out by professional teams of the Company to identify the technical and management problems for any unplanned outages. Notifications of major and common problems will be sent to all parties concerned in a timely manner for arranging supervision and inspection of rectification work. Inspection is carried out quarterly to ensure that rectifications are implemented effectively.

#### A Proven Track Record of Stable Power Supply

In 2017, the Company's unplanned power outages of thermal power units were 0.30 times per unit per annum. Twenty-six thermal power plants, including those in Yueyang and Huaiyin, recorded no unplanned outage. Shangan No.6 power unit and Baiyanghe No.6 power unit achieved long-periods of operation of 637 days and 615 days respectively while Jinling No.2 coal-fired power unit smashed national records by operating for 606 consecutive days. Five of the Company's power units, including Yuhuan No.2 power unit and Haimen No.4 power unit, received national benchmark rankings for their reliability indices, making Huaneng International one of the most reliable power companies in the industry.

#### Stable Supply Under Extreme Weather Conditions

In 2017, the Company successfully maintained stable supply under very hot weather and in times of typhoon by planning ahead and making early preparations in accordance with the requirements laid down by the Safety Committee of the State Council, the National Energy Administration and the Group Company. To ensure production during flood and drought seasons, various units of the Company have formed a flood prevention and drought relief working group led by the persons in charge and mobilized personnel and resources to step up inspection and carry out emergency drills according to contingency plans formulated with reference to regional meteorological features and actual circumstances. Technological measures have also been implemented to ensure the safe operation of the power generation units in the spirit of our iron-clad determination to ensure safe production. In 2017, there was no production safety accident caused by natural disasters and neither was there any incident endangering the safety of the power grid.

#### Supporting Beijing to Address Power Supply Demand

Since July, Beijing has been hit by persistent high temperatures. The output of the Beijing power grid and the daily power consumption in the city are hitting new highs as rising demand makes the task of power supply even more daunting. Huaneng International's coal-fired power plant in Beijing has declared a state of emergency in response to a request by the Beijing Municipal Commission of City Management. Upon receiving the order, various departments of the power plant took immediate actions to rise to challenges and proactively initiated a series of work relating to personnel preparation, resource allocation and equipment testing. At 8:51 on 21 July, the No.4 unit was successfully connected to the power grid after just one attempt and other units have also been turned to hot standby mode for use anytime to alleviate the power supply situation in the capital city.

#### Sparing No Effort in Preparing for Winds and Typhoons

Coastal areas like Fujian and Guangdong were pounded by Typhoon No. 7 Locke, Typhoon No. 8 Sonca, Typhoon No.9 Nesat and Typhoon No. 10 Hato one after another while places like Hunan, Jiangxi, Shandong, Chongqing and Shanghai were lashed by heavy rainfall and hit by persistent high temperatures. During times of typhoon, the Company promptly took stock of the precautionary work undertaken by its various power plants in terms of fuel reserves and coal-unloading equipment at ports, discussed alternative shipping routes and subsequent coal supply plans, and gauged the impact on equipment, power generation units and setting up wires outgoing lines. The corresponding regional branches were delegated to take proactive response measures to minimize losses from extreme weather conditions, ensure safe production and contribute to the safe operation of power grids by guaranteeing satisfactory and stable power generation in times of typhoon.

#### Guarantee of Power Supply during the 19th National Congress of CPC

In strict accordance with the National Energy Administration's Work Plan on Guarantee of Power Supply and Huaneng Group's Comprehensive Work Plan on Maintaining Safe and Stable Power Supply During the 19th CPC National Congress, the Company has requested the stepping up of publicity by various units on guarantee of power supply, clear division of labor and responsibilities, and also across-the-board implementation.

During the 19th National Congress of CPC, no incident was reported in the Company concerning personal injury or death, power plant complete outage or external power outage, equipment failure, power plant-related power grid failure, fire outbreak, pollution, preventable traffic accident, cybersecurity threat, and other issues having a negative impact on society. The Company was able to maintain normal operation with a performing workforce to ensure the reliability of electric power and heat supplies, thereby creating a harmonious and stable social environment.

#### 4.2 Lawful Enterprise Management

Effective rules and regulations form the basis for regulated management of company. Enterprise governance is fundamental to earnestly rectifying and standardizing the order in the market economy as well as to the sustainable development of an enterprise. Huaneng International is committed to regulated operation, standardized procedures, comprehensive risk prevention and continuous operation and management improvement.

##### 4.2.1 Reinforcement of Anti-corruption

In 2017, the Company rolled out anti-corruption campaigns, urging all employees to uphold ethics as well as Party disciplines and state laws and create an atmosphere where everyone remains disciplined, abides by the law, discharges duties in a standardized fashion, and practices clean operation.

##### Corruption Punishment and Prevention

In order to prevent corruption, bribery and other acts of the sort, Huaneng International steadily combines anti-fraud education firmly with attainment of anti-corruption and with implementation of what is stipulated in the Manual of Prevention and Control of Risks of Corruption (“Manual”), so as to energetically carry out education on anti-grand and clean career and continuously strengthen control on risks of corruption. First, the Company strictly effectuates responsibility system for the establishment of an incorrupt party, and party members of each level give a written undertaking thereof. Second, the Company rigidly implements stipulations within the spirit of the “eight-point” guideline for fighting bureaucracy and formalism and rejecting extravagance among party members and Huaneng International’s own 30 stipulations on improving working manners. Third, the Company vigorously develop anti-trickery education. In 2017, the Company audit department led the organization to conduct anti-fraud training, in which 287 person times of people participated. Fourth, the Company firmly takes good care of the effectuation of the Manual and makes the prevention and control of risks of corruption a crucial means for anti-trickery, which further serve as the promotion for amendment and improvement of relevant management system and for establishment of long-term mechanism of prevention and control of risks of corruption. Fifth, the Company attaches great importance to the work of handling complaints expressed in letters or visits. Sixth, the Company will seize upon critical periods to publish documents and send out text messages to reiterate the relevant requirements, urge and remind people to follow them, and carry out supervision and inspection.

##### Open Channels for Complaints

The Company has offense reporting hotline and email, opens channels of handling complaints expressed in letters or visits, welcomes letter and visits, regularly collects, analyses clues reported by all units that have to do with corruption, bribery and other undisciplined or unlawful cases.

According to statistics, in 2017 the Company headquarters and subsidiaries did not have any illegal matters of significant influence, and there were also no lawsuits on corruption raised or concluded.

##### Anti-corruption and Anti-bribery

Within report period, the Company has developed various anti-corruption and anti-bribery activities, including:

**Fuel procurement special inspection:** Special inspections focusing on fuel procurement management were carried out in 7 regional branches, such as Liaoning branch, and 15 grassroots units, including the Dalian Power Plant, to strictly monitor the bidding management process and identify fraud risks.

**Key area investigation:** Supervision and inspection have been enhanced in those business areas where corruption, bribery and fraud activities are frequent. In accordance with the Group Company’s guidelines, the Company has carried out investigations into and rectifications of misappropriation of funds on high-end liquor.

**Disciplinary dialogue:** The Company held 19,000 person times of routine disciplinary conversations with employees under normal circumstances, reminding them to comply with laws and regulations in carrying out their work and

resolutely oppose corruption and bribery.

#### 4.2.2 Protection of Intellectual Property Rights

Huaneng International attaches great importance to the value of intellectual property rights and patents. We strictly abide by national laws, respect knowledge and technological achievements, and continuously strive for scientific and technological innovation.

The Company's current "Intellectual Property Rights Management System" was implemented in January 2012. For the sake of effective management and maintenance, the management of registered and non-registered intellectual property rights has been centralized and is handled by the legal affairs department, subject to a process encompassing application, review, approval, declaration and registration. In doing so, the Company is able to innovate further and stay competitive.

In 2017, the Company launched for the first time an international patents protection project, which aimed to further protect intellectual property rights. Relevant departments of the Company held several rounds of talks with intellectual property agencies to improve project plans and discuss contracts. After receiving the Company's approval, a PCT international application for an invention titled "High-Efficiency Gradient Hierarchy Complex Desulphurizing Tower" (international application no.: PCT/CN2016/090766) was filed on 20 July 2016 and a US patent application relating to the invention (application no.: 15/577046) was filed on 27 November 2017, which is currently under review.

In 2017, the Company paid 9 annual patent fees as scheduled and sorted out 13 expiring "H-type" trademarks. We plan to complete all renewal applications with the Trademark Office by 21 June 2018.

In 2017, no punitive action by the government or litigation was undertaken against the Company regarding intellectual property rights issues.

PCT refers to the "Patent Cooperation Treaty", an international cooperation treaty which mainly deals with the filing, search and examination of patent applications as well as the cooperativeness and rationality of disseminating the technical information contained therein.

05

Environmental Protection and Green Development

Our planet provides us with the space and environment upon which to survive. Therefore, it is everyone's responsibility to protect the environment. As a responsible enterprise citizen, Huaneng International regards environmental protection as a prerequisite for the survival and development of an enterprise. To live up to our environmental responsibilities, we are committed to promoting structural adjustment, optimizing industrial layout, vigorously developing clean energy, promoting scientific and technological innovation, increasing efforts on energy conservation and environmental protection, improving efficiency of resource consumption, and reducing pollutant emissions.

22

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### 5.1 Speeding Up the Development of Clean Energy

The Chinese government's response to climate change has been accorded the status of a major strategy for national economic and social development to advance eco-civilization, develop a green economy and earnestly promote various emissions reduction measures as core climate change policies.

During the "13th Five-Year Plan" period, the pace of China's power structure adjustment will be further accelerated. The proportion of installed capacity and power generation of low-carbon clean energy power will be further increased. There will be a more stringent requirement on the total power generation ratio of power generation companies' power generated by non-water renewable energy. Huaneng International closely focuses on improving the quality and efficiency of development, optimizes its industrial layout under the guidance of developmental strategy, and further accelerates its pace of power structure adjustment to achieve goals concerning low-carbon clean energy development.

#### Directions of Development

During "13th Five-Year Plan" period, Huaneng International will focus on promoting low-carbon clean energy development, and continuously improves installed capacity of the proportion of low-carbon clean energy. By 2020, the Company will boost its low-carbon clean energy installed capacity to above 20%. The main development directions include:

1 Vigorously developing wind power. The Company is going to further increase the reserves of resources of high-quality wind power project, optimize the base-type wind power development program, speed up the development of efficient low-velocity wind power, increase the development of offshore wind power, develop and build complementary wind power projects according to local conditions.

2 Accelerating the development of solar power. The Company is going to vigorously promote the development of wind-photovoltaic power plants, make full use of its own land to build photovoltaic power plants, actively develop distributed photovoltaic, promote projects aiming at comprehensive utilization of photovoltaic power plants, research and pilot on relevant works on development of power generation through light and heat.

3 Optimally developing natural gas power generation. The Company is going to optimize the development of large-scale gas turbine cogeneration units, moderately increase reserves of gas spike power generation projects, accelerate the layout of natural gas distributed energy projects, strive to develop user-oriented co-production and co-suppliance of heating, electricity, and cold and integrated energy service that combines purchase, distribution and sell, and actively pilot complementary distributed energy system that combines gas, light, wind, and geothermal energy.

4 Discretionary layout of pumped storage power station. The Company is going to respond to the continuously increasing demand of safe, stable and economical operation of power grid and to the rapid rising need of improving the market share of new energy, and, when appropriate, carry out research on investment opportunities for pumped storage power stations.

5 Striving to participate in nuclear power investment. Given the owned shares of Shandong Shidaowan Nuclear Power, Hainan Changjiang Nuclear Power and Fujian Xiapu Nuclear Power, the Company attempts to participate in nuclear power investment, and perform well in site protection and reserving resources.

6 Actively seeking investment cooperation and opportunities for merger and acquisition of properties of new energy power generation.





### Clean Energy Projects

At present, Huaneng International's clean energy types include wind power, hydropower, nature gas power, photovoltaic power. As of December 31, 2017, the Company has 99 clean energy production units in China with a total capacity of 1,426.19 ten thousand kW; 45 wind power units with the capacity of 457.83 ten thousand kW; 8 hydropower units with the capacity of 35.21 ten thousand kW; 12 nature gas power units with the capacity of 854.31 ten thousand kW; 34 photovoltaic power units with the capacity of 78.84 ten thousand kW. In 2017, the Company's managed fans' availability reached 98.3%, and main equipment of clean energy is maintained well.

In 2017, the Company successively put into operation Rudong offshore wind power (30.24 ten thousand kW), Linghua mountain wind power (10 ten thousand kW), Zhanhua Qingfenghu wind power (10 ten thousand kW), Huaining Longchi wind power (9.9 ten thousand kW), Tongshan Xiehe wind power (4.8 ten thousand kW), Jiaoziding wind power (4.8 ten thousand kW), Guanglingzi wind power (4.8 ten thousand kW) and other wind power projects, with the capacity of 88.76 ten thousand kW in total; Zhanhua Qingfenghu photovoltaic power (10 ten thousand kW), Huishan zhaozhuang photovoltaic power (8 ten thousand kW), Yushe photovoltaic power (5 ten thousand kW), Taicang power plant ash pond photovoltaic power (4 ten thousand kW), Jining photovoltaic power (2 ten thousand kW), Laiwu Niuquan photovoltaic power (2 ten thousand kW), Qinbei power plant ash pond photovoltaic power (2 ten thousand kW), Yueyang Leigutai photovoltaic power (2 ten thousand kW), Zhaodong Dechang photovoltaic power (2 ten thousand kW) and other photovoltaic power projects, with the capacity of 62.76 ten thousand kW in total. In 2017, the Company's wind power and photovoltaic production capacity accounted for 46% of its total production.

Table: 2017 thermal power (coal-fired and gas-fired power unit), wind power and photovoltaic power production scale of the Company (ten thousand kW)

	Coal-Fired Power	Gas-Fired Power	Wind Power	Photovoltaic Power
2017 production scale	15	166	88.76	62.76

### Rudong Offshore Wind Power Plant—the Largest Offshore Wind Power Project with the Highest Generation Capacity in Asia

Rudong Baxianjiao offshore wind power project in Jiangsu began full commercial operation in 2017. It is the first offshore wind power project run by Huaneng International and is Asia's largest wind power project to date in terms of generation capacity. The project is located in Rudong sea area in Nantong, Jiangsu Province, with a total generation capacity of 302.4MW and a total of 70 wind turbines, including 4MW, 4.2MW and 5MW wind turbines, of which 20 5MW offshore wind turbines are used in batch for the first time in China. The Unit 70 wind turbine boasts the world's largest rotors with a diameter of 171 meters. The project employed the mode of "large isolated island" creatively, and two 110kV offshore booster substations were built to ensure the yawing, anti-corrosion and communication functions of wind turbine generators under special conditions.

To develop Rudong Offshore Wind Power Plant into Huaneng's first "national best project" and "exemplary project", close attention was paid to safety and quality in project construction, strengthened site control and technological innovation, and its construction was carried out in an orderly and timely manner. Despite a number of difficulties and challenges, such as frequent occurrence of typhoon and complex topography of the construction sea area, the Company has successfully created a number of "firsts" in offshore wind power construction in China and accumulated valuable experience for offshore wind power construction. The annual average feed-in electricity generated by the wind power is estimated at 820 million kWh. Going by the standard coal consumption of 305 g/kWh for power generation, the project can bring significant economic, social and environmental benefits by saving 25.01 ten thousand tons/year of standard coal, reducing CO<sub>2</sub> emissions by 55.05 ten thousand tons/year, reducing ashes by 100 thousand tons/year, and reducing water consumption by 2.4 million m<sup>3</sup>/year.

### Zhanhua Qingfenghu Photovoltaic Power Plant—Photovoltaic Poverty Alleviation Project

The Zhanhua Qingfenghu Photovoltaic Power Plant was among the first batch of photovoltaic poverty alleviation projects approved by the National Energy Administration and the State Council Leading Group Office of Poverty Alleviation. It was Huaneng's first photovoltaic poverty alleviation power plant project and it was also the Company's largest "6·30" photovoltaic poverty alleviation project put into operation in 2017, with a total generation capacity of 100 MW.

The construction project began in April 2017 and in just 88 days, the installation of all 61 thousand pipe piles, 15 thousand supports and 336 thousand photovoltaic panels was completed. On 27 June, prior to incorporation into the power networks, the project passed the acceptance of the State Grid Shandong Electric Power Company and smashed national records with the shortest period of construction as a project with a generation capacity to the tune of millions of watts. The power plant can generate 106 million kWh clean electric power each year. According to the standard of RMB3,000 per household per year, the project accounts for the precise poverty alleviation of 4,000 poor families in Zhanhua District of Binzhou, Shandong Province. Going by the thermal power coal consumption of 350 g/kWh in Zhanhua, the project can save 3.71 ten thousand tons/year of standard coal, reduce 7.77 ten thousand tons/year of CO<sub>2</sub> emissions, reduce 563.03 tons/year of SO<sub>2</sub> emissions, reduce 320.65 tons/year of nitrogen oxide emissions, reduce ashes 1.18 ten thousand tons/year, reduce water consumption by 42 thousand m<sup>3</sup>/year.

## 5.2 Unwavering Commitment to Scientific and Technological Innovation

Scientific and technological innovation is the driver of growth for enterprises. Huaneng International is committed to developing itself into an innovation-driven enterprise by improving technological innovation, enhancing our self-developed innovation capability, constantly investing in research and development, optimizing the systems of decision making and management relating to scientific and technological innovation, and continuously developing platforms for innovation to accelerate the development of the Company.

### Innovation Management and Investment

Huaneng International persistently orients itself by demand, sticks to the combination of living in the present and planning in the long-term, plays its role as scientific and technological mainstay and leader, adheres to the combination of scientific and technological innovation and institution and mechanism innovation, strengthens its incentives, and resolutely combines independent innovation and collaborative innovation in order to improve innovation efficiency.

The Company has set up the Technology department to carry out research and development activities related to design, production, infrastructure and new technology study. At the same time, the Company, Xi'an Thermal Power Research Institute Co., Ltd. ("Xi'an Thermal"), Huaneng Group Clean Energy Technology Research Institute Co., Ltd. ("Huaneng Clean Energy Research Institute") cooperate to discuss and solve technical problems. The Company has cooperated with universities, manufacturers and other external parties to form a powerful alliance in order to complete project research.

In 2017, the Company invested a total of RMB92.26 million in research and development and obtained 73 patents, including 10 invention patents.

## Innovation Achievements

### (1) Study on New Energy Technology

The Company will continue to strengthen the research and development of new energy technologies and conduct research into new technologies for offshore wind power, high mountain wind power, low wind speed wind power, solar power as well as various energy storage technologies. Our research success relating to key offshore wind power technologies in 2017 provides the Company with the technological support for new energy development.

### (2) Study on Transformation for Flexible Power Unit

The Company initiated the study on transformation for flexible power unit at the Dandong power plant. The study aimed to tap into the potential of boilers under light loads and develop a technology that enables the stable combustion of boilers under low-load conditions, with a view to making boilers more economically sound, stable and environmentally friendly. The technology has been applied at some power plants in Liaoning and Jilin and has achieved good results, which help to promote the large-scale adoption of renewable energy sources in power generation across China.

### (3) Study on 700°C Ultra-supercritical Coal-Fired Power Generation Technology

The Company has successfully launched China's first 700°C key components test facility at Huaneng Nanjing Power Plant, which is used to conduct long-period testing. Through long-period operation and testing at the 700°C test facility, important data on high temperature alloy materials in actual operation, as well as practical experience, can be obtained. By accumulating relevant experience in design, manufacture, installation and operation from on-site testing of the properties and manufacturing techniques of 700°C materials, the technological risks involved in demonstration projects can be greatly reduced. This has laid a solid foundation for the construction and demonstration operation of 700°C units in the future and contributes to the development and advancement of China's electric power industry and the relevant manufacturing industry.

The "Research and Demonstration on High-parameter Ultra-supercritical Secondary Reheating Key Technology" project has won the "China Power Innovation Award" given by the China Electricity Council. The "Technical Innovation and Application of 660MW Efficient Ultra-supercritical Coal-fired Power Generating Units" project has won the second highest "China Power Science and Technology Award" given by Chinese Society for Electrical Engineering and the highest "China Power Innovation Award" given by China Electricity Council.

(4) Study on Long-Distance Large-Capacity Heating Technology

The Company has substantially increased the heating radius of heat sources and expanded our heat supply, which now covers the long-distance heat users, to meet the demand for centralized heat supply and scale up power cogeneration so that energy consumption and pollutant emissions can be further reduced. The next step is to implement this practice at Shangan Power Plant and Qinbei Power Plant.

(5) Study on Pollutant Combined Treatment Technology

The Company has proposed to directly remove major pollutants from flue gas treatment equipment as well as combinedly remove other pollutants, and create conditions for the removal of pollutants from other equipment. The Company has developed a flue gas combined treatment method that employs low-low temperature electrostatic precipitator technology and deep desulfurization with high-efficiency dust remove technology. The Company has pioneered an enterprise technical standards system for comprehensive multi-pollutant combined treatment and developed key equipment and components for high-efficiency pollutant combined treatment. This has helped resolve the technical issues involved in the application of low-low temperature electrostatic precipitator technology given the complex quality of coal in China, and highly achieved SO<sub>2</sub> ultra-low emissions for single-tower use high sulfur coal-fired. This technology has been fully employed by all power plants of the Company, with a total generation capacity of over 100 GW, thereby making the Company a global leader in achieving ultra-low emissions.

Development Directions

According to the 13th Five-Year Plan for Energy Development, China's CO<sub>2</sub> emissions per GDP should be reduced by a further 18% by 2020 from the level laid out in the previous Five-Year Plan. The four major directions of the Company's technological development are summarized below:

First, the Company will vigorously develop low-carbon environmentally friendly renewable energy and optimize the industrial structure. Second, we will conduct further research and develop high-efficiency environmentally friendly high-parameter large-capacity thermal power units to further increase efficiency and reduce emissions. Third, we will earnestly develop smart power plants with the technological support of new generation sensing, Internet of Things, artificial intelligence and virtual reality to maximize the safety, cost-effectiveness, efficiency and environmental friendliness of operation. Fourth, we will continue to develop energy storage technology, frequency modulation technology, distributed energy and multi-energy application technology.

### 5.3 Energy Conservation and Emissions Reduction

The environment of our planet is fundamental to human lives and health, and the natural resources it provides are the driving force of the development and progress of humanity. Only by reducing consumption of non-renewable energy, waste disposal and pollutant emissions can we achieve sustainable development for our society. Huaneng International attaches great importance to environmental protection, strictly abides by the latest environmental laws and regulations of our country, takes the initiative to take environmental responsibility, actively promotes energy conservation, optimizes the energy structure, continuously improves the efficiency of resource use, and creates, through “efficient environmental protection and green ecology”, the global leading listed power generation company, leading the industry’s green development. In 2017, the Company did not experience any serious accidents.

#### 5.3.1 Overall Planning

To implement the State Council’s Program of Action for the Energy Development Strategy (2014-2020) and become an industry leader in overall energy use efficiency and ultra-supercritical unit energy use efficiency, Huaneng International has formulated the “Rules on the Administration of Environmental Protection (Provisional)” and the “Environmental Emergency Response and Heavy Pollution Contingency Plan”, as well as incorporating environmental protection requirements into its intrinsic safety system. The Company actively promotes the Company’s coal-fired power units’ energy conservation and emission reduction, plans to carry out year by year energy conservation and environmental protection, strives to complete the national task of energy saving and emission reduction in advance and excess, ensures that the Company’s coal-fired units takes continues lead in energy conservation and environmental protection, ensures competitive advantage of coal-fired power generation units, and makes contributions on promoting revolution on the nation’s energy production and consumption, enhancing the clean and efficient development of coal power level, and achieving the 2020 national target of coal-fired power generation units’ energy conservation and emission reduction.

#### 5.3.2 Energy Consumption Management

As an advanced power company, Huaneng International strictly abides by the Environmental Protection Law, Energy Conservation Law and other relevant laws of the People’s Republic of China. The Company continues to implement energy saving transformation projects and energy saving technologies like waste heat recovery, roll out energy conservation and environmental protection activities, enhance management of the operation and maintenance of environmental protection facilities, and step up supervision and assessment relating to energy conservation and environmental protection.

The Company mainly consumes coal and natural gas in the power generation process, and consumes a certain amount of oil during the start-up ignition and production combustion process. In 2017, the Company’s average coal consumption rate for power sold was 306.48 grams/kWh, representing a decrease of 0.39% from that of the same period last year. A total of 10,885.99 ten thousand tons of standard coal, 29,951.27 tons of production oil, 340,735.00 ten thousand of standard cubic meters of natural gas have been consumed during Company’s power generating, and the weighted average house consumption rate was 4.66%.

#### Management Mechanism

The Company’s production department is responsible for the centralized administration of energy conservation. In accordance with the relevant state laws and regulations and in view of actual circumstances, the Company has established a system for energy conservation by implementing the three-level administration of energy saving, vigorously promoting energy conservation and increasing the efficiency of energy consumption. Various systems of energy saving are specified by each unit of the Company according to their actual circumstances so as to carry out publicity, training, supervision and inspection in a timely manner.

To enhance the budget management of energy consumption, Huaneng International has formulated the Special Assessment Requirements for Energy Conservation and Emissions Reduction to ensure an optimal level of

consumption of coal, electric power, oil and natural gas. By combining goal management and process management, the Company first sets the annual energy consumption reference taking into account the energy efficiency level of each grassroots unit and carries out assessment on the degree to which the reference target is met. Second, regarding those units which have difficulty meeting the target or whose energy consumption rebounds severely, the Company will arrange on-site inspection performed by professionals, who then carry out comprehensive investigations, provide recommendations and take measures to ensure that the energy conservation and emissions reduction targets set by the state and the Company are met. By doing so, the Company can maintain its leading position in energy conservation.



### Management Measures

In 2017, the Company strived to meet stringent the major energy consumption reference targets and focused on energy conservation and energy saving work in three areas, namely management, structure and technology. With the concerted effort of various units, the Company has maintained its industry-leading position in terms of the major energy consumption reference targets achieved both by the Company and by its major types.

On energy conservation management, first, the Company has set up a leading group and a working group dedicated to driving the major type indicators in leading position to coordinate work on technology, safety and fuel. Second, various units of the Company have formulated a plan on advancing development and set a timetable for implementation. Third, a special reward fund has been set up to provide incentives for advancement.

On structural energy conservation, first, the Company requires that the relevant units keep a close on policy changes and take guided action to promote energy conservation and economic dispatching, increase the output coefficient of high-efficiency units and effectively reduce coal consumption for power supply. Second, the Company encourages all units to tap into a wider heat supply market according to local conditions. Third, the Company has enhanced fuel procurement to maintain higher levels of coal calorific value amid a gradual decrease in coal calorific value on a yearly basis.

On energy conservation technology, the Company has put itself ahead of the curve by diagnosing the energy saving potential of major types, researching into advanced technology and establishing the Reference Table for Key Unit Transformation Projects. Through unit maintenance and ultra-low emissions retrofitting, we seek to achieve optimization of stream admission of stream turbines, low temperature economizer, led to add one and preheater flexible seal transformation, optimization of air and flue gas ducts, and optimization of coordinated control systems. In 2017, the Company completed 76 energy conservation technological transformation projects. Based on the current data, it is expected that the overall coal consumption of thermal power units for power supply can be further reduced.

Through a series of effective management measures, as at December 2017, the Company has beaten the other four competitors and maintained its leading position for energy conservation in coal consumption for power supply by major type, such as 1,000MW ultra-supercritical wet cooling, 600MW ultra-supercritical wet cooling, 600MW super-critical wet cooling, 600MW super-critical air cooling and 600MW subcritical wet cooling.

Fifty-three power units of the Company managed to gain a spot in the energy efficiency competition and benchmarking organized by China Electricity Council. Of the units awarded, 14 units, including Laiwu No.6, received the highest honor; 13 units, including Jinling No. 1, received the second highest honor; 16 units, including Haimen No. 4, received the third highest honor; 5 units, including Laiwu No. 6, received the “optimal coal consumption power unit” award and 5 units, including Weihai No. 6, received the “optimal house consumption rate power unit” award.

#### Weihai Power Plant—Energy Conservation and Emissions Reduction Transformation

To implement the state’s action plan for the transformation and upgrading of coal-fired power saving and emissions reduction, Weihai Power Plant has been making concerted efforts to overcome difficulties and persevere over the past three years by continuously applying and innovating the most cutting-edge energy saving technologies. Since then, major energy conservation and emissions reduction transformation has been completed for 4 thermal power units.

Between 2015 and 2016, the Company successfully implemented the advanced energy conservation technology integrated application and demonstration project for Unit 6, which included the integrated application and transformation of 13 advanced energy conservation technologies, and gained ownership of the intellectual property rights pertaining to 4 new self-developed technologies. After the transformation, the house consumption rate of the power unit dropped by 1.51 percentage points to 2.23%; coal consumption rate for power sold went down by 7.16 g/kWh to 278.52 g/kWh, breaking world records concerning an installed capacity of 600MW. Subsequently, two phases of stream turbine flow remolding and low-temperature economizer retrofitting for Unit 3 and 4 were completed. Between November 2016 and February 2017, the Company applied the energy conservation advanced integrated application approach adopted in Unit 6 to Unit 5 and implemented 9 integrated energy conservation transformation projects, including low-temperature economizer retrofitting.

Following three years of hard work, the house consumption rate of the power plant dropped by 0.32 percentage points and coal consumption rate for power sold went down by 8.61 g/kWh, which translates into a reduction of 8.45 ten thousand tons of annual coal consumption. This represents an exemplary energy conservation transformation for coal-fired power and valuable experience for the 2014-2020 national energy conservation and emissions reduction transformation and upgrading of coal-fired power units. Weihai Power Plant has won the 2016 China Power Market Golden Bridge Award, Huaneng Group Technological Innovation Award, the highest award in the 2016 National 600MW thermal power units energy efficiency benchmarking and competition, the Most Optimal Coal Consumption for Power Supply Award and the Most Optimal House Consumption Award.

#### 5.3.3 Water Resources Management

Huaneng International has always been committed to the protection of water resources, strengthen water saving, deepen the recycling of water and improve water use efficiency, to achieving the Company’s “energy saving and environmental protection” standards. The water management system was set up in accordance with the national laws, regulations and standards, and meets the requirements of local laws and regulations of the power plants’ regions.

In 2017, the Company’s total water consumption was 19,344.24 million tons, the fresh water for generating power was 423.42 million tons, the open cooling circulation water was 18,920.82 million tons, and the consumption performance value of fresh water for generating power was 1.07 kg/kWh.

### Management Mechanism

The main water consumptions of Huaneng International are for power units generating electricity, replenishing water for closed circulating water, and wet desulphurization, etc. Mostly, surface water such as rivers, urban water, a small amount of groundwater, etc., is used for generating power, and river water or sea water is used for circulating.

In accordance with the Company's requirements, the various thermal power plants have established a set of water consumption management systems and procedures, which include:

- A water management system has been established and managed by specific personnel, who shall formulate rules for water usage, instruments maintenance and management. All water-usage sectors and professionals conduct regular maintenance and calibration for water metering, water quality testing instruments and water-usage equipment, etc., so as to eliminate unreasonable water usage.

An account management system has been constructed, including the whole plant account, drainage account, water quality monitoring, water metering instrument basic information table, equipment installation location and parameter table, records of instrument test/calibration and maintenance, etc. They also regularly calculate the water management index of the whole plant, and the water usage account is based on the actual monitoring data.

The thermal power plants also comprehensively utilised various wastewater of the plant area and reduced discharge rate, according to the principles of shunting sewage and clean water, classification and recovery, and disposal and reuse.

### Management Measures

In 2017, the Company rolled out a number of important water saving measures to mitigate the risk of water shortage.

The Company's two-pronged approach to enterprise evaluation and assessment centered on "energy conservation and environmental protection" requires power plants to implement water saving management and assess water consumption for power generation. Water-saving thermal power plants has established a sound water quantity and quality monitoring system and adopted new technology, new craft and new equipment to improve water usage efficiency of the power plant. In the regions with serious water shortages, the power plant carried out in-depth technical transformation of water saving or implemented the technical upgrading project of wastewater zero emission, such as building air cooling units to reduce reliance on water.

Next year, the Company will formulate the Technical Guide to Water Conservation and Wastewater Treatment for coal-fired power plants and carry out power plant retrofitting for water conservation for wastewater reduction and utilization.

#### Shangan Power Plant—"Three-Step" Water Conservation

To ensure that water conservation work is carried out smoothly, Shangan Power Plant has formed the Huaneng Shangan Power Plant Water Conservation Leading Group led by the power plant manager to look into the current water saving practices and formulate water saving plans. With underground water consumption reduction as the focus, the power plant has carried out a number of technological transformation projects for water conservation.

To meet the targets of doing away with underground water, using reclaimed water as the sole water resource for production and "zero drainage" of wastewater, since 2010, the power plant has switched from wet fly ash to dried fly ash to substantially reduce underground water consumption and adopted a recycled water reverse osmosis operation system that can save 5 million tons of water a year. Besides, the power plant has commissioned the Xi'an Thermal Power Research Institute to conduct preliminary study and analysis on formulating plans for the transformation and upgrading of the reclaimed water treatment system, the recycled water reverse osmosis system and the water desalination system to gradually increase the consumption of reclaimed water month by month. By October 2017, the power plant's consumption of reclaimed water surpassed that of underground water for the first time, thereby reducing the consumption of underground water resource.

To achieve smart monitoring of water consumption and "zero drainage" of wastewater, the power plant has designed a three-step roadmap to water conservation and sewage treatment. The first step is to implement wastewater system basic transformation for separation and reuse of rainwater and sewage. The second step is to implement water saving and emissions reduction projects, such as water saving transformation of the recycled water and sewage reverse osmosis and treatment system and the reclaimed water advanced treatment system as well as transformation of the second-generation boiler feed water ion exchange treatment system to reverse osmosis. The third step is to implement wastewater and sewage treatment projects, namely small quantity with high salinity wastewater treatment, such as desulfurization wastewater treatment using evaporation crystallization, dry flue gas and spray irrigation to achieve the "Zero Drainage" of wastewater target.

#### Yuhuan Power Plant—“On Demand” Water Supply

Located at the west of Yuhuan Peninsula and east of Yueqing Bay, Yuhuan Power Plant is surrounded on three sides by mountains with one side facing the sea, an area resembling a port. Because there is lack of fresh water and abundant seawater, seawater is used for the power plant’s circulating cooling water system. Fresh water for production and living at the power plant comes from desalinated seawater using the double-membrane method. The power plant adopts an “on demand” approach to water supply, meaning that water supply is provided only when water volume is lower than the reference level of equipment water consumption, in order to encourage wastewater treatment and reuse. Yuhuan Power Plant has implemented an operation-specific management mechanism for separation of fresh water and sewage. Solid walls are used for fuel operating sites; moat-like conduits are used for coal-fired and ash storage sites; both solid walls and conduits are used for desulfurization sites. To further conserve water resource, measures such as rain water reuse and water recycling have been rolled out and a comprehensive roadmap to “wastewater decontamination, waste water reduction and wastewater resource reclamation” has been designed to achieve wastewater reuse. As a result, Yuhuan Power Plant’s total fresh water consumption has maintained a downward trend.

#### 5.3.4 Emissions Management

In accordance with China's 13th Five-Year Plan for Ecological and Environmental Protection, 13th Five-Year Comprehensive Work Plan for Energy Conservation and Emissions Reduction, 13th Five-Year Work Plan for the Control of Greenhouse Gas Emissions, as well as the relevant requirements of the National Development and Reform Commission, the Ministry of Environmental Protection and the State-owned Assets Supervision and Administration Commission of the State Council, and guided by China Huaneng Group Company's 13th Five-Year Plan for Establishing a Globally Competitive World-Class Enterprise, Huaneng Group Company have formulated China Huaneng Group Company's 13th Five-Year Special Plan for Leading the Development of Environmental Protection, which is based on Huaneng Group's environmental protection work progress and experience during the 12th Five-Year period.

In strict accordance with Huaneng Group's 13th Five-Year Plan for environmental protection, Huaneng International requires that all its power plants comply with national and local standards on pollutant emissions and strictly abide by the provisional pollution control measures implemented by local governments in accordance with the law in the event of abnormal weather conditions or important social activities. The Company's headquarters operates the production management department, which comprises an environmental protection office and a production monitoring office and is responsible for supervising and coordinating the environmental protection management and pollutant emissions control of regional companies. Each regional company operates its safety and production department, which is responsible for supervising and coordinating the environmental protection management and pollutant emissions control of its power plants. Power plants operate their own production department, operation department and maintenance department, which are responsible for the operation, maintenance, repair and retrofitting of various environmental protection facilities.

By fully utilizing Huaneng Group's internal information platforms, Huaneng International is able to get informed of emissions in excess of the prescribed standards in a timely manner and conduct focused analysis on those cases involving longer periods, higher levels of severity and more typical problems. Through regular and ad-hoc reporting, as well as sharing of experience and lessons learned, various power plants can take precautionary measures accordingly and the Company can improve its environmental protection management.

To gauge public opinion and encourage public debate on environmental protection, the Company has established a comprehensive information collection system to canvass opinion on various environmental issues. We will work with power plants and formulate response measures in enhancing exchange of ideas among the public. In accordance with the requirements of the Ministry of Environmental Protection, the Company actively carries out voluntary monitoring of pollutants and discloses environmental protection information. In accordance with the requirements of local environmental protection departments, pollutant emissions information disclosures are made on the Company's website or the online platform of the corresponding environmental protection department of local governments.

##### 5.3.4.1 Exhaust Gas Management

The exhaust gas discharged by Huaneng International is mainly carbon dioxide, sulphur dioxide, nitrogen oxides and soot generated from coal-fired power plants during the process of combustion in the coal-fired utility boiler. In 2017, the Company's emissions of sulfur dioxide, nitrogen oxides and soot were 43,392.91 tons, 59,789.73 tons and 6,247.77 tons respectively, with emission performance values of 0.11 g/kWh, 0.15 g/kWh and 0.02 g/kWh respectively.

In daily administration, the Company's production monitoring office is responsible for maintaining and using the "production real-time monitoring system" to monitor emissions data through real-time connection between plant-level monitoring systems and air pollutant emissions monitoring systems of each power plants. In the event of emissions in excess of the prescribed standards and the annual pollutant performance target, the Company will impose fines on the relevant units and make internal announcements. Besides, upon collecting monthly, quarterly and annual pollutant emissions performance data, the Company will conduct analysis on the causes and patterns of performance changes and provide guidance for relevant units to investigate potential risks and take effective measures to meet annual

performance targets.

35

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#### Comprehensive Retrofitting of Power Units for Ultra-low Emissions Near Completion

A total of 205 power units of Huaneng International are in need of retrofitting for ultra-low emissions, accounting for an installed capacity of 84,354MW. 48 units have undergone retrofitting in 2015, 87 in 2016 and 68 in 2017, with the remaining 2 expected to complete retrofitting in 2018.

#### Denitrification Under Heavy Load

In the face of expensive low-nitrogen oxides remolding method for thermal system optimization and wide-temperature catalyst retrofitting, various units of the Company earnestly explore and innovate for increasing the denitrification flue gas inlet temperature. Through operation optimization and adjustment, we have developed a pre-incorporation denitrification technique without equipment alteration and at lower costs. In summing up the experience of five power plants, including Haimen, Yuhuan and Qinbei, from denitrification prior to incorporation into the power grid, the Company has decided to go in the direction of “changing the heat distribution of the boiler rear heated surface and increasing the flue gas inlet temperature” and published the Guiding Opinions on Low Nitrogen Oxides Operating Technology of Coal-Fired Power Units”. In light of the publicity on this technology, relevant experts from the Company have provided guidance and advice for those power plants with greater difficulty in implementation. Currently, only 5 units of the Company have not carried out denitrification prior to incorporation into the power grid.

#### Luohuang Power Plant—Emissions Reduction Advanced Group

In 2017, Luohuang Power Plant completed retrofitting of 5 power units for ultra-low emissions on schedule, accounting for 137.5% of the annual retrofitting progress prescribed by the Chongqing municipal government and fulfilling the retrofitting target set by the local environmental protection department ahead of schedule.

During the transformation process, the power plant vigorously promoted scientific and technological innovation and pioneered the adoption of a large ratio of bituminous coal blending (up to 70% or above) for its No.5 and No.6 600MW “W”-flame boilers. This practice can reduce coal consumption for power supply and substantially reduce the total amount of pollutants produced at source (the concentration of nitrogen oxides at furnace exit dropped from 1,200mg/Nm<sup>3</sup> to 700mg/Nm<sup>3</sup>; the concentration of dust at electrostatic precipitator entrance went down from 45g/Nm<sup>3</sup> to 25g/Nm<sup>3</sup>; and the concentration of sulfur dioxide at desulfurization entrance decreased from 9,500mg/Nm<sup>3</sup> to 4,000mg/Nm<sup>3</sup>). This makes retrofitting for ultra-low emissions easier and less expensive. The waste charge per unit power generation went down by 50.77% year on year.

The power plant pioneered the application of low-temperature economizers for its coal-fired power units using coal with a sulfur content of more than 3%. It also conducted an in-depth study on the “single-tower deep desulfurization” technology. It was showed that the single-tower high-efficiency desulfurization technology is of a higher application and promotional value when used to desulfurize coal with a sulfur content of more than 3%. After the retrofitting, emissions of nitrogen oxides, sulfur dioxide and soot were less than 50, 35 and 5 mg/Nm<sup>3</sup>, which outperformed national standards on ultra-low emissions as well as competitors in the industry. Luohuang Power Plant was awarded the title “12th Five-Year Advanced Group in Emissions Reduction” by the Chongqing municipal government.



#### Fuzhou Power Plant—Protecting the Environment with Integrity

With the objective of achieving ultra-low emissions, the power plant has set up a technological transformation department to carry out ultra-low emissions retrofitting projects and enhance the management of environmental protection retrofitting projects. Following the ultra-low emissions retrofitting of Unit 3, 4 and 5 in 2016, the power plant carried out comparable ultra-low emissions projects for Unit 1, 2 and 6, fulfilling the 2017 annual target set in the Fujian's Work Plan for Comprehensively Implementing the Ultra-Low Emissions and Energy-Saving Upgrade of Coal-Fired Power Plants. Three months ahead of schedule. The retrofitting projects for Unit 1 and 2 were carried out simultaneously, and despite the difficulty in retrofitting and the challenge of meeting high safety standards, the projects were successfully completed ahead of the BRICS Xiamen Summit.

In taking its self-assessment on environmental protection seriously and working hard for recognition from the local environmental protection department, the power plant was awarded the "2016 Enterprise Protecting the Environment with Integrity", the highest honor given at the provincial level by Fujian environmental protection department in 2017.

During the 2017 BRICS Xiamen Summit, the power plant implemented strict controls on pollutant emissions, enhanced the operation and maintenance of environmental protection facilities, and strengthened fugitive dust control on coal storage sites, ash storage sites and operating sites to prevent production suspension and reduction resulting from environmental concerns, while strictly complying with the requirement of daily information submission relating to environmental protection issues to achieve the target of "zero report" on safety.

#### Future Plan

Huaneng International will continue to adhere to high standards on emissions, strictly comply with the licensing clauses on sewage discharge, and ensure reliable and stable operation of all environmental protection facilities and equipment.

Besides, the Company will work towards eliminating white smoke plume from the chimney by developing technology, conducting in-depth research and instructing power plants to formulate a technical feasibility plan for eliminating white smoke plume in a cost-effective and energy-efficient way in accordance with the requirements of national and local environmental protection policies.

#### 5.3.4.2 Management of Greenhouse Gases

In order to actively support the national carbon trade market, Huaneng International has consecutively introduced the Management Methods of the Company's Carbon Asset, Management Regulations on Greenhouse Gases' Emission Statistics, Management Regulations on the Development of the Company's Voluntary Emission Reduction Projects and Management Regulations on Performance and Transaction of the Company's Quota, which provides detailed guidance and regulations of carbon asset management, greenhouse gases' statistics management, voluntary emission reduction projects and carbon asset transactions.

##### Carbon Emission Reduction

Carbon dioxide is the major greenhouse gas produced during the operation of the Company. It is mainly produced in the combustion process of coal, and a small amount is produced in the wet limestone-gypsum desulphurization process. In 2017, the Company's total amount of energy-related direct greenhouse gas emission was 33,559.30 ten thousand tons of carbon dioxide equivalent, of which coal consumption, natural gas consumption, fuel consumption and desulphurization generated respectively was 32,629.28, 743.96, 9.27 and 176.79 ten thousand tons of carbon dioxide equivalent. The energy-related direct Greenhouse gas emission intensity was 770.09 grams of carbon dioxide equivalent/kWh. The Company's total amount of energy-related indirect greenhouse gas emission was 38.42 ten thousand tons of carbon dioxide equivalent. Its indirect greenhouse gas emission intensity in energy-related was 0.88 grams of carbon dioxide equivalent/kWh.

The Company has established a sound management mechanism in reducing greenhouse gas emissions. By comprehensively strengthening the management of fossil fuel consumption, the Company has reduced its consumption, increased the efficiency its use, and increased the proportion of green energy such as hydropower and wind power to meet the purpose of carbon dioxide emission reduction. According to the characteristics of the power plant equipment, the Company adopts the advanced and practical energy saving technologies, such as transformation of lean coal to the bituminous coal in boiler, steam turbine transformation, heating transformation, waste heat recovery from flue and gas, integration of fans, frequency conversion, speed control and so on, in order to reduce the coal consumption and greenhouse gas emission.

According to the Company's 13th Five-Year Plan, the intensity of carbon dioxide emissions from all power units should decrease by about 25% by 2020. By 2020, the Company seeks to build a carbon asset management system geared to the national carbon market and the goal of establishing a global first-class leading enterprise.

##### Carbon Asset Management

###### Organizational Structure

In order to strengthen the management of carbon assets, the Company has set up a leading group for domestic emission reduction and project development ("leading group"). Its main responsibilities include: (1) formulating the Company's overall carbon emission quota and strategy of target transaction and transaction of certified emission reduction; (2) approving the emission statistics reports of the Company and the grassroots units prepared by the external professional organizations; (3) verifying the annual carbon emission quota gap and the annual budget; (4) approving the development plan of annual voluntary project on emission reduction; (5) deciding follow-up implementation plans for Clean Development Mechanism project (CDM project).

The leading group supervises a working group, which is responsible for managing, instructing and coordinating the development and implementation of the Company's work on carbon asset trading, voluntary emissions reduction projects and greenhouse gas emissions statistics. Special bodies have been set up by regional companies of the Company to carry out work on carbon asset trading and contract performance, as well as greenhouse gas reporting and budget declaration. Under the leadership of regional companies, project units and emissions control enterprises form special bodies managed by designated persons, who are assigned to carry out work on emissions trading, voluntary emissions reduction project development, data monitoring and reporting to management.



#### Daily Administration

The Company has entrusted Huaneng Carbon Asset Management to formulate trading strategies, provide agency transaction and escalate compliance issues to higher authorities. After communicating with grassroots units and taking into consideration grassroots units' actual circumstances and market trends, Huaneng Carbon Asset Management prepares a quarterly report on "Quarterly Trading Strategies" and submits it to the Company's leadership. The report covers market supply and demand analyses, price trend forecasts, trading directions, trading price ranges, trading caps and budgets. The Company's Commerce department organises conferences among managements to examine and approve relevant trade strategies. Approved strategies will be despatched to every branch offices and production unites, and guide them with carbon assets transactions and implementation.

#### Performance in Carbon Trade Pilot Regions

With the support of Carbon Assets Company, the Company has carried out effective greenhouse gas emission reduction and carbon trade in eight provinces or cities (Beijing, Shanghai, Tianjin, Chongqing, Shenzhen, Hubei, Guangdong and Fujian), where carbon asset transactions are carried out in recent years.

From year 2014 to 2017, the Company has successively launched projects of carbon quota trade, CCER<sup>6</sup> displacement, etc., in eight carbon trade pilot regions, and successfully fulfilled all the tasks of honouring agreements for thermal power companies. Comparing with average transaction value in the market, the Company respectively lowered the cost of honouring agreements by RMB 7.01 million, RMB4.51 million, RMB8.12 million and RMB8.62 million from year of 2014 to 2017 respectively, which aggregates to RMB28.26 million.

Concerning carbon finance innovation, the Company reasonably utilised financial tools, developed a series of carbon finance innovation projects based on actual circumstances of production unites, and attained preliminary achievements. On the basis of such carbon financial innovation businesses as allocation of carbon-CCER exchange options and the allocation of carbon trust launched in 2015 and 2016 respectively, in 2017, the Guangdong branch's unit signed a allocation of carbon options transaction agreement with external institutions while grassroots units from Beijing, Shanghai and other places made use of CCER to comply with the limits set by the government at a lower cost. These innovation businesses have reduced the Company's compliance costs.

Concerning developments of CCER projects, from the year of 2013 the Company developed 50 CCER projects in five batches which are mainly wind power and photovoltaic projects, and in estimation they will reduce emission by 2.5 million tons each year. By the end of 2016, the Company has 10 projects put on records in the National Development and Reform Commission, four projects put on records for emission reduction, and on records around 3 million tons of emission reduction in total. The development of CCER projects and the storage of CCER well lay a solid foundation for the Company.

#### Responding to the Start of National Carbon Trading Market

According to the work plan of the National Development and Reform Commission, the national carbon trading market kicked off at the end of 2017 and the power industry was among the first batch to be incorporated in the market. Taking into account the Company's business features and drawing on our experience of pilot market participation, we have formulated a series of response measures:

On organizational system, relevant units outside the 8 carbon trade pilot zones will set up carbon asset management bodies and assign responsible persons in accordance with the requirements of the Company's three-level management system to enable seamless transition of work, define key measures and requirements, and clarify division of labor and responsibilities.

CCER: The full name is “China Certified Emission Reductions”, which means that a unit is in line with the principles and requirements of the Clean Development Mechanism, and it is its emission reduction issued and confirmed by the CDM project.

39

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On institutional system, the Company will further enhance operation efficiency and lower compliance costs for carbon assets. Drawing on the experience of piloting units and taking note of the features of the national carbon market, the Company will further improve the three-level carbon asset system, revise the current carbon asset system, and enhance supervision and inspection of the implementation of the system.

On carbon verification and gap estimation, the National Development and Reform Commission started the process of public consultation on quota allocation for the power industry in the first half of 2017, although the official document has yet to be published. In 2018, the Company will carry out carbon verification for 2016 and 2017. Quota gap estimates will be calculated against the baseline emissions set out in the quota allocation plan taking into consideration different stress parameters and capacity levels. In doing so, an overall quota gap forecast can be made, which serves as preparatory work for the Company to participate in the national carbon trading market.

Regarding voluntary emissions reduction project development and voluntary emissions reductions reserve, in response to the introduction of the national carbon trading market, the Company will through with the development of voluntary emissions reduction projects in accordance with national project declaration and reductions offset policies. The key focuses are as follows: first, after the reinstatement of the national voluntary emissions reduction project declaration policy, the Company will promptly promote the development of voluntary emissions reduction projects concerning wind power and photovoltaic power as far as possible to offset the compliance pressure on thermal power units; second, the Company will start building its emissions reductions reserve as soon as possible and keep a close eye on relevant voluntary emissions reductions offset policies. Taking advantage of a positive policy outlook, the Company can accurately calculate the amount of voluntary emissions reductions against which emissions from thermal power units can be offset. The Company will also initiate emissions procurement for unmet internal quota demand to mitigate the impact of carbon restrictions in the early stages of the national carbon trading market.

The Company will put more effort into emissions trading and compliance work in the pilot zones as well as lowering compliance costs. According to national and local governing departments' arrangements, units in the pilot zones are probably required to remain compliant in those carbon trading market in 2018. The Company will closely monitor policy changes. Once compliance arrangements are confirmed, the Company will conduct market analysis, formulate trading strategy and initiate trading. As long as favorable policies are in place, the Company is eager to operate in carbon finance, such as CCER, with a view to lowering compliance costs.

#### 5.3.4.3 Wastewater Management

In accordance with national and local environmental protection standards and policies, various power plants of Huaneng International considers wastewater treatment one of our key focuses. The Company has established an environmental protection supervision and management system to improve management mechanisms and contingency plans, specify the responsibilities of environmental protection personnel at various levels and impose strict controls on the production, treatment and discharge of sewage with the aim of reducing environmental pollution.

The sewage produced by the Company includes industrial waste, which is mainly generated from Company's powering facilities such as circulation system of steam turbines, and desulphurization wastewater produced during the operations of the unit's wet desulphurization facilities. In the year of 2017, the total water discharge of the Company is 18,449.64 million tons, the total discharge of the open cooling circulating water is 18,415.30 million tons, and the total discharge of sewage, which is mainly industrial wastewater and desulphurization wastewater, is 34.34 million tons.

Since the implementation of the permitting system for pollutant discharge, the Company has imposed more stringent requirements on power plants regarding wastewater discharge. By 2017, all power plants of the Company have obtained pollutant discharge permits and strictly abide by the requirements of the permit concerning the outlet and water quality. To optimize the utilization of water resource, the Company has formulated "The Guide of Water Saving and Wastewater Treatment Technologies" for coal-fired power plants and has proactively promoted the work of water

saving and wastewater treatment transformation. In 2017, the Company approved the initiation of 10 retrofitting and preparatory work projects on water saving and wastewater treatment, of which four were special treatment projects and six were projects of feasibility study on the preparatory work for retrofitting. Various technologies for zero wastewater discharge have become more mature, such as the flue gas bypass evaporation system developed by the Xi'an Thermal Power Research Institute. The technology has been tested at Huangtai Power Plant on a certain scale and has shown good performance.

Given the complexity and diversity of wastewater treatment, the Company will continue to work with scientific research institutes to enhance wastewater research and develop practical, reliable and cost-effective wastewater treatment technologies. Taking into account the actual circumstances facing the power plants and in accordance with the requirements of the sewage discharge permit, the Company insists on the idea of “on power plant, one policy” and complies with the principles of diversion of clean water and sewage, water recycling, and treatment classification, thereby helping to promote the transformation of water saving and wastewater treatment

#### 5.3.4.4 Waste Management

Huaneng International has implemented a stringent waste management system, which requires that the storage, discharge, and disposal of waste comply with national laws and local policies, cooperates with qualified third parties to deal with waste, strengthens waste recycling, and strives to minimize waste emissions.

#### Hazardous Waste

The main hazardous waste produced by the Company during the process of power generation includes such solid waste as used denitration catalysts and ion exchange resin deactivated in wastewater treatment, as well as liquid waste like waste oil produced during the operation of power plant units. The Company regenerates the denitration catalysts which have reached their life limit and continues to charge them into denitration devices for use. The ion exchange resin can be washed by an appropriate concentration of inorganic acid or alkali, thereby returning to the original state and being reused. The Company will hire qualified agencies to deal with denitration catalysts that could not be renewable any more, ion exchange resins that cannot be reused and hazardous liquid waste such as lubricant and other waste oil during operations. Besides, through managing the accounts, we detailed statistics on the amount of waste generated, the amount of disposal, and the audit of the qualifications of disposal units, etc., and strictly managed the generation and disposal of waste.

In 2017, the Company in the process of production and operation generated 1,358.99 tons of waste denitrification catalysts, 128.24 tons of ion exchange resin and other hazardous solid waste and 959.04 tons of waste oil and other hazardous liquid waste.

#### Solid Waste

The main solid waste generated during the Company’s power generation process includes fly ash and cinder produced during the combustion process of the boiler, and gypsum produced during the limestone wet desulphurization in power plants. The Company produced 4,002.46 ten thousand tons solid waste, 3,289.62 ten thousand tons of fly ash and cinder, and 712.84 ten thousand tons of desulphurization gypsum during the year of 2017. The rate of comprehensive utilization of fly ash and cinder stood at 91.40% and the rate of utilization of desulphurization gypsum disposal was 100.00%.

Fly ash and cinder, desulphurization gypsum and other solid waste can be sold as raw materials in related industries, such as cement, concrete, aerated blocks and gypsum board. In accordance with national and local environmental protection standards and policies, the Company has established an environmental protection supervision and management system to effectively control the canning, stacking and marketing of as hand desulfurization gypsum.

When loading fly ash, cinder and gypsum, the Company rigorously follows the operational norm for load control and conducts thorough check and cleaning before entry to prevent “escape, spillover, dripping and leakage”. The Company closely monitors where the by-products of power generation are being transported and how they are going to be used to prevent environmental pollution and public issues that have a negative impact on society.



The Company will temporarily place the unsold fly ash and cinder on ash storage sites and has implemented a rigorous control system to ensure the safety of ash dams and prevent seepage by carrying out regular assessment and inspection. In accordance with the requirements of environmental protection departments, construction and retrofitting of wind-proof and dust control facilities have been carried out to ensure that the storage of ash and gypsum is in line with environmental protection standards. The Company has developed an ash storage site management information system with two major functions, namely safety assessment and production operation management. The introduction of the ash storage site management system represents several breakthroughs in terms of dynamic monitoring, mobile application and GPS positioning of ash storage sites. By using drones for inspection at piloting power plants, the Company has taken a substantial leap to improving production safety management of ash storage sites.

### 5.3.5 Noise and Other Environmental Impacts

#### Noise Management

From the initial stage of construction to the operation period of the power plants, Huaneng International continued to pay attention to noise management to prevent the noise pollution.

On the initial stage of construction, relevant departments of environmental protection determined the sensitive points of noise between plants and the noise control level, in accordance with environmental impact assessment approval requirements. In the environmental completion acceptance of the power units in all power plants, the monitoring department will monitor according to the environmental impact assessment approval requirements, and only when the monitoring results are qualified will the acceptance concerning noise pass. During the operation of power units, the power plants, complying with requirements of environmental protection departments, regularly commissioned relevant monitoring departments to monitor and published the reports in various ways.

The power plants installed noise coverings on equipment such as fans which are the noise sources in the plant area, and built noise walls in key areas such the Liangshuita area. When the power units are undergoing transformation or equipment failure which cause excessive noise, the Company will conduct noise reduction transformations to those noise-excessive equipment, so as to achieve the relevant requirements.

#### Other Impacts

All power plants owned by the Company during their initial stage of construction are all required to pass the EIA approval by the relevant environmental protection departments, in order to avoid serious impact on the surrounding environment and natural resources during operations. All power plants during operations strictly abide by national environmental emission standards, and discharge within the standards. Some power plants actively responded when the requirements of surrounding environment changed, to ensure that surrounding environment and natural resources are protected.

To enhance the management of unorganized emissions from coal yards, the Company has promoted closed coal yard renovations at power plants in Beijing-Tianjin-Hebei 2+26 cities and the Yangtze River Delta. Not only can this reduce the environmental pollution caused by the coal dust and coal yard rainwater and improve the surrounding environment of coal yards, but also increase the coal storage capacity, improve the mechanical operating conditions and reduce the equipment maintenance work. Shanghai Shidongkou No.1 Power Plant coal yard enclosure project, with "Great Pressure on Small" in consideration of equal capacity, carry out coal yard enclosure in the form of Eurosilos, China's first enclosure coal storage project in the power system. In order to make full use of idle space at the top of the coal shed and maximize the effectiveness of energy saving and emissions reduction, the Company is ready to carry out all the photovoltaic construction for the new closed coal yard project.

06

People-Oriented Safe Production

Huaneng International regards safety as its own life, tolerates no safety incidents, always adheres to the production safety principles of “life-oriented, safety first, prevention first, comprehensive management”, uphold the safety conception of “safety is credibility, efficiency, competitiveness, responsibility of safety is of the greatest significance”. Prevention of personal death, mishandling of operations with malicious intent, major equipment damage, major equipment incidents, fire outbreaks, traffic accidents for which someone is held responsible, and other incidents that may adversely affect the Company’s reputation. The Company places in any case safety in the first place, attaches great importance to safety and occupational health of employees, strengthens bottom line awareness, and effectively implements safe production.

43

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According to the Company's 13th Five-Year Arrangement for Safety Production, by 2020, the Company and various units regulate the operation of the intrinsic safety system, incorporate outsourcing into the scope of the Company's management and further enhance training on production safety for comprehensive control of risk management, effective implementation of the responsibility system and prevention of safety accidents and occupational diseases. The target is to achieve zero injury (minor or above) and zero (equipment) incident in grassroots unit. Major production safety tasks during the 13th Five-Year include strengthening outsourcing management, deepening the operation of the intrinsic safety system, deepening risk control, deepening the management of safety hazards, strengthening emergency response management, pushing ahead with production safety education, strengthening on-site monitoring, promoting the information of safety management and creating a corporate safety culture.

In 2017, the Company and its various units met the production safety target.

#### 6.1 Promoting the Intrinsic Safety System

According to laws and regulations on production safety stipulated by the state, the Company, taking into consideration actualities of its subsidiaries, has established its own fourfold Intrinsic Safety System ("ISS"), which comprises intrinsic safety of personnel, process equipment, environment and management.

The fourfold intrinsic safety system include:

#### The PDCA Management Model of Intrinsic Safety System

The Company's intrinsic safety system follows the PDCA management model, i.e. PLAN, DO, CHECK, and ACTION, establishes circulation and improves continuously. The management model consists of six key elements: leaders' commitments, policies of safety, health and environment, planning, implementation and operation, inspection and corrective measure, and management review.

The Company's Intrinsic Safety System's documents consist of system management manuals, normative and procedural documents, as well as operating procedures and other supportive documents.

#### Revision and Review the Intrinsic Safety System Documents

In 2017, the Company revised, reviewed and published the intrinsic safety system regulations. By sorting and consolidating the 109 original safety management documents, 96 documents were finalized. In the second half of that year, the Company started revising the document on regulations for hydropower management of the intrinsic safety system and soon to be published.

## 6.2 Establishing a Sound Safety Management Mechanism

### Establishing a Three-level Safety Supervision System

Huaneng International has set up the Committee of Safety, Occupational Health and Environmental Protection, whose main aims are to adhere to the policy of “safety first, prevention first, comprehensive management”, implement the national, industrial, and Huaneng Group’s own guidance and arrangements on safety production, organize and guide the Company’s work of production safety, analyse and propose important decisions and measures concerning production safety, and coordinate and solve key problems therein.

Under the leadership of the Committee of Safety, Occupational Health and Environmental Protection, the Company establishes and improves management and organizational institutions of production safety, and has built a three-level security inspection system made up of “headquarters – regional companies – production units”. The three-level management and organizational institutions of production safety forms complete supervisory system of production safety, performs duties of supervising production safety, and guarantees the realisation of aims of production safety with the system of production safety system.

The headquarters is responsible for system design, business guidance, worksite monitoring services, assessment and evaluation, etc. Regional companies are responsible for the implementation of the Company’s safety management requirements, work plans and decision deployments, give full play to the role of organization and coordination, and supervise basic production units’ implementation of responsibility of subjects. Production units are responsible for the implementation of Comprehensive Standard of Production Safety Responsibility, implement security responsibility of the Company’s all levels and posts, and set up the sense of responsibility of “whoever works is responsible, whoever checks is responsible, whoever supervises is responsible, and whoever approves is responsible”.

### Target Responsibility System Concerning Production Safety

The Company and its subsidiaries apply target responsibility system concerning production safety. Every year the Company’s managements sign a memorandum concerning target responsibility of production safety with principals from subsidiaries, carry out monthly pre-assessment and yearly final assessment, and guarantee the implementation of responsibility at every level. The Company’s target of production safety abides by “one vote veto”, which refers to a quantitative evaluation on production safety performance of each unit with starting score of 100 points. Whenever employees’ injury or death accident, injury accidents of outsourcing personnel for whom the Company is responsible, serious and above equipment accidents for which the Company is responsible, or fire disasters, environmental pollution and devastation accidents happen, 100 points will be deducted.

## 6.3 Implementation of Effective Safety Measures

Huaneng International sees safe production and employees’ occupational safety and health as paramount. In order to guarantee production safety, the Company has taken comprehensive and effective measures, continuously updated methodology, and contributed to lasting enhancement of the level of production safety.

In 2017, the Company has formulated an annual work plan and rolled out a series of activities to ensure all grassroots units implemented production safety measures effectively:

### Building an Intrinsic Safety System

To implement an intrinsic safety system, deepen employees’ knowledge and understanding of it and expedite the construction of such a system at various grassroots units, the Company has formed a dedicated team to garner support for the initiative. The team has held 35 talks, provided training for 47 thermal power plants and completed publicity work at 75 power plants regarding the introduction of an intrinsic safety system.



In addition, the Company has carried out review and verification of the intrinsic safety system at grassroots units, confirmed the work, urged all units to complete the review of the system documents and put them into operation on site, and conducted an annual assessment of the effectiveness of the confirmed operation of the intrinsic safety system at grassroots units.

In 2017, the Company carried out acceptance check on the intrinsic safety system at 8 grassroots units.

#### Strengthening On-site Safety Monitoring

Currently, grassroots units are in the phase of mandatory management. This means that grassroots units are required to comply with the safety measures formulated by the headquarters. Strengthening on-site safety monitoring is a measure taken during this phase. Being in accordance with national requirements and taking into consideration production units' circumstances of overall production, the Company has devised 2017 safety monitoring plan, including spring and autumn safety checks, holiday inspection, monitoring for summer peak and flood control, Safety Month supervision, outsourcing safety monitoring, risk control, "double-ticket" (work tickets and operation tickets) monitoring, potential risk investigation, anti-violation monitoring, monitoring of dangerous chemicals, ammonia zones, hydrogen stations and oil depots, special fuel treatment inspection, occupational health and emergency response monitoring, and monitoring of power security measures during critical periods.

Safety monitoring takes place both at the company level and at the regional company level, while cross-monitoring takes place at the regional company level. For any problem found, the Company will issue supervision handbook requesting timely rectification and regular evaluation of rectification work by the unit under monitoring, urge regional branches to fulfill their duties and supervise all grassroots units to implement various measures.

#### Enhancing Risk Control

In 2017, the Company fine-tuned the acceptance and assessment standards of its risk control system to further enhance its risk control capabilities. The Company encourages grassroots units to identify and analyze on-site hazards to make “dangers visible and risks quantifiable”. Based on a “double-ticket” model, grassroots units carry out identification work in respect of personal, equipment and environmental dangers, establish a database for danger identification, and regulate the “double-ticket” management process to better identify, analyze and control dangers. The establishment of a risk control system has enhanced operators’ ability to identify risks, personnel safety awareness and their ability to prevent and control operating risks so as to ensure effective implementation of safety measures, strengthen risk control and improve civilized production.

In 2017, the Company completed acceptance check on the risk control system at 4 grassroots units.

#### Enhancing Potential Risk Investigation and Anti-violation Work

Through various safety inspection activities, the Company has established a mechanism to enhance routine inspection, special inspection and the integration of self-inspection and supervised inspection for the normalization and standardization of safety hazard investigation and anti-violation work.

#### Improving the Emergency Response Management System

In 2017, the Company earnestly encouraged all grassroots units to carry out assessment on emergency response capability in accordance with the requirements of the National Energy Administration. The Company required grassroots units to specify the major responsibilities, establish a long-term and effective mechanism, and enhance publicity and training for emergency response capability assessment, in order to strengthen emergency response management and build a sound emergency response management system.



The Company mainly instructs and supervises grassroots units to enhance their organizing and leadership in emergency response management, formulate emergency plans according to actual circumstances in a timely manner, and complete the review and filing of contingency plans as required by the government in line with the practical situation.

As at the end of 2017, grassroots units of the Company formulated a total of 101 comprehensive contingency plans, 1,617 special contingency plans and 2,779 on-site disposal plans.

#### Conducting Safety Evaluation

The Company conducts comprehensive safety evaluation regularly, in accordance with Measures for the Administration of Safety Evaluation and in collaboration with specialists and professionals at all levels, to inspect and assess the work on ensuring production safety at power plants.

Accidents are often the results of unsafe human behaviors, unsafe conditions of objects, safety management failure and bad operating environments translating into safety hazards and violations. Safety evaluation is the process by which to formulate rectification and preventive measures through evaluation and analysis of equipment system, labor and working environment, and safety management, to achieve an optimal human-machine-environment matching for advanced control of accidents.

For initiation of safety evaluation, grassroots units first conduct self-inspection, self-evaluation and self-rectification. After that, they are required to submit an application for expert evaluation to higher level management units. Regional companies then arrange expert evaluation. Upon division of labor by specialty, the expert team carry out verification based on grassroots units' self-inspection report and evaluation criteria to compile an expert evaluation report. In view of the problems and rectification recommendations put forth in the evaluation report, grassroots units formulate rectification plans and implement them accordingly. They are then required to submit an application for expert review to higher level management units. This time round, the expert team focus on reviewing the effectiveness of rectification plans to verify whether the enterprise's PDCA closed loop management mechanism is operating effectively.

In 2017, the Company conducted safety evaluation at 9 grassroots units.

Roll-out of the "Year of Deepening the Implementation of the Production Safety Responsibility System" Activity  
In 2017, to implement the Opinions of the CPC Central Committee and the State Council on Promoting Reform and Development in the Field of Production Safety, the Company formulated and published the Plan of Huaneng International for the Year of Deepening the Implementation of the Production Safety Responsibility System, and rolled out the "year of deepening the implementation of the Production Safety Responsibility System" activity. The Company has carried out inspection and evaluation of the implementation of the production safety responsibility system at regional companies, and has issued supervision handbook requesting grassroots units to rectify the problems identified during inspection and evaluation. Through the activity, the Company has helped grassroots units put in place the production safety responsibility system to ensure that they "know their responsibilities, fulfil their responsibilities and take their responsibilities" in improving the Company's production safety management.

#### Roll-out of "Production Safety Month" Activity

In 2017, the Company actively participated in the 16th national "Production Safety Month" activity with the topic of "National implementation of responsibility of enterprises' production safety subjects" in which Qinbei Power Plant was honored as an advanced unit in production safety.

#### 6.4 Protecting Occupational Health and Safety

Occupational diseases in the electric power industry are often caused by coal dust, noise and electrical work. Huaneng International has always been emphasizing employees' occupational health. In accordance with the requirements of the intrinsic safety system, the Company has formulated the "Occupational Health Management Standards" and "Employee Health Guardianship Management Standards" (collectively referred to as "Occupational Health Management Standards") to strengthen employees' safety awareness, prevent hazardous events, and protect employees' health and safety.

Various grassroots units have set up occupational disease prevention organizations to specify and put in place occupational disease prevention responsibilities as well as identify and evaluate workplaces with occupational hazards against relevant standards to rate the hazards. Employees are provided with training on occupational disease prevention, while clear warnings are put up in workplaces with potential occupational hazards where regular inspection is carried out.

The Company regularly conducts occupational health examinations for employees in production positions and has established occupational health management records. At present, no occupational disease has occurred.

#### 6.5 Continuously Improving Safety Awareness and Skills

Raising employees' safety awareness is key to the Company's safety management. To develop and encourage employees to participate in the Company's all kinds of security activities in order to establish good security behaviours is the key guarantee to create an intrinsic safety enterprise.

##### Safety Training Management Mechanism

Huaneng International's management has incorporated safety education and training into the Company's annual and long-term plan, established double-level and triple-level educational and training mechanisms, and ensured the implementation of required coaches, funds and materials. The Company's Safety department is responsible for the preparation of safety education outline, design of plans, organisation of safety education and training, and sorting well the records and archives of safety trainings. All units of the Company ensure that employees receive adequate training, adjust safety education plan and organize training for power plants, departments, and teams according to the characteristics of departments' and teams' production.

##### Safety Training

In 2017, the Company organized 81 speaking tours to grassroots units, covering topics like "creating my safe working conditions", "the work ticket for repair work risk control", "analysis of safety rules", "outsourcing management" and "overview of the intrinsic safety system", in which 4,300 person times of employees took part.

The Company has further improved the safety education and training platform and system, upgraded and optimized system software in a timely manner, held training and examinations on the training platform. A total of 4,383 training sessions were held during the year where 172,123 person times of employees took part, and a total of 2,505 examinations were held, attended by 97,343 person times of employees. A certain number of units have uploaded some quality self-developed courseware onto the platform, which is specific, rich in content, targeted, instructive and highly applicable, adding to the diversity of the education platform's content.

The Company has established a safety rules test question database, educated grassroots units on the topic of personal injury and death, improved personnel safety training acceptance standards, and standardized personnel safety training acceptance for 12 grassroots units, all of which passed acceptance with good results.

#### 6.6 Comprehensively Regulating Outsourcing Management

To enhance the management of outsourced teams and employees, the Company has incorporated the long-term outsourced repair and maintenance partner teams into its safety management system in accordance with the “four in one” management requirement in line with the way formal employees are managed to make outsourcing risks controllable and bring them under control for protection of the personal safety of outsourced workers.

##### Promoting the Standardization of Outsourcing

Over the past two years, various coal-fired power plants have made significant progress through the standardization of long-term outsourcing. In 2017, the Company continued to promote the standardization of long-term outsourcing by conducting inspection and acceptance of the standardization of outsourced teams at Beijing Thermal Power Plant, Jinling Gas Turbine, Zhongyuan Gas Turbine and Liangjiang Gas Turbine, as well as doing publicity work at some of those newly acquired grassroots units in Shandong, Heilongjiang and Jilin.

##### Advancing the Construction of an Outsourcing Information System

The Company has further advanced the construction of an outsourcing information system, and supervised various units to put the system into operation, implement the access control system and integrate with the outsourcing information system.

The Company has also optimized and improved the outsourcing information system software, granted the production department and human resources department greater access to outsourced personnel information, and expanded the use of the system.

##### Enhancing Safety Education and Training for Outsourced Personnel

Grassroots units formulate outsourced personnel training plans in accordance with Huaneng International’s employee job training standards, require outsourced personnel to understand the basics and fundamentals of their position, provide outsourced personnel training in line with employee training, and engage them in activities like spring and autumn checks, Safety Month and safety inspection, so as to continuously enhance their technical skills and safety awareness.

Apart from receiving the entry three-level safety education and training, outsourced personnel have to attend continuous safety education and training as well as professional and technical training throughout the whole daily work process. The Company assesses major outsourced personnel by holding annual examinations on operating procedures, repair procedures and safety rules to increase their learning and understanding of the Company’s business.

07

Fostering Solidarity and Growing Together

Huaneng International recognizes that talent is the most fundamental resource of an enterprise and forms the basis for developing into a global leading company. Huaneng International follows the concept of “people-oriented, pragmatic and efficient development”. We highly value our employees, reasonable incentivization, employee cohesion and employees’ all-round development with a view to integrating employees’ personal progress with the Company’s development, creating a harmonious and happy working environment and making employees feel more attached to the Company.

52

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### 7.1 Equal Employment and Equity Protection

The Company strives to establish a long-term and stable employment relationship with employees, employs people in accordance with the law, upholds the principle of equal employment and protects the legitimate rights and interests of employees.

#### Legal Employment

The Company insists on legal and equal employment and requires all units to strictly abide by the state's Labor Law, Labor Contract Law and relevant laws and regulations. The Company has signed the labor contract with all of its employees and abide by the state's Provisions on the Prohibition of Using Child Labor, prohibits the use of child labor.

At the same time, the Company adopts equal and non-discriminatory employment policies to provide equal employment opportunities and labor security to employees of different nationalities, ethnicities, genders, religious beliefs and cultural backgrounds.

As at the end of 2017, the Company had 53,962 employees, 74% of whom had college qualifications or above.

No labor disputes due to violation of laws and regulations occurred in 2017.

#### Protection of Employee Rights and Interests

The Company has established a comprehensive and stringent system for protection of employee rights and interests.

**Remuneration system:** The total remuneration of the Company's employees includes wages, bonuses and allowances. By adopting a remuneration system based on talent, performance, efficiency and the fairness principle, the Company can ensure that its highly performing and competitive workforce are rewarded in a fair manner.

**Social insurance:** The Company has set up various kinds of social insurance, housing provident fund, enterprise annuity and supplementary medical insurance in strict accordance with the relevant national and local government policies and regulations to ensure that employees enjoy equal rights according to law in respect of pension, medical treatment, work injury, unemployment and childbirth. In 2017, the Company did not have any social insurance violation or default.

**Working hours:** The Company strictly abides by the state's Labor Law and relevant laws and regulations, and does not practice compulsory labor.

**Trade Union:** All units of the Company have formed the Trade Union in accordance with the Trade Union Law of the People's Republic of China and all employees are members of the Trade Union. The various Trade Union conscientiously perform their duties, safeguard the legitimate rights and interests of employees, encourage employees to participate in management and decision making, jointly achieve the goals of the Company, and help mediate disputes between the Company and its employees.

#### Democratic Management

Employees' congress is one of the most important forms of open and democratic management of factory affairs. In 2017, the Company published Measures for the Implementation Method of Employees' Congress, among four others, to further improve and enrich the system of employees' congress. Early this year, the first third session employees' congress was successfully held and the Company solicited proposals from members of the congress for the first time. The fact that the Company has finished responding to all proposals is testament to its employees' enthusiasm and active involvement in the Company's management work.

Besides, the Company continues to promote democratic systems like the system of publicizing factory affairs and the responsibility system for complaint letters and visits, carry out democratic management performance appraisal, recognize employees' rights to information, participation, expression and supervision, and mobilize the enthusiasm, active involvement and creativity of employees. In 2017, Yuhuan Power Plant and Yunhe Power Plant were awarded "the National advanced units of open and democratic management of factory affairs".

#### Collective Care

The Company sees that giving employees the support they need is the best way to safeguard their rights and interests. In 2016, RMB2.988 million was dedicated to helping 205 employees in need and all funds have reached them since. In 2017, the Company helped 309 employees in difficulty complete procedures for the declaration of assistance funds totaling RMB4.171 million.

#### Love Donation

In 2017, the Labour's union of the Company initiated a donation drive to raise funds for our employee Liu Chang who suffered from serious illness. The funds raised were sufficient to cover 30% of the total treatment fee, which provided a timely reprieve from the huge financial burden on her family.

## 7.2 Employee Training and Career Development

With the belief that “elites are the forefront important assets”, the Company has actively implemented the strategy of developing the enterprise by talents, focused on the tri-tasks of attracting, training and making good use of talents, accelerated the establishment of a team with high-level and highly skilled talents as core members. As a result, a team of talents with excellent quality, which is well structured, professionally equipped, devoted to careers in Huaneng and in line with the Company’s developmental and strategic needs, has been formed.

### Training System

Taking full advantage of our resources, the Company’s training system consists of three levels, namely the headquarters level, the regional branch level and the grassroots unit level. The headquarters formulates the annual target for training, competition and assessment according to the Company’s needs, while regional companies implement relevant plans, and at the end of the year make statistical analysis and conclusions on the yearly training performance.

**Institutional guarantee:** The Company conscientiously carries out the Group Company’s “2015-2017 Implementation Plan on the Work of Enhancing Training in Production Skills”, “Notice on Further Enhancing Training for New Employees of Power Enterprises”, “Rules on Team Lead Training” and “Rules on Production Personnel Training”. The Company instructs the roll-out of training in a timely and orderly manner.

**Training modes:** The Company provides different modes of training, including cadre training, orientation training, post training, skill training, continuing education and international cooperation training.

**Training bases:** At present, the Company has six group-level training bases (Shanghai overhaul company, Huaiyin, Shantou, Dalian, Huangtai and Weihai), an increase of two bases year on year, and two group-level relay protection training bases (Qinbei and Huangtai), an increase of one base year on year. The Company also has three secondary training bases (Taicang, Yanglu and Luohuang).

In 2017, various business departments organized training according to the annual target, while regional companies and grassroots units centralized the organizing of induction training, different kinds of technical training and on-the-job training for a total of 33 ten thousand person times.

### Career Development

The Company places emphasis on establishing a platform for employees' personal growth and nurturing the leadership of the Company. The Company's promotion policy is open, fair, just, performance-driven, dynamic and merit-based, and employees can be promoted either at the job position level or at the job function level. Promotion at the job position level concerns factors like job duties and overall qualities, whereas promotion at the job function level concerns factors like specializations and business nature.

The Company attaches great importance to the development of professional and technical personnel, and has established a sound management mechanism to clearly define the professional and technical skills, job responsibilities, terms of service, selection process, exit mechanism and assessment. The Company insists on promoting staff who possess the best qualities, have outstanding performance and are recognized by other employees. Promoted employees are appointed for a fixed period and automatically enjoy the benefits of the position upon completion of the term.

In 2017, in cooperation with China Business Executives Academy at Dalian, the Company organized special training on leadership for 172 employees at the leading position level and above in three batches; 24 managers in charge of regional companies were selected to attend 7 classes of training at National Cadre Academy and Yan'an Cadre Academy; 20 leaders were selected to attend training on leadership at the group level. The focus of training rested on "teach to study, study to teach, study to study, study to application", which enhanced the relevance of training. At the same time, the Company boosted the exchange of 76 person times of employees in leading positions. The Company transferred 32 employees in leading positions to the group headquarters and selected 20 employees in leading positions to work out by assuming positions at the Company's headquarters. The relevant training and exchange were aimed at enhancing the overall capacity and management capability of the Company's leadership, improving the mechanism for talent mobility and promoting the optimization of allocation of human resources.

In the future, the Company will further enhance talent development, continue to build its workforce and place more emphasis on employee education, training and career development, with a view to growing together.



### 7.3 Happy Work and Happy Life

Huaneng International upholds the concept of “happy work, happy life”, and encourages employees to strike a work-life balance. The Company provides employees with benefits and organizes many cultural, sports and volunteer activities that are beneficial to employees’ physical and mental health.

#### Sports Activities

The Company’s headquarters and regional companies have organized a series of exciting sports activities, such as the third session of “ten thousand steps every day, I will be healthier than anyone” activity, basketball, tennis, badminton and table tennis matches, sports games and autumn outings.

#### Planting Activities

On 31 March, as our tradition, the Company organized a tree planting activity for headquarters employees who were enthusiastic about it. Since 2010, the Company has organized tree planting activities for employees for eight consecutive years, which attests to our environmental responsibilities. The activities have also facilitated communication and exchange among employees and made them more engaged in contributing to the development of the Company.

#### Reading Activities

The Company has launched a reading campaign among all employees and fosters a culture of “loving reading, reading good books, using good books and collecting good books” to make reading a habit, let books keep you company and promote literacy among employees as well as their ideological and cultural development. The Company won two national top prizes and two national second prizes at the “Shuxiang 3.8” activity.

#### Volunteer Activities

The Company champions the volunteer spirits of dedication, fraternity, mutual help and progress, and strives to build an organizational structure combining the organization of the Communist Youth League and volunteer service team to optimize the operating model for volunteer service. In accordance with the Group Company’s Notice on Enhancing and Regulating the Management of “Three-Color Sail” Young Volunteer Service Activities and Volunteer Registration, the Company has regulated the management of young volunteer activities under the unified branding of “three-color sail” to enhance young volunteers online registration management. As of the end of December, 107 Youth Leagues have completed the work of full coverage of volunteer online management.

08

Creating a Win-Win Situation and Giving Back to Society

Huaneng International has insisted on harmonious development concepts of “serve the Country, benefit society, seek multilateral benefits and develop together”, as well as thorough consideration of and effective response to stakeholder demands, with a view to sharing the Company’s achievements with stakeholders and jointly improving the Company’s environmental, social and governance performance.

59

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### 8.1 Continuously Enhancing Supplier Management

Huaneng International believes that cooperation is an indispensable driving force for the development of the Company, and is committed to building a platform for closer cooperation and more effective communication with suppliers to bring quality products and services to our clients. The suppliers of the Company include material suppliers, engineering suppliers and fuel suppliers, with which the Company has established a long-term and stable partnering relationship and jointly enhances our environmental, social and governance performance, thereby helping suppliers bring a more positive impact on the environment and society.

The Company's tender committee and tender working group are in charge of decision making and authorized management of the administration of company-level suppliers of the Company respectively, while the business contract department is in charge of the centralized administration of material suppliers. The finance department is responsible for appraising the finances and credit status of suppliers while relevant technical departments are responsible for technical appraisal of suppliers. The grassroots materials use unit is involved in daily administration and regular appraisal of suppliers.

#### The Access of Suppliers

**Basic requirements:** The Company requires suppliers to be legally registered and accredited for safety, quality and environmental protection. Suppliers should have legal proof for the source of their products and a track record for better product performance compared to competitors in the industry, with good business reputation and a sound financial and accounting system.

**Selection mechanism:** Suppliers are selected in an open, fair and just way upon thorough consideration of the impact they bring to the environment and society.

All engineering suppliers are selected by open tender upon comprehensive appraisal in areas such as environmental protection, safety, labor, quality, turnover, business reputation and social responsibilities.

Material suppliers are basically selected by open tender to further enhance competitiveness, lower procurement costs and improve procurement quality.

Regarding fuel procurement, the Company has published the Requirements for Fuel Supplier Management, which include qualification, reputation and capability subject to one-vote veto.

#### Procurement of Coal

The fundamental principle concerning the procurement of coal is to source coal from major state-owned mines and large coal mines and transport it directly from there to power plants. The Company recognizes that the major state-owned coal mines have stronger ability to perform the contract, stricter controls on product quality, and stronger commitment to the law, social responsibilities and environmental protection. The state has also imposed environmental protection requirements on the planning, design, construction, mining and goaf treatment of large coal mines. Such requirements must be met before an approval of initiation is obtained for production and operation. The state also has a series of special requirements on the induction and labor protection of mine workers at large mines where there is no child labor and no lack of safety protection. Therefore the Company opts for major state-owned mines and large coal mines as qualified suppliers to ensure that suppliers have lived up to their social, environmental and labor protection responsibilities and obligations.

### Supplier Appraisal

The centralized administration departments of the Company's various suppliers carries out regular and ad-hoc supplier appraisals.

Daily appraisal: Statistical analysis on supplier daily compliance, including supply quality, delivery, prices and services, is conducted based on procurement contract performance ledgers. For suppliers in violation of laws, regulations and rules, different penalties will be imposed, depending on the severity of the violation. In more serious cases, the supplier concerned will be blacklisted and barred from participating in any procurement projects for a period of five years.

Annual appraisal: The Company conducts annual appraisal of those suppliers engaged in the appraisal year, the scope of which includes on-time delivery, quality passing rate, quality complaint, after-sale service and collaborative attitude based on supplier performance in that year.

### Internal Supervision

In accordance with relevant monitoring, audit and internal control requirements, the Company's monitoring department and audit department carry out comprehensive and systematic inspection and audit of the supplier management system, including the supplier selection process, to ensure compliance.

### Supervision of Environmental and Social Responsibilities

While the Company encourages suppliers to fulfill their environmental responsibilities, we require suppliers to fully comply with labor and human rights laws against child, forced or compulsory labor, remain vigilant in compliance and achieve the target of zero incident.

## 8.2 Building Harmonious and Stable Relationships with Clients

Huaneng International is committed to providing power grid companies and other downstream enterprise consumers with quality power products and services to ensure safe and stable power supply in sharing the Company's achievements with clients.

### A Tradition of Harmonious and Stable Relationships with Clients

Currently, Huaneng International's clients are mainly power grid companies, which account for the purchase and sale of most of the power generated and are responsible for settlement. The Company has maintained a long-term and friendly partnering relationship with power grid companies. Since the power consumption of clients is not affected, no complaint from end users has been received. The Company successfully achieved the target of zero breach of contract in 2017.

### Extending Our Reach for New End Users

Amid the reform of the electric power system, the Company has expanded its client base by incorporating power consumer enterprises involved in direct trading and sales trading, other power generating enterprises involved in generating rights trading, and other electricity retailers involved in sales trading. The Company is determined to strive for reform and international cutting-edge electricity retailing experience to develop new end users and build our capacity in meeting clients' needs.

### 8.3 Fulfilling Corporate Social Responsibility

Huaneng International is actively involved in social and community services through innovative cooperation channels to contribute and give back to society by bringing our care and support to the needy.

#### Community Involvement

The Company always upholds our commitments to “serve the Country, benefit the society, seek multilateral benefits and develop together” in a harmonious fashion, fully considers and effectively responds to the demands of stakeholders, and actively participates in community and public services. We encourage all units to provide social support for the needy, engage in volunteer work and organize open days in further enhancing our community involvement and building a good corporate image.

#### Anyuan Power Plant Normalizes Publicity on Environmental Protection

Between 2016 and 2017, Anyuan Power Plant organized three power plant visits for more than 130 students from nearby primary schools. Led by power plant’s staff, the students visited the exhibition hall, production sites and environmental facilities. They also attended talks on power generation procedures and environmental protection measures. They were invited to a “Draw my ideal power plant” activity to express their thoughts and ideas about a truly modernized power plant using pictures. Through a series of fun-filled activities, students brought home knowledge about the power plant’s advanced clean and efficient power generation technologies as well as the power plant’s work and effort in protecting the environment. The power plant hopes that the students can become its ambassador to nearby communities and help build connections to create a harmonious external environment for the power plant’s development.

Haimen Power Plant “Poverty Alleviation + Support for Education + Empowerment”

Quality education is the key to tackling intergenerational poverty by transforming lives from “dependence” to “self-reliance”. Haimen Power Plant’s local team highly values the role of education in poverty alleviation. Taking into account local conditions and with the support of Beimen Community, the power plant has organized a variety of activities for poor students, such as popular science base visits, campus talks on popular science, winter clothes donation drives and volunteer engagements, with the aim of promoting education-precise poverty alleviation by bringing underprivileged children back to school.

Zuoquan Power Plant Volunteer Activities – Care for the Elderly

On 9 September 2017, staff volunteers from Zuoquan Power Plant came to the Red Army Nursing Home for an elderly visit.

Apart from bringing their best wishes to the elderly residents, volunteers pitched in to help with the housekeeping work as they listened to their honorable seniors talking excitedly about their glorious days during the revolution period. The staff volunteers lived out the traditional Chinese virtues of respect and care for the elderly with their actions and learned from the conviction, dedication and sacrifices of the once frontline revolutionary fighters about the importance of kindness, filial piety, love for the country and loyalty to the people.

Besides, staff volunteers from Lingang Combined-cycle Power Plant, Chaohu Power Plant and other units took part in volunteer service activities on visits to welfare institutions, primary and secondary schools, and special education schools where they spent time interacting with children and brought them warmth. Yingkou Thermal Power Plant, Yangliuqing Thermal Power Plant and other units held open days and social popular science activities through which to interact with primary and secondary students and community members, enhance public understanding of and support for the Company, and get closer to the community.



#### Public Welfare Donations

The Company strictly abides by the state's relevant laws and regulations as well as policies. To help the needy, a reasonable scale and standard of public donations is set based on the Company's finances in a way that does not violate social morals and does not damage the public interest as well as the legitimate rights and interests of others. The Company has formulated a series of rules and regulations such as "Rules on the Management of External Donations". Our management of the Company's system of external donations is guided by the principles of "donating according to laws, within capabilities, being honest and trustworthy, and focusing on effectiveness".

In 2017, the Company donated a total of RMB10.0018 million under its name to support local public welfare activities.

Besides, various units of the Company launched different kinds of donation drives.

On 3 May 2017, Chaohu Power Plant held a book donation activity called "Give love, give books, give hope" and received a total of 612 donated books. After sorting, the books were donated to children living in poverty-stricken mountainous areas with the help of Chaohu Mutual Aid Association. Part of the donations was sent to Anhui branch's precision poverty alleviation point at Huangchongcun, Huoqiu County, to build a "village library".

On 22 September 2017, Yangliuqing Power Plant held a donation activity called "The warmth of old clothes" where a large number of staff responded by bringing their spare winter clothes to the plant and donating to poverty-stricken mountainous areas as a way of showing their care for residents there. Young volunteers sorted the clothes one by one and at the end of the activity, a total of 705 clothes were received.

09

Going Global and Moving Forward

As a wholly owned subsidiary of Huaneng International, Singapore Tuas Power Ltd. (“Tuas Power”) is one of the three major power generating companies in Singapore and one of Singapore’s major public utility and environmental service providers.

66

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#### About Tuas Power

Tuas Power is one of the three largest power companies in Singapore, which Tuas Power owns and operates two plants, Tuas Power Station and Tembusu Multi-Utilities Complex (TMUC). In 2017, Tuas Power counts for 21.9% of Singapore's power generation market share.

Tuas Power Station has been providing safe, reliable and efficient electricity supply to Singapore since 1999. The Station has five Combined Cycle Power (CCP) plants and a steam plant that contribute to the country's energy demands at a high reliability performance record of over 99%.

The Tembusu Multi-Utilities Complex was completed in 2013, and it serves the petrochemical industries in the Tembusu area of Jurong Island. TMUC is composed of Biomass Clean-Coal (BMCC) thermoelectric cogeneration plant, water treatment plant and waste water treatment plant, which provides different types of electricity, steam, high-quality industrial water and softened water for industrial customers.

Going beyond energy, the company enlarged its operations to cover multi-utility, environmental, oil terminals and storage services – all of which harness leading-edge technologies and world-class practices to power today's industries.

Tuas Power emphasizes efficient and environmentally responsible energy solutions for modern business and industrial needs. Tuas Power insists on conducting operations in an environmentally responsible manner through maximizing plant efficiency, resource conservation, reducing waste and controlling emissions. The system of Tuas Power for the management and planning of its environment, occupational health and safety has been certified by OHSAS 18001 (Occupational Health and Safety Assessment Series) certification and ISO 14001 (Environmental Management System) certification, both Tuas Power Station and TMUC.

In the year 2017, Tuas Power has had no reportable environment-related incidents. Tuas Power will continue to enhance environmental and safety.

#### Energy Conservation

##### Energy Conservation Efforts at Tuas Power Station

Tuas Power Station initially used fuel oil generator with a unit efficiency of only 34%. Through the expansion, the Station has now achieved a strategic transformation to a more energy-efficient and cleaner power generation. The Station has now owned five most advanced F-class CCP generation units with an average efficiency of 48% and the less efficient oil-fired unit is now on standby mode.

In the latest project completed in May 2017, the Station has successfully replaced the aging air-cooled chillers to water-cooled chillers for the Station Administration. The replacement has resulted in an improvement in energy efficiency of the air-conditioning system from 2kW/RT to 0.62kW/RT (about 70% savings). A measurement and verification exercised over 2 months has validated that an annual energy savings of over 3,400MWh is achievable. Following this successful achievement of energy savings, The Station will be looking into expanding the energy conservation efforts onto other parts of the plant.

#### Energy Conservation Efforts at TMUC

In 2017, TMUC completed several energy saving projects, including the optimization of seawater intake pumps, load distribution optimization on Steam Turbine Generators (STG), and LED retrofitting in the Circulating Fluidized Bed (CFB) boiler areas.

The optimization of seawater intake pumps are being carried out by gradually reducing its speed to an optimum operating level without comprising plant reliability. An annual saving of 882 MWh has been achieved from this initial action. The optimization of load distribution for STGs has gained an annual savings of 3,790 MWh. Fluorescent lightings at the CFB boiler areas are replaced with energy savings LED lightings. This project has an annual saving of 135 MWh. These three projects were submitted as part of the mandatory annual submission to National Environmental Agency (NEA) under the Energy Conservation Act (ECA).

To demonstrate the corporate's commitment in continuous effort to conserve energy and to comply with local regulatory requirements, TMUC plans to achieve ISO 50001 (Energy Management System) certification in 2018.

#### Emission Management

##### Greenhouse Gas Management

With the installation of 5 CCP plants, Tuas Power Station's carbon emission factor decreased and is now lower than that of the national average of all power plants in Singapore. In addition, upon smooth completion of the ongoing project to replace air-cooled chillers with water-cooled chillers, it is expected that 1,655 tons of carbon dioxide emission are to be reduced every year.

The usage of 20% carbon-neutral biomass (Palm Kernel Shell & Woodchips) is a mandatory requirement by the local authority to lower the carbon. By co-firing 80% coal with 20% biomass, TMUC has lowered the carbon footprint and will lower the carbon tax TMUC has to bear when carbon tax implements in 2019.

#### Exhaust Gas Management

Tuas Power Station operates gas-fired units in preference to the older oil-fired unit whenever possible. As a consequence, the emission of SO<sub>2</sub> has decreased in 2017.

TMUC reduces NO<sub>x</sub> and SO<sub>2</sub> emissions by using advanced Circulating Fluidized Bed (CFB) boiler, reducing the use of coal and purchasing low-sulfur coal. The low furnace temperature of CFB boilers and the use of low-sulfur low-ash coal have ensured a low NO<sub>x</sub> and low SO<sub>2</sub> emission. SO<sub>2</sub> monitoring devices are also in place to achieve a low emission. TMUC is able to meet the stringent air emission limits set by the Air Impurities Regulation of the Singapore Environmental Protection and Management Act.

#### Ash Recycling and Utilization

In Singapore, the landfill of the ash generated in industrial process is prohibited. Now TMUC has achieved 100% comprehensive utilization of ash by cooperating with local building materials company, EnGro.

Tuas Power had initially conducted coal-biomass combustion pilot trials in 2008 to gather fly ash samples for companies to explore feasibility of use. In 2014, the fly ash application on blended cement developed by EnGro finally got approval from local authorities, the Building and Construction Authority (BCA) and the National Environmental Agency (NEA), which is mandatory regulatory requirement for the TMUC project.

In 2016, TMUC manage to collaborate with EnGro to use the bed ash in a sustainable concrete application that was approved by the authorities such as BCA and NEA. The bed ash from TMUC are used as an alternative to fine aggregates or sand in concrete production, complied with EN 12620:2008 Specifications of Aggregate for Concrete standard.

#### Wastewater Management

In the case of water treatment, the TMUC project has established wastewater treatment facilities to treat the wastewater produced internally and the wastewater generated by the petrochemical industry in the Denpasar region to ensure that the drainage is in line with the relevant regulations.

To leverage on the well-designed water cycle and demonstrate TMUC's effort for water conservation, customers are incentivized for returning clean condensate for TMUC's steam production. High temperature return condensate from customers is used to pre-heat deaerator feed water. Water cleaning is also replaced with vacuum cleaning. Boiler blow down water is recycled back to the Water Treatment Plant as an alternative source of raw water. Treated water from the Industrial Waste Water Plant is being reused for plant washing and process usage in TMUC Site 2.

#### Providing Customers with High-Quality Services

Since 2003, Tuas Power has been serving customers with high-quality service. These customers range from individual businesses to developers and landlords of commercial buildings.

#### The Tuas Power Green Programme

The Tuas Power Green Programme is designed to provide customers with a wide range of various energy solutions, including green consultancy service and lighting solution. The green consultancy service is customer focused, and encourages companies to undergo energy audits to maximize energy efficiency. It also helps them identify and recommend improvements in the base design and features of their buildings, and bring value to customers. The lighting solution helps customers achieve significant energy-saving effects through changing simple details, such as using energy-efficient lighting system instead of existing traditional lighting systems, so as to reduce energy conception and save costs.

#### Integrated Energy Management System (IEMS)

Tuas Power started a comprehensive energy management system service in Jan. 2016, with its business highlight of automated meter readers. This instrument can detect the amount of electricity consumed by the target company for half an hour and conduct it to the portable side in real time, so that customers can view the data in real time through the mobile application, enabling immediate management and immediate adjustment. As part of the integrated energy management system, the automated meter reader provides an automated meter reading function that provides better service to customers, reduces human input, improve efficiency, and improves billing accuracy. After researches and studies in Europe, the employee of Tuas Power improved this intelligent meter to better meet the needs of local customers.

In handling customer information, Tuas Power enters an agreement with the contractor to protect customer information. Its own employees are subject to the same requirements as the contractor, and comply with the Company's governance policies that protect customer information.

#### Community Co-construction

Tuas Power is close linked to the community and actively provides public services, financial supports and cooperation for government statutory committees, charitable organizations and non-profit organizations. Cooperative institutions include Singapore Children's Association and preschool students' educational organizations, etc. The Tuas Power also supports the horticultural research and conservation through the Garden City Fund, in order to protect Singapore's green government.

#### Communication with the Company

There is a frequent interaction and mutual assistance between Tuas Power and the Company.

Personnel from two sides have carried out a number of related business exchanges. Several groups of technical and engineering employee from Tuas Power have finished trainings in the Company's operational experiences. Tuas Power have also consulted with technical experts from the Company to further improve and strengthen operational efficiency of the Tuas Power Station and TUMC.

Through Tuas Power's own experience with navigating the gradually deregulated electricity market in Singapore, the Company has given many in-depth talks in Guangzhou, Hangzhou, Shenzhen and Beijing to various departments within the Huaneng Group and Huaneng International. Tuas Power has shared the experience of Singapore's electricity market reform with relevant Chinese government agencies and the Company's business partners such as Singapore's market structure and operations the retail competition, competitive differentiation from competitors and so on, which help the Company to be more prepared to meet the reform of China's electricity market.



10

Looking Forward and Overcoming Challenges

We look forward to the future, and continuously accumulate experience for a time of use. Electric power industry is closely related with international development and people's lives. Although it has existed for around a hundred years, it is still vibrant. It requires responsible enterprises to continuously tap their own potentials and improve their self-requirements. Face current situations of risks and opportunities coexisting, Huaneng International adheres to steady progress, promotes transformation and upgrading, actively reforms and innovates, and has established practical stage targets of the year 2020 and through our continuous hard work, we have seen meaningful achievements.

71

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Scale of the Company	To achieve a controllable installed capacity of more than 100 million kilowatts, and further strengthened synergies.
Business Performance	To significantly improved our operating efficiency, ensure profitability to approach close to or surpassed the global leading listed power generation companies.
Company Operation	Power generation business comprehensively achieve excellent operations, and our operating indicators generally reach the international industry-leading level. Use of hours maintain the domestic industry-leading level, and power efficiency indicators continued to maintain the international industry-leading level. Cost of installation per unit and safe production level reach the global leading level.
Development Potential	Transformation and upgrading achieve significant results, installed capacity of low-carbon clean energy account for more than 20%. Financial situation and operating strength further enhance, with further improvement of development potential.
International Business	Scale of overseas business further expand. International business operations and overseas business efficiency rank among the global leading power generation companies.
Overall Management	Overall management further develop. To form a scientific and complete modern management system and mechanism, to enhance ability of management innovation, to continuous consummate management mechanism. Performance management, financial management, risk management and other overall managements of the Company and its subsidiaries comprehensively enhance, reach the standard of global leading listed power generation companies.
Talent Management	To build an global leading talent team with 200 of senior managers, 400 of senior professionals, and 3000 of senior technical employees. Innovate personnel, labour and distribution system, mechanisms of talents selection and appointment, assessment and evaluation, assembly and deployment, incentive and insurance, and training and development tend to be perfected.
Brand Reputation	Significantly improve the Company's branding ability, enhance Huaneng brand awareness and reputation. To be evaluated as "well-known brands" by the authoritative agency. Further strengthen the Company's social responsibility system and internal communication system to be an internal harmonious enterprise.
Company Governance and Risk Management	Complete company system, normative company governance, and harmonious relationship with investors, which makes the Company a good model for domestic listed companies. Sound risk control system, maturely grasping and flexibly adapting to changes in policies and markets, achieved a steady growth of operation performance.
Party Building	Study in-depth the spirit of a series of significant speeches of General Secretary Xi Jinping, follow the plan of Huaneng Group's party group and further implement the overall requirements of the CCP Party Central Committee to comprehensively govern the party in a strict manner. Comprehensively deepen party building of the Company, and focus on the implementation of three key works, namely, "one post two responsibilities", strengthening the branch party construction, and consolidate and enlarge the achievements of behaviour construction. Strive to achieve "clear targets, implemented responsibilities, specific contents and quantified assessments".

## 11. Appendix

### 11.1 About this Report

This report is the second “Environmental, Social and Governance Report” released by Huaneng International. This report focuses on the Company’s efforts and contributions to the environment, society and governance, as well as our outlook for the future. We hope that through the publication of this report, we will strengthen communication and liaison with our stakeholders.

The Board of Directors and all the Directors hereby warrant that the contents of this report do not contain any false representations, misleading statements or material omissions and take joint and several liabilities for the authenticity, accuracy and completeness of the contents.

### The Scope of the Subject of this Report

Huaneng International and its domestic and foreign affiliated branches and its wholly owned and controlled companies. Unless otherwise stated, the data disclosed in this report are about Huaneng International and its affiliated subsidiaries and its wholly-owned and controlled companies.

In 2017, the Company acquired Huaneng Shandong Power Generation Co., Ltd., Huaneng Jilin Power Generation Co., Ltd., Huaneng Heilongjiang Power Generation Co., Ltd., and Huaneng Henan Zhongyuan Gas Power Generation Co., Ltd..

### Reporting Period

The Company’s “Environmental, Social and Governance Report” is an annual report for the period from January 1, 2017 to December 31, 2017, and some of the statements and data are traced back to the previous year.

### Reference Remarks

In order to facilitate the presentation and be easy to read, “Huaneng Power International, Inc.” in this report is referred to as “Huaneng International”, “the Company” or “we”. “China Huaneng Group Co., Ltd.” in this report is referred to as “Huaneng Group”.

### Content Compiling

The contents of this report are prepared in the light of the HKEx’s “Environmental, Social and Governance Reporting Guide”, the Global Reporting Initiative (GRI)’s “G4 Sustainability Reporting Guidelines” and its supplementary guidelines for power generation industry.

### Access to this Report

You can download the Chinese and English version of this report on Huaneng International’s website at <http://www.hpi.com.cn>. This report is published in both Chinese and English. In case of any discrepancies among the different versions, the Chinese version shall prevail. If you have any questions or suggestions, please call 010-63226582.

## 11.2 Contents Index of Environmental, Social and Governance Reporting Guide of Hong Kong Exchanges and Clearing Limited

Environmental, Social and Governance Reporting Guide		Page Number	Report Content
Subject Area A: Environment			
Aspect A1: Emissions			
A1	General Disclosure	40-47	5.3.4 Emissions Management
A1.1	The types of emissions and respective emission data.	40-47	5.3.4 Emissions Management
A1.2	Greenhouse gas emissions in total (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	43	5.3.4 Emissions Management
A1.3	Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	46	5.3.4 Emissions Management
A1.4	Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	46	5.3.4 Emissions Management
A1.5	Description of measures to mitigate emissions and results achieved.	40-47 76-78	5.3.4 Emissions Management 9 Going Global and Moving Forward
A1.6	Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved.	46-47 78	5.3.4 Emissions Management 9 Going Global and Moving Forward
Aspect A2: Use of Resources			
A2	General disclosure	34-36	5.3.2 Energy Consumption Management
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).	34	5.3.2 Energy Consumption Management
A2.2	Water consumption in total and intensity (e.g. per unit of production volume, per facility).	36	5.3.3 Water Resources Management
A2.3	Description of energy use efficiency initiatives and results achieved.	34-36 76-77	5.3.2 Energy Consumption Management 9 Going Global and Moving Forward

A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved.	36-39	5.3.3 Water Resources Management
A2.5	Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	–	N/A

Environmental, Social and Governance Reporting Guide	Page Number	Report Content
Aspect A3: The Environment and Natural Resources		
A3 General disclosure	47	5.3.5 Noise and Other Environmental Impacts
A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	47	5.3.5 Noise and Other Environmental Impacts
Subject Area B. Social		
Employment and Labour Practices		
Aspect B1: Employment		
B1 General Disclosure	60	7.1 Equal Employment and Equity Protection
Aspect B2: Health and Safety		
B2 General Disclosure	56	6.4 Protecting Occupational Health and Safety
B2.1 Number and rate of work-related fatalities.	15	2.6 Table of Key Performance Indicators in 2017
B2.3 Description of occupational health and safety measures adopted, how they are implemented and monitored.	56 64-65	6.4 Protecting Occupational Health and Safety 7.3 Happy Work and Happy Life
Aspect B3: Development and Training		
B3 General disclosure	62-63	7.2 Employee Training and Career Development
Aspect B4: Labour Standards		
B4 General disclosure	60	7.1 Equal Employment and Equity Protection
Operating Practices		
Aspect B5: Supply Chain Management		
B5 General disclosure	68-69	8.1 Continuously Enhancing Supplier Management
B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they	68-69	8.1 Continuously Enhancing Supplier

are implemented and monitored.

Management

75

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Environmental, Social and Governance Reporting Guide		Page Number	Report Content
Aspect B6: Product Responsibility			
B6	General Disclosure	22	4.1 Intensive Guarantee of Power Supply Stability
B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons.	–	N/A
B6.2	Number of products and service related complaints received and how they are dealt with.	69	8.2 Building Harmonious and Stable Relationships with Clients
B6.3	Description of practices relating to observing and protecting intellectual property rights.	25	4.2.2 Protection of Intellectual Property Rights
B6.4	Description of quality assurance process and recall procedures.	–	N/A
Aspect B7: Anti-corruption			
B7	General Disclosure	24	4.2.1 Reinforcement of Anti-Corruption
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.	24	4.2.1 Reinforcement of Anti-Corruption
B7.2	Number of products and service related complaints received and how they are dealt with.	24	4.2.1 Reinforcement of Anti-Corruption
Community			
Aspect B8: Community Investment			
B8	General Disclosure	70-73	8.3 Fulfilling Corporate Social Responsibility
		79	9 Going Global and Moving Forward
B8.1	Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	70-73	8.3 Fulfilling Corporate Social Responsibility
		79	9 Going Global and Moving Forward
B8.2	Resources contributed (e.g. money or time) to the focus area.	73	8.3 Fulfilling Corporate Social Responsibility





## 11.3 Contents Index of G4 Sustainability Reporting Guidelines of Global Report Initiative

G4 Indicator	G4 Description	Pages	References and Remarks
Strategy and Analysis			
G4-1	Statement from the most senior decision-maker of the organization	2-3	1 Chairman's Statement
Organizational Profile			
G4-3	Name of the organization	6	2.1 Company Profile
G4-4	Primary brands, products, and services	6	2.1 Company Profile
G4-5	Location of the organization's headquarters	92	11.4 Reader's Feedback
G4-6	Number and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report	6	2.1 Company Profile
G4-7	Nature of ownership and legal form	6	2.1 Company Profile
G4-8	Markets served	6	2.1 Company Profile
G4-9	Scale of the organization	6 13	2.1 Company Profile 2.6 Table of Key Performance Indicators in 2017
G4-10	Employee statistics	60	7.1 Equal Employment and Equity Protection
G4-11	Percentage of total employees covered by collective bargaining agreements	60	7.1 Equal Employment and Equity Protection
G4-12	Organization's supply chain	68-69	8.1 Continuously Enhancing Supplier Management
G4-13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain	83	11.1 About this Report
G4-14	Explanation of whether and how the precautionary approach or principle is addressed by the organization	6 10-12	2.2 Corporate Governance 2.5 ESG Responsibility Management
G4-15	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses	10-12	2.5 ESG Responsibility Management
G4-16	Memberships of associations	16	2.7.1 Information about and Communication with Stakeholder



G4 Indicator	G4 Description	Pages	References and Remarks
Identified Material Aspects and Boundaries			
G4-17	a. List all entities included in the organization's consolidated financial statements or equivalent documents b. Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report	83	11.1 About this Report
G4-18	a. Explain the process for defining the report content and the Aspect Boundaries b. Explain how the organization has implemented the Reporting Principles for Defining Report Content	83	11.1 About this Report
G4-19	List all the material Aspects identified in the process for defining report content	17	2.7.2 Processes of Identification of Material Issues
G4-20	Aspect Boundary within the organization for each material aspect	17	2.7.2 Processes of Identification of Material Issues
G4-21	Aspect Boundary outside the organization for each material aspect	17	2.7.2 Processes of Identification of Material Issues
G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries	17	2.7.2 Processes of Identification of Material Issues
EU1	Install capacity by primary energy and regulatory mechanism	6 13-15	2.1 Company Profile 2.6 Table of Key Performance Indicators in 2017
Stakeholder Engagement			
G4-24	List of stakeholder groups engaged by the organization	16	2.7.1 Information about and Communication with Stakeholder
G4-25	Basis for identification and selection of stakeholders with whom to engage	16	2.7.1 Information about and Communication with Stakeholder
G4-26	Report the organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process	16	2.7.1 Information about and Communication with Stakeholder
G4-27		16	

Report key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting. Report the stakeholder groups that raised each of the key topics and concerns

2.7.1 Information about and Communication with Stakeholder

Report Profile

G4-28	Reporting period (such as fiscal or calendar year) for information provided	83	11.1 About this Report
G4-29	Date of most recent previous report (if any)	83	11.1 About this Report
G4-30	Reporting cycle	83	11.1 About this Report

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G4 Indicator	G4 Description	Pages	References and Remarks
G4-31	Provide the contact point for questions regarding the report or its contents	83	11.1 About this Report
G4-32	'In accordance' option the organization has chosen, GRI Content Index, reference to the External Assurance Report	–	Core suitable plan
Governance			
G4-34	Governance structure of the organization. Committees responsible for decision-making on economic, environmental and social impacts	6	2.2 Corporate Governance
Ethics and Integrity			
G4-56	Organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	7 10	2.3 Development Strategy 2.4 Company Philosophy
Economic Performance			
G4-EC1	Direct economic value generated and distributed	13 73	2.6 Table of Key Performance Indicators in 2017 8.3 Fulfilling Corporate Social Responsibility
Energy (Material Issues: Energy Use, Clean and Sustainable Energy)			
G4-EN3	Energy consumption within the organization	34-36	5.3.2 Energy Consumption Management
G4-EN5	Energy intensity	34-36	5.3.2 Energy Consumption Management
Water			
G4-EN8	The total water consumption by source. (EU) the total amount of water used by treatment, cooling and consumption of thermal power and nuclear power equipment, including ash and clean coal water	36-39	5.3.3 Water Resource Management
G4-EN10	Percentage and total volume of water recycled and reused	36-39	5.3.3 Water Resource Management
Emissions (Material Issues: Reduction of Carbon Dioxide Emission and Emission of Control Components)			
G4-EN15	Direct greenhouse gas (GHG) emissions (Scope 1) According to the regulatory mechanism classification, the net generated power of the	43-45	5.3.4.2 Management of Greenhouse Gas

generating capacity, the fossil fuel power generation, the estimated net power per tonne of carbon dioxide equivalent sent to the end user, including the emissions of its own power generation facilities

G4-EN16	Energy indirect greenhouse gas (GHG) emissions (Scope 2)(EU) According to regulatory mechanism classification, carbon dioxide equivalent of estimated net power per megawatt hour sent to end user, including emissions from its own power generation facilities	43-45	5.3.4.2 Management of Greenhouse Gas
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G4 Indicator	G4 Description	Pages	References and Remarks
G4-EN18	Greenhouse gas (GHG) emissions intensity	43	5.3.4.2 Management of Greenhouse Gas
G4-EN21	NO <sub>x</sub> , SO <sub>x</sub> , and other significant air emission (EN) Generating capacity of the net power generation, and nitrogen oxides', sulphur oxides' and other major gas' emissions per megawatt hour, when the fuel is burned by a power plant	40	5.3.4.1 Exhaust Gas Management
Effluents and Waste			
G4-EN22	Total water discharge by quality and destination(EU) Heat emission in the total amount of planned and accidental water emission	45	5.3.4.3 Wastewater Management
G4-EN23	Total weight of waste by type and disposal method(EU) PCBs in the total weight of hazardous and general waste	46	5.3.4.4 Waste Management
Products and Services			
G4-EN27	Reducing the degree of environmental impact of products and services	34-37	5.3 Energy Conservation and Emissions Reduction
Compliance (Material Issues: Energy Use, Emission of Control Components and Reduction of Carbon Dioxide Emission)			
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	14	2.6 Table of Key Performance Indicators in 2017
Supplier Environmental Assessment			
G4-EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken	68-69	8.1 Continuously Enhancing Supplier Management
Occupational Health and Safety (Material Issue: Safe Production and Occupational Health)			
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender(EU). Health and safety performance of contractors' and subcontractors 'employees inside and outside the workplace	15 56	2.6 Table of Key Performance Indicators in 2017 6.4 Protecting Occupational Health and Safety
Training and Education (Material Issue: Staff Training and Development)			
G4-LA10	Programs for skills management and life long learning that support the continued employability of employees and assist them in managing career endings	62-63	7.2 Employee Training and Career Development





G4 Indicator	G4 Description	Pages	References and Remarks
	Supplier Assessment for Labor Practices		
G4-LA15	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	69	8.1 Continuously Enhancing Supplier Management
	Child Labor		
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	60 68-69	7.1 Equal Employment and Equity Protection 8.1 Continuously Enhancing Supplier Management
	Forced or Compulsory Labor		
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	60 69	7.1 Equal Employment and Equity Protection 8.1 Continuously Enhancing Supplier Management
	Anti-corruption (Material Issue: Management by Law and Anti-corruption)		
G4-SO4	Communication and training on anti-corruption policies and procedures	24	4.2.1 Reinforcement of Anti-Corruption

11.4 Readers' Feedback

Dear readers:

Hello! Thank you for reading this report. We particularly wish to listen to your comments and suggestions, and your comments and suggestions are the driving force behind our continuous improvement of our report. Please help to complete the relevant questions raised in the feedback form and mail it to the headquarters of the Company (headquarters address: Huaneng Building, Fuxingmennei Street 6, Xicheng District, Beijing).

1. Your overall assessment of the Company's "Environmental, Social and Governance Report" is:

good            fair            poor

2. Do you think this report reflects the Company's significant impacts on the environmental, social and governance?

good            fair            poor

3. What do you think of the information, and the accuracy and completeness of the indicator data disclosed in this report?

good            fair            poor

4. What do you think of the Company in serving its customers and protecting the interests of its stakeholders?

good            fair            poor

5. Which part of the report do you concern the most?

6. Is there any content that you are looking for but not found in this report? If yes, please write down what you are concerned about.

If you wish, you are welcome to provide personal information to facilitate further communication with you:

Name:            Occupation:    Organization:    Contact Address:

Postal Code:    Tel:            Fax:            E-mail:

Report 2

**THE OBJECTIVES OF THE COMPANY**

As a power company, devoted to providing sufficient, reliable and eco-friendly energy to the community; as a listed company, devoted to creating long-term, stable and increasing returns for shareholders; and as a first class power producer, devoted to having excellency in operation, becoming a leading power enterprise in China and an advanced enterprise internationally.

1

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CONTENTS

Overview

2 Company Profile

6 Major Corporate Events in 2017

8 Financial Highlights

10 Letter to Shareholders

14 Management's Discussion and Analysis

41 Corporate Governance Report

60 Social Responsibility Report

67 Investor Relations

71 Report of the Board of Directors

96 Report of the Supervisory Committee

101 Profiles of Directors, Supervisors and Senior Management

110 Corporate Information

112 Glossary

Financial statements prepared in accordance with International Financial Reporting Standards

113 Independent Auditor's Report

120 Consolidated Statement of Comprehensive Income

122 Consolidated Statement of Financial Position

125 Consolidated Statement of Changes  
in Equity

127 Consolidated Statement of Cash Flows

130 Notes to the Financial Statements

Financial statements reconciliation between PRC GAAP and IFRS

270 Financial statements reconciliation between PRC GAAP and IFRS

## COMPANY PROFILE

Huaneng Power International, Inc. (“the Company”, “Huaneng Power” or “Huaneng International”) and its subsidiaries are mainly engaged in developing, constructing, operating and managing large-scale power plants throughout China. As at 31 December 2017, the Company is one of China’s largest listed power producers with controlling generation capacity of 104,321 MW and equity-based generation capacity of 92,003 MW, and its domestic power plants are located in 26 provinces, autonomous regions and municipalities. The Company also has a wholly-owned power company in Singapore.

The Company was incorporated on 30 June 1994. It completed its initial global public offering of 1,250,000,000 overseas listed foreign shares (“foreign shares”) in October 1994, which were listed on the New York Stock Exchange (Stock Code: HNP) in the United States by issuing 31,250,000 American Depository Shares (“ADS”). In January 1998, the foreign shares of the Company were listed on The Stock Exchange of Hong Kong Limited (the “Hong Kong Stock Exchange”) by way of introduction (Stock Code: 902). Subsequently, in March 1998, the Company successfully completed a global placing of 250,000,000 foreign shares along with a private placing of 400,000,000 domestic shares. In November 2001, the Company successfully completed the issue of 350,000,000 A Shares (Stock Code: 600011) in the People’s Republic of China (“China”, “PRC”), of which 250,000,000 domestic public shares were listed on the Shanghai Stock Exchange. In December 2010, the Company completed the non-public issuance of 1,500,000,000 A Shares and 500,000,000 H Shares. In November 2014, the Company completed the non-public issuance of 365,000,000 H Shares. In November 2015, the Company completed the non-public issuance of 780,000,000 H Shares. Currently, the total share capital of the Company amounts to approximately 15.2 billion shares.

The core business of the Company is to develop, construct and operate large-scale power plants throughout China by making use of modern technology and equipment and financial resources available domestically and internationally. As a power generation enterprise, the Company has been insisting on innovations in technologies, structure, and management since its incorporation. On aspects regarding the advancement in power technologies and construction and management of power plants, the Company has been the pioneer and has created various milestones within the domestic power industry, which facilitated the great-leap development of the power business and technological advancement of the power station equipment manufacturing industry in China, and also significantly contributed to the improvement of technical and management standards of the domestic power generation enterprises. The Company was the first to introduce a 600 MW supercritical generating unit into China and we also started operating the first domestically built single 1,000 MW ultra-supercritical coal-fired generating unit, and the first digitalized 1,000 MW ultra-supercritical coal-fired generating unit in China. The Company completed the construction of the first 1,000 MW generating unit in the world using sea water desulphurization facilities and the 660 MW high-efficiency ultra-supercritical coal-fired generating unit with the highest parameter in China. The Company completed the construction of the first double reheat ultra-supercritical coal-fired generating unit, and developed the

technology for synergistic treatment of fuel gas of coal-fired power plants, which was successfully applied in various environmental protection renovation and newly-constructed projects. The Company completed the offshore wind power project with the largest generating capacity in Asia and was the first to realise mass production of wind turbine of 5 MW in China. The Company also invested and operated the most advanced gas turbine with the largest generation capacity and heat supplying capacity in China. The Company completed the first major energy project in the China-Pakistan Economic Corridor and created the best record of safety, quality and progress in overseas electricity construction by China. The Company was the first power company in China to get listed in New York, Hong Kong and Shanghai. The technical and economic indicators as well as the overall manpower efficiency of the Company have been remaining at the forefront in China's power industry. The Company constantly optimizes the power structure and regional distribution, and accelerates development of new energy while consolidating its leading position in conventional energy, aiming to enhance industrial synergy effect. Furthermore, it has expanded the service range for power distribution and sales to achieve an overall improvement in operation, quality and corporate vigour.

Throughout the years, with efforts in seeking expansion and operating our business in a prudent manner, the Company has expanded successively with steady growth in competitive strengths. The success of the Company is attributable to its various advantages, including advantages in scale and equipment, advantages in geographic layout of power plants, strong support from major shareholders, sound corporate governance structure, advantages in market reputation, extensive experience in the capital markets, advantages in overseas development, staff with high calibre and professional management.

The objectives of the Company are: as a power company, devoted to providing sufficient, reliable and eco-friendly energy to the community; as a listed company, devoted to creating long-term, stable and increasing returns for shareholders; and as a first class power producer, devoted to having excellency in operation, becoming a leading power enterprise in China and an advanced enterprise in the international market.

Huaneng International Power Development Corporation ("HIPDC"), the Company's parent company and controlling shareholder, was incorporated as a Sino-foreign joint stock company in 1985.

DISTRIBUTION OF POWER PLANTS OF THE COMPANY

The controlled power generation capacity of the Company as at 13 March 2018 is 104,321 MW, distributed in areas as depicted in the chart (Unit: MW)

5

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MAJOR CORPORATE  
EVENTS IN 2017

January

The Company announced that its total power generation within China for 2016 recorded a decrease of 2.13% year-on-year.

March

The Company announced its operating results for 2016. According to the PRC GAAPs, the net profit attributable to shareholders of the Company was RMB8,814 million, representing a decrease of 36.06% over the previous year.

The Company held investor and press conferences within and outside China for its results for 2016.

April

The Company announced that its total power generation within China for the first quarter of 2017 recorded an increase of 24.89% year-on-year.

The Company announced its results for the first quarter of 2017. According to the PRC GAAPs, the net profit attributable to shareholders of the Company was RMB652 million, representing a decrease of 86.97% over the corresponding period of the previous year.

The Company held global investor telephone conferences for its results for the first quarter in 2017.

The Company announced and paid the interest of its 10-year bonds issued in 2008 for the period from 8 May 2016 to 7 May 2017.

May

The Company held annual non-deal roadshows in Canada, the United States.

June

The Company announced and paid the interest of its 5-year bonds and 10-year bonds issued in 2016 for the period from 30 June 2016 to 12 June 2017.

The 2016 Annual General Meeting considered and approved the election on change of session of the Board of Directors and the Supervisory Committee. On the same day, each of the ninth session of the Board of Directors and the Supervisory Committee convened the first meeting and elected thereat Mr. Cao Peixi as the Chairman of the ninth session of the Board of Directors and Mr. Guo Junming as the Vice Chairman, and Mr. Ye Xiangdong as the Chairman of the ninth session of the Supervisory Committee and Mr. Mu Xuan as the Vice Chairman.



July

The Company announced the implementation of the profit distribution plan for the year of 2016 and distributed the cash dividends of RMB0.29 (including tax) for each ordinary share to all shareholders.

The Company announced that the domestic power generation in the first half of 2017 increased by 27.80% year on year.

In 2017, the Company ranked the 420th among the Forbes Global 2000.

August

The Company announced its interim results for the year of 2017. According to the PRC GAAPs, the net profit attributable to shareholders of the Company was RMB788 million, representing a decrease of 89.88% as compared to the corresponding period of the previous year.

The Company held global investor telephone conferences for its interim results for the year of 2017.

September

The Company publicly issued 3+N years perpetual corporate bonds of RMB2.5 billion and 5+N years perpetual corporate bonds of RMB2.5 billion to qualified investors.

The Company ranked 59th in the “Platts Top 250 Global Energy Listed Company”.

October

The Company announced that its total domestic power generation for the first three quarters of 2017 recorded an increase of 26.52% year-on-year.

The Company announced its results for the first three quarters of 2017. According to the PRC GAAPs, the net profit attributable to shareholders of the Company was RMB2,860 million, representing a decrease of 74.30% as compared to the corresponding period of the previous year.

The Company held global investor telephone conferences for its results for the three quarters in 2017.

November

The Company received “The Best Listed Company” award and “The Best CEO of Listed Company” award in the 2017 China Securities Golden Bauhinia Awards Competition.

The Company publicly issued 3-year corporate bonds of RMB2.3 billion to qualified investors.

December

The Company announced payment of interest on its 10-year corporate bonds issued in 2007 for the period from 25 December 2016 to 24 December 2017. The corporate bonds were delisted upon expiry on 25 December 2017.

The Company was awarded the “2017 Outstanding Issuer of Corporate Bonds on Shanghai Stock Exchange Bond Market” award.

## FINANCIAL HIGHLIGHTS

(Amounts expressed in thousands of RMB, except per share data)

## CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (Note 1)

	Year ended 31 December				
	2013	2014	2015	2016	2017
Operating revenue	133,832,875	125,406,855	128,904,873	113,814,236	152,459,444
Profit before income tax expense	17,422,689	19,049,580	22,958,050	13,813,138	2,801,733
Income tax expense	(4,522,671 )	(5,487,208 )	(5,698,943 )	(3,465,151 )	(1,217,526 )
Profit after income tax expense	12,900,018	13,562,372	17,259,107	10,347,987	1,584,207
Attributable to:					
– Equity holders of the Company	10,426,024	10,757,317	13,651,933	8,520,427	1,579,836
– Non-controlling interests	2,473,994	2,805,055	3,607,174	1,827,560	4,371
Basic earnings per share (RMB/share)	0.74	0.76	0.94	0.56	0.10
Diluted earnings per share (RMB/share)	0.74	0.76	0.94	0.56	0.10

## CONSOLIDATED STATEMENTS OF FINANCIAL POSITION (Note 2)

	As at 31 December				
	2013	2014	2015	2016	2017
Total assets	262,232,760	275,171,768	308,866,354	314,839,739	396,589,511
Total liabilities	(187,039,786)	(190,389,062)	(207,172,665)	(212,653,002)	(288,974,907)
Net assets	75,192,974	84,782,706	101,693,689	102,186,737	107,614,604
Equity holders of the Company	62,450,665	70,129,491	84,141,948	86,002,995	87,641,566
Non-controlling interests	12,742,309	14,653,215	17,551,741	16,183,742	19,973,038

## Notes:

1. The results for the years ended 31 December 2013, 2014, 2015 are derived from the historical financial statements of the Company. The results for the years ended 31 December 2016 and 2017 are set out on pages 120 to 121. All such information is extracted from the financial statements prepared under International Financial Reporting Standards (“IFRS”).

2. The consolidated statements of financial position as at 31 December 2013, 2014, 2015 are derived from the historical financial statements of the Company. The consolidated statements of financial position as at 31 December 2016 and 2017 are set out on pages 122 to 124. All such information is extracted from the financial statements prepared under IFRS.



## LETTER TO SHAREHOLDERS

Dear Shareholders,

The development objectives of Huaneng International are:

as a power company, devoted to providing sufficient, reliable and eco-friendly energy to the community; as a listed company, devoted to creating long-term, stable and increasing returns for shareholders; and as a first-class power producer, devoted to having excellency in operation, becoming a leading power enterprise in China and an advanced enterprise in the international market.

In 2017, the Company continued to focus on improving corporate development quality and operation benefits and proactively adapted to the new changes arising from the reform of power structure, grasped opportunities to respond to challenges and solidly launched various jobs. The Company achieved outstanding annual business results when facing complicated business environment and continued to fulfil its responsibility of providing sufficient, reliable and environmentally-friendly power.

In 2017, the safe and clean production was stable in general, the stability in the operation of the generation units was steadily improved, and the energy saving and environmental indicators continued to lead in the industry. The Company put green development concept into practice by vigorously developing clean energy projects, optimising and developing gas power generation, orderly developing coal-fired and thermal power generations and constantly optimising the power structure. It realised increases in both quantity and price in power generation, actively participated in market transactions, held non-controlling interests in regional power trading centers and participated in incremental power distribution pilot projects, in an effort to enhance its market competitiveness. To adapt to the government policy of reducing over-capacity of coal supply and cope with the new situation of demand and supply of coal, the Company strictly controlled the cost of fuel. The Company's capital structure was further optimized, and its risk resistance capability was further enhanced.

The Company continued to perform well in the capital market. It was awarded "The Best Listed Company" and "The Best CEO of Listed Company" awards in the China Securities Golden Bauhinia Awards Competition 2017, and the "2017 Outstanding Issuer of Corporate Bonds on Shanghai Stock Exchange Bond Market" award. Besides, the Company was on the list of "Platts Top 250 Global Energy Listed Companies Award" for nine consecutive years and ranked 59th in 2017.

In 2017, the Company achieved consolidated operating revenue of RMB152,459 million, representing a year-on-year increase of 33.95%. Net profit attributable to the equity holders of the Company amounted to RMB1.580 billion, representing a year-on-year decrease of 81.46%. The decrease of the net profit of the Company was mainly due to the significant growth in coal price.

The development of the Company is supported by shareholders, and the Company has also generated returns to shareholders. The Company has been paying dividends to shareholders every year since 1998, with an accumulated dividend distribution of RMB54.7 billion. The Board of Directors of the Company has resolved to propose the following profit distribution plan for 2017: a cash dividend of RMB0.10 (inclusive of tax) per share will be paid to all shareholders of the Company with a dividend payout ratio of 100%. Such distribution plan will submit for consideration of the Company in the 2017 annual general meeting to be convened on 3 May 2018.

In addition, in order to allow all shareholders to better share the development results of the Company, after considering the Company's strategic planning and development targets, industry development trends and other factors, the Company decided to further increase the proportion of cash dividends to investors in the next three years, and accordingly formulated the Shareholders Return Plan for the Next Three Years (2018 to 2020) of Huaneng Power International, Inc. according to relevant regulations. Detailed terms and the proportion of the Company's cash dividends in the next three years are: when the profit and accumulated undistributed profits in the current year are

positive, and on condition that the Company's cash flow is able to meet the need for its ordinary operation and sustainable development, the Company shall

distribute dividends in cash and the annual cash dividend payout shall, in principle, be no less than 70% of the realised distributable profits stated in the consolidated financial statement that year and such dividend shall be no less than RMB0.1 per share.

In 2018, the Company will adapt to the general trend of national economic and energy development in the new era, adhere to the direction of safe, green, highly efficient and sustainable development according to the requirements of power market reform and supply-side structural reform. The Company will scientifically grasp the trend of macro-economy, the trend of system reform, the development trend of the industry, and the trend of the three markets (power, coal and capital markets), take strategies as the guides, innovation as the driving force and standard management as the guarantee, to consolidate its leading advantages of clean and efficient conventional energy and further accelerate the development and construction of new energy. The Company will improve efficient coordination of the industrial chains among resources, logistic, production and distribution and construct a strategic support system for organization, security, information, management and talent, to further enhance the core competitiveness, industry leadership, market influence and risk control capability of the Company and to build the Company into a global leading power generation listed Company.

Being a responsible enterprise, the Company insists on supporting the continued enhancement of our corporate competitive edges through a responsible approach; insists on duly performing our economic responsibilities to provide our shareholders with long-term, stable and increasing returns; continues to perform our safety responsibilities, to be people-oriented and be focused on safety development for the sake of developing itself into an enterprise with the highest safety standard; continue to perform our environmental responsibilities by paying heed to people's livelihood and concerning clean development to ensure utilization of resources in an efficient and energy-saving manner, thus turning the Company into a "green corporation"; continue to perform our social responsibilities by creating mutual benefits and win-win scenarios that are conducive to the harmonious development of the Company and its stakeholders, so that the Company may serve as an excellent corporate citizen.

CAO Peixi  
Chairman

Beijing, the PRC  
13 March 2018

INCREASE ENVIRONMENTAL EFFICIENCY  
REALIZE GREEN DEVELOPMENT

12

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MANAGEMENT'S DISCUSSION AND ANALYSIS  
OPERATING AND FINANCIAL REVIEWS AND PROSPECTS

Management's Discussion and Analysis

(Prepared under International Financial Reporting Standards ("IFRS"))

General

The principal activities of the Company are development, construction, operation and management of power plants within China. As of 31 December 2017, the Company had a controlled generation capacity of 104,321 MW and an equity-based generation capacity of 92,003 MW, of which more than 15% was from clean energy sources (gas turbine, hydro, wind and photovoltaic and other power generation). The Company located its power plants in 26 provinces, autonomous region and municipalities within China; the Company has a wholly owned power enterprise located in Singapore, and it is one of the biggest listed power company.

For the year ended 31 December 2017, the operating revenue of the Company amounted to RMB152.459 billion, representing an increase of 33.95% over the same period of last year. The net profit attributable to equity holders of the Company was RMB1.58 billion, representing a decrease of 81.46% over the same period of last year; the earnings per share was RMB0.10.



## A. OPERATING RESULTS

## 1. 2017 operating results

In January 2017, the Company completed the acquisition under common control of the subsidiaries of Huaneng Group including Huaneng Shandong Power Generation Co., Ltd. (“Shandong Power”), Huaneng Jilin Power Generation Co., Ltd. (“Jilin Power”), Huaneng Heilongjiang Power Generation Co., Ltd. (“Heilongjiang Power”), and Huaneng Henan Zhongyuan Gas Power Generation Co., Ltd. (“Zhongyuan Gas”) (collectively, the “newly acquired entities”). The aforementioned entities were included in the consolidated financial statements.

The power generation of the Company’s domestic power plants for the year ended 31 December 2017 are as listed below (in 100 million kWh):

Domestic Power Plant	Power Generation		Electricity sold		
	2017	Change	2017	Change	
Heilongjiang Province	131.72	3.53 %	123.2	3.52 %	
*Coal-fired	122.5	1.58 %	114.12	1.43 %	
*Wind-power	9.22	38.89 %	9.07	39.75 %	
Jilin Province	85.96	13.44 %	81.11	13.81 %	
*Coal-fired	74.48	10.69 %	70.09	10.76 %	
*Wind-power	8.6	48.17 %	8.36	51.24 %	
*Hydro-power	0.62	0.75 %	0.61	0.79 %	
*PV	0.116	–	0.115	–	
*Biomass power	2.15	3.62 %	1.93	4.35 %	
Liaoning Province	197.04	-0.60 %	183.95	-1.25 %	
Coal-fired	192.53	-1.15 %	179.47	-1.84 %	
Wind-power	3.33	12.13 %	3.31	12.19 %	
Hydro-power	0.39	14.43 %	0.39	14.00 %	
PV	0.79	392.78 %	0.778	396.67 %	
Inner Mongolia	2.28	4.84 %	2.26	4.50 %	
Wind-power	2.28	4.84 %	2.26	4.50 %	
Hebei Province	134.00	2.58 %	125.85	2.40 %	
Coal-fired	131.32	1.55 %	123.43	1.43 %	
Wind-power	2.28	96.82 %	2.04	87.01 %	
PV	0.399	153.60 %	0.375	208.25 %	
Gansu Province	99.35	2.25 %	94.13	0.08 %	
Coal-fired	83.33	-1.30 %	78.65	-3.91 %	
Wind-power	16.02	25.80 %	15.48	26.78 %	
Ningxia Province	0.103	–	0.099	–	
PV	0.103	–	0.099	–	
Beijing	61.76	-18.12 %	55.62	-20.61 %	
Coal-fired	13.39	-60.68 %	11.63	-60.79 %	
Combined Cycle	48.36	16.92 %	43.99	8.87 %	

Domestic Power Plant	Power Generation		Electricity sold		
	2017	Change	2017	Change	
Tianjin	72.73	0.27 %	68.43	0.01 %	
Coal-fired	56.58	7.15 %	52.71	7.18 %	
Combined Cycle	16.14	-18.22 %	15.7	-18.39 %	
PV	0.015	-	0.015	-	
Shanxi Province	98.13	-8.35 %	91.85	-8.75 %	
Coal-fired	70.35	-13.80 %	64.95	-14.46 %	
Combined Cycle	27.43	7.75 %	26.68	7.87 %	
PV	0.35	-	0.221	-	
Shandong Province	894.87	116.39 %	837.87	115.24 %	
*Coal-fired	888.48	114.85 %	831.62	113.63 %	
*Wind-power	4.52	8.82 %	4.4	9.13 %	
*PV	1.865	266.61 %	1.851	276.54 %	
Henan Province	222.1	3.53 %	209.27	7.58 %	
Coal-fired	206.96	-3.44 %	194.45	0.02 %	
*Combined Cycle	14.24	-8.13 %	13.93	-8.18 %	
Wind-power	0.77	309.51 %	0.76	513.65 %	
PV	0.128	-	0.126	-	
Jiangsu Province	427.61	-0.61 %	404.52	-1.05 %	
Coal-fired	364.41	-6.38 %	343.95	-6.70 %	
Combined Cycle	51.99	47.79 %	50.1	45.02 %	
Wind-power	10.77	86.12 %	10.04	79.52 %	
PV	0.442	-	0.436	-	
Shanghai	184.84	1.91 %	174.9	1.80 %	
Coal-fired	169.34	2.70 %	159.76	2.60 %	
Combined Cycle	15.5	-5.99 %	15.13	-5.94 %	
Chongqing	85.63	-14.51 %	79.3	-14.86 %	
Coal-fired	73.88	-9.40 %	67.87	-9.52 %	
Combined Cycle	11.75	-36.90 %	11.44	-36.94 %	
Zhejiang Province	275.89	11.65 %	264.87	11.74 %	
Coal-fired	270.9	12.08 %	260	12.18 %	
Combined Cycle	4.49	-13.30 %	4.38	-13.46 %	
PV	0.496	130.26 %	0.492	128.47 %	
Hubei Province	147.81	4.94 %	138.33	4.73 %	
Coal-fired	141.47	4.00 %	132.15	3.64 %	
Wind-power	2.92	54.86 %	2.87	64.88 %	
Hydro-power	3.36	14.36 %	3.25	14.80 %	
PV	0.059	-	0.059	-	

Domestic Power Plant	Power Generation		Electricity sold	
	2017	Change	2017	Change
Hunan Province	93.08	11.94 %	87.09	11.28 %
Coal-fired	84.76	13.86 %	78.89	13.23 %
Wind-power	5.31	-1.11 %	5.25	-1.16 %
Hydro-power	2.85	-14.68 %	2.8	-14.77 %
PV	0.162	—	0.159	—
Jiangxi Province	198.01	13.53 %	189.15	13.67 %
Coal-fired	195.29	12.66 %	186.7	12.88 %
Wind-power	2.72	153.43 %	2.45	142.93 %
Anhui Province	59.4	1.60 %	56.77	1.82 %
Coal-fired	57.14	1.73 %	54.54	1.88 %
Wind-power	1.27	42.14 %	1.24	52.18 %
Hydro-power	0.99	-29.68 %	0.98	-29.81 %
Fujian Province	103.8	35.22 %	97.91	35.45 %
Coal-fired	103.73	35.12 %	97.87	35.39 %
PV	0.073	—	0.041	—
Guangdong Province	214.48	22.89 %	204.91	22.75 %
Coal-fired	214.25	22.81 %	204.68	22.66 %
PV	0.225	217.25 %	0.225	250.68 %
Guangxi	0.29	—	—	—
Combined Cycle	0.29	—	—	—
Yunnan Province	36.88	-5.01 %	33.98	-4.89 %
Coal-fired	32.7	-8.76 %	29.97	-9.05 %
Wind-power	4.18	40.04 %	4.01	44.53 %
Guizhou Province	0.58	28.88 %	0.54	43.36 %
Wind-power	0.58	28.88 %	0.54	43.36 %
Hainan Province	116.47	-2.36 %	108.09	-2.62 %
Coal-fired	113.27	-1.74 %	104.95	-2.02 %
Combined Cycle	0.2	-84.64 %	0.19	-84.29 %
Wind-power	1.17	15.47 %	1.14	15.39 %
Hydro-power	1.53	-6.37 %	1.51	-6.33 %
PV	0.305	267.36 %	0.301	268.30 %
Total	3,944.81	25.76 %	3,713.99	25.56 %

The statistics marked \* comprise newly acquired regional subsidiaries and power plants of the Company that Note: were included in the consolidated financial statements in January 2017. The comparison figures thereof are solely for reference purposes.

The increase in the Company's power generation for the year was mainly attributable to the following reasons: (1) The acquisition of power generation assets in Heilongjiang, Jilin and Shandong largely increased the Company's power generation capacity; (2) The Company's coal-fired power generation in Central China, East China and Guangdong increased over the same period of last year, (3) Beijing Co-generation (combined cycle), Suzhou Combined Cycle, Rudong Wind Power and other power plants were put into production.

For the year ended 31 December 2017, the accumulated power generation of Tuas Power Ltd., the Company's wholly owned subsidiary in Singapore, accounted for a market share of 21.9%, representing an increase of 0.4% compared to the same period last year.

In respect of tariff, the Company's domestic average tariff for the year ended 31 December 2017 was RMB414.01 per MWh, increased by RMB17.41 per MWh from the year ended 31 December 2016. SinoSing Power's average tariff for 2017 was RMB544.15 per MWh, representing an increase by 5.86% from last year.

In respect of fuel costs, due to the rise of coal prices, compared with 2016, the Company's fuel cost per unit of power sold of domestic power plant increased by 32.41% to RMB225.92 per MWh.

Combining the forgoing factors, for the year ended 31 December 2017, the Company recorded an operating revenue of RMB152.459 billion, representing an increase of 33.95% from RMB113.814 billion of last year, and the net profit attributable to equity holders of the Company of RMB1.580 billion, representing a decrease of 81.46% from RMB8.520 billion of last year.

For the year ended 31 December 2017, the net profit attributable to equity holders of the Company from domestic operations was RMB2.057 billion, representing a decrease of RMB6.703 billion from RMB8.760 billion for the same period last year. The decrease was primarily attributable to the significant rise of coal price compared to the same period last year, which significantly reduced the profitability of the Company's coal-fired power generation. The net loss attributable to equity holders of the Company from its operations in Singapore was RMB477 million, representing a loss increase of RMB237 million compared to the same period last year.

## 2. Comparative Analysis of Operating results

## 2.1 Operating revenue and tax and levies on operations

Operating revenue mainly consists of revenue from electricity sold. For the year ended 31 December 2017, the consolidated operating revenue of the Company and its subsidiaries amounted to RMB152.459 billion, representing an increase of 33.95% from RMB113.814 billion for the year ended 31 December 2016. The operating revenue from domestic operations of the Company increased by RMB37.326 billion over the same period of last year, while the operating revenue generated from newly acquired entities and newly operated generating units was RMB33.956 billion.

The operating revenue from the operations of the Company in Singapore increased by RMB1.319 billion over the same period of last year, which was mainly attributed to the aggressive competitive strategy adopted by the Company in Singapore and the rise of on-grid tariff compared to the same period of last year.

Region/type of power generation	Average tariff rate (VAT inclusive) (RMB/MWh)			Change
	2017	2016		
Heilongjiang Province				
*Coal-fired	376.88	370.34	1.77	%
*Wind-power	595.75	613.36	-2.87	%
Jilin Province				
*Coal-fired	383.75	344.25	11.47	%
*Wind-power	551.80	585.64	-5.78	%
*Hydro-power	426.63	428.52	-0.44	%
*PV	879.95	–	Not applicable	
*Biomass power	750.02	745.90	0.55	%
Liaoning Province				
Coal-fired	370.25	344.42	7.50	%
Wind-power	583.79	618.74	-5.65	%
Hydro-power	330.00	332.67	-0.80	%
PV	907.54	950.00	-4.47	%
Inner Mongolia				
Wind-power	452.91	471.22	-3.89	%
Hebei Province				
Coal-fired	366.23	358.48	2.16	%
Wind-power	541.30	554.60	-2.40	%
PV	978.48	784.95	24.66	%
Gansu Province				
Coal-fired	246.89	207.63	18.91	%
Wind-power	459.23	398.34	15.29	%

Region/type of power generation	Average tariff rate (VAT inclusive) (RMB/MWh)			Change
	2017	2016		
Ningxia				
PV	800.00	–	Not applicable	
Beijing				
Coal-fired	749.82	454.99	64.80	%
Combined Cycle	674.07	687.33	-1.93	%
Tianjin				
Coal-fired	393.82	370.82	6.20	%
Combined Cycle	699.14	726.44	-3.76	%
Shanxi Province				
PV	879.99	–	Not applicable	
Shandong Province				
Coal-fired	317.52	252.98	25.51	%
Combined Cycle	678.32	682.40	-0.60	%
Shandong Province				
PV	1,370.19	–	Not applicable	
*Coal-fired				
	397.13	380.64	4.33	%
*Wind-power				
	625.68	643.84	-2.82	%
*PV				
	881.74	1,155.80	-23.71	%
Henan Province				
Coal-fired	370.27	355.46	4.17	%
*Combined Cycle	600.00	627.84	-4.43	%
Wind-power	610.00	610.00	0.00	%
Jiangsu Province				
PV	375.34	–	Not applicable	
Coal-fired				
	401.57	378.06	6.22	%
Combined Cycle				
	599.85	661.52	-9.32	%
Wind-power				
	679.60	570.50	19.12	%
Shanghai				
PV	957.89	–	Not applicable	
Coal-fired				
	398.00	385.59	3.22	%
Combined Cycle				
	911.36	899.62	1.31	%
Chongqing				
Coal-fired	392.74	376.92	4.20	%
Combined Cycle	811.53	649.74	24.90	%
Zhejiang Province				
Coal-fired	421.15	407.76	3.28	%
Combined Cycle	912.07	887.70	2.74	%
PV	1,128.38	1,076.50	4.82	%



Region/type of power generation	Average tariff rate (VAT inclusive) (RMB/MWh)			Change	
	2017	2016			
Hubei Province					
Coal-fired	402.46	378.65	6.29	%	
Wind-power	676.00	610.00	10.82	%	
Hydro-power	378.04	378.81	-0.20	%	
PV	880.00	–	Not applicable		
Hunan Province					
Coal-fired	455.94	449.87	1.35	%	
Wind-power	606.72	610.00	-0.54	%	
Hydro-power	376.17	404.19	-6.93	%	
PV	879.57	–	Not applicable		
Jiangxi Province					
Coal-fired	411.82	399.78	3.01	%	
Wind-power	610.00	610.00	0.00	%	
Anhui Province					
Coal-fired	371.86	351.24	5.87	%	
Wind-power	610.00	610.00	0.00	%	
Hydro-power	376.74	385.60	-2.30	%	
Fujian Province					
Coal-fired	375.59	348.95	7.63	%	
PV	980.00	–	Not applicable		
Guangdong Province					
Coal-fired	431.23	448.36	-3.82	%	
PV	980.00	980.00	0.00	%	
Yunnan Province					
Coal-fired	577.23	579.58	-0.40	%	
Wind-power	478.37	494.71	-3.30	%	
Guizhou Province					
Wind-power	599.76	610.00	-1.68	%	
Hainan Province					
Coal-fired	431.33	420.72	2.52	%	
Combined Cycle	1,619.97	672.26	140.97	%	
Wind-power	608.99	609.78	-0.13	%	
Hydro-power	399.53	400.07	-0.13	%	
PV	991.44	1,010.00	-1.84	%	
Domestic total	414.01	396.60	4.39	%	
SinoSing Power	544.15	514.00	5.86	%	

Note 1: The tariff of combined-cycle power plants in Shanghai and Zhejiang consists of on-grid settlement price and capacity subsidy income.

Note 2: The statistics marked \* comprise newly acquired regional subsidiaries and power plants of the Company that were included in the consolidated financial statements in January 2017. The comparison figures thereof are



solely for reference purposes.

20

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Tax and levies on operations mainly consist of surcharges of value-added tax. According to relevant administrative regulations, these surcharges include City Construction Tax and Education Surcharges calculated at prescribed percentages on the amounts of the value-added tax paid. For the year ended 31 December 2017, the tax and levies on operations of the Company and its subsidiaries were RMB1.376 billion, representing an increase of RMB198 million from RMB1.178 billion for the same period of last year, of which the tax and levies on operations attributable to newly acquired entities and new generating units accounted for RMB278 million.

## 2.2 Operating expenses

For the year ended 31 December 2017, the total operating expenses of the Company and its subsidiaries was RMB141.90 billion, representing an increase of 50.54% from the same period last year. The operating expenses in domestic operations of the Company increased by RMB46.074 billion, or 53.85%, from the same period last year, of which the newly acquired entities and the new generating units accounted for RMB32.364 billion; the costs attributable to the existing entities increased by RMB13.710 billion, which was primarily attributable to the increased fuel costs for domestic operations in China.

The operating expenses from the operations in Singapore increased by RMB1.567 billion, or 18.02%, from the same period last year, which was mainly due to increased gas price attributable to the rise of international oil price.

### 2.2.1 Fuel costs

Fuel costs account for the majority of the operating expenses for the Company and its subsidiaries. For the year ended 31 December 2017, fuel costs of the Company and its subsidiaries increased by 63.79% to RMB92.737 billion from the RMB56.618 billion for the year ended 31 December 2016. The fuel costs from domestic operations of the Company and its subsidiaries increased by RMB35.387 billion, which was primarily attributable to the increased fuel price. The fuel costs of the newly acquired entities and new generating units were RMB17.402 billion and the fuel costs of the existing generating units increased by RMB17.985 billion from same period last year. Fuel costs in Singapore increased by RMB0.732 billion from the same period last year, mainly due to increased fuel costs arising from increased natural gas prices. For the year ended 31 December 2017, the average price (excluding tax) of natural fuel coal consumed of the Company and its domestic subsidiaries was RMB548.02 per ton, representing a 45.63% increase from the RMB376.30 per ton for the year ended 31 December 2016. The fuel cost per unit of power sold by the Company's domestic power plants increased by 32.41% to RMB225.92/MWh from RMB170.62/MWh in 2016.

### 2.2.2 Maintenance

For the year ended 31 December 2017, the maintenance expenses of the Company and its subsidiaries amounted to RMB4.348 billion, representing an increase of RMB5 million from RMB4.343 billion for the year ended 31 December 2016. The maintenance expenses of the Company's domestic operations increased by RMB21 million compared to the same period last year. The maintenance expenses of operations in Singapore decreased by RMB16 million compared to the same period last year.

### 2.2.3 Depreciation

For the year ended 31 December 2017, depreciation expenses of the Company and its subsidiaries increased by 36.21% to RMB20.181 billion, compared to RMB14.816 billion for the year ended 31 December 2016; the increase is mainly due to the newly acquired entities and new generating units. The depreciation expenses of domestic operations increased by RMB5.288 billion compared to the same period last year, of which the depreciation costs incurred by the newly acquired entities and new generating units was RMB5.509 billion. The depreciation expenses of the operations in Singapore increased by RMB77 million compared to the same time last year.

### 2.2.4 Labor

Labor costs consist of salaries to employees and contributions payable for employees' housing funds, medical insurance, pension and unemployment insurance, as well as training costs. For the year ended 31 December 2017, the labor costs of the Company and its subsidiaries amounted to RMB10.590 billion, representing an increase of RMB2.547 billion from RMB8.043 billion for the year ended 31 December 2016. This is mainly attributable to labor costs of the newly acquired entities and new generating units, which were RMB2.496 billion. Labor costs for Singapore operations increased by RMB14 million compared to the same time last year.

2.2.5 Other operating expenses (including electricity power purchase costs and service fees paid to HIPDC)

Other operating expenses include environmental protection expenses, land fee, insurance premiums, office expenses, amortization, Tuas Power's electricity power purchase costs, impairment losses, government subsidies and net losses on disposal of properties, plant and equipment. For the year ended 31 December 2017, other operating expenses (including electricity power purchase costs and service fees paid to HIPDC) of the Company and its subsidiaries was RMB14.044 billion, representing an increase of RMB3.605 billion from RMB10.439 billion for the year ended 31 December 2016. The other operating expenses from the Company's domestic operations increased by RMB2.845 billion due to the newly acquired entities and new generating units, which were RMB6.122 billion.

Other operating expenses of the operations in Singapore increased by RMB760 million compared to the same period last year.

2.3 Financial expenses

Financial expenses consist of interest expense, bank charges and net exchange differences.

2.3.1 Interest expenses

For the year ended 31 December 2017, the interest expenses of the Company and its subsidiaries were RMB9.749 billion, representing an increase of 42.99% from RMB6.818 billion for the year ended 31 December 2016. The interest expenses from the Company's domestic operations increased by RMB2.961 billion. The interest expenses from the newly acquired entities and new generating units were RMB2.510 billion and those incurred by the existing entities in China increased by RMB0.451 billion, which is largely attributable to increased interest rate and debts scale. The interest expenses of Singapore operations decreased by RMB30 million compared to the same period last year.

### 2.3.2 Net exchange differences and bank charges

For the year ended 31 December 2017, the Company and its subsidiaries recorded a net gain of RMB144 million from net exchange differences and bank charges, representing an increase of RMB394 million compared with the net loss of RMB250 million for the year ended 31 December 2016, mainly due to the strengthened exchange rate of RMB against U.S. dollar.

The operations in Singapore recorded net losses of RMB17 million from net exchange differences and bank charges, representing a decrease of RMB67 million from the net gains of RMB50 million for the year ended 31 December 2016, mainly due to the settlement of effective hedging instruments for cash flow hedge.

### 2.4 Share of profits less losses of associates and joint ventures

For the year ended 31 December 2017, the share of profits less losses of associates and joint ventures was RMB0.425 billion, representing a decrease of RMB874 million from RMB1.299 billion from last year, mainly due to decreased profit of associates and joint ventures.

### 2.5 Income tax expenses

For the year ended 31 December 2017, the Company and its subsidiaries recognised income tax expenses of RMB1.218 billion, representing a decrease of RMB2.247 billion from RMB3.465 billion for the year ended 31 December 2016. The income tax expenses for the domestic operations decreased by RMB2.192 billion primarily attributable to large increase in coal price from same period last year, which significantly reduced the profitability of the Company's coal-fired power plants. The income tax expenses of the operations in Singapore decreased by RMB55 million.

2.6 Net profit, net profit attributable to the equity holders of the Company and non-controlling interests

For the year ended 31 December 2017, the Company and its subsidiaries achieved a net profit of RMB1.584 billion, representing a decrease of RMB8.764 billion, or 84.69%, from RMB10.348 billion for the year ended 31 December 2016; the net profit attributable to equity holders of the Company was RMB1.580 billion, representing a decrease of RMB6.940 billion from RMB8.520 billion for the year ended 31 December 2016.

The profit attributable to equity holders of the Company from its domestic operations decreased by RMB6.703 billion, mainly attributable to large increase in coal price from same period last year, which significantly reduced the profitability of the Company's coal-fired power plants. The net loss attributable to equity holders of the Company from its operations in Singapore was RMB477 million, representing a loss increase of RMB237 million from same period last year. This was mainly due to the continued oversupply in the Singapore's power market and lower than expected profit margin of power contracts, which led to a drop in the profitability of the Company's overseas power generation business.

The Company's recorded net profit attributable to non-controlling interests decreased to RMB4 million for the year ended 31 December 2017 from RMB1.828 billion for the year ended 31 December 2016, mainly attributable to large increase in coal price from same period last year, which significantly reduced the profitability of the Company's non-wholly owned coal-fired power subsidiaries.

2.7 Comparison of financial positions

2.7.1 Comparison of asset items

As of 31 December 2017, consolidated total assets of the Company and its subsidiaries were RMB396.590 billion, representing an increase of 25.97% from RMB314.840 billion as of 31 December 2016; total assets of the domestic operations increased by RMB82.072 billion to RMB368.629 billion, including a net increase of RMB70.544 billion in non-current assets, which is mainly attributable to the newly acquired entities and the capital expenditure on construction projects.

As of 31 December 2017, total assets of the operations in Singapore were RMB27.961 billion, representing a decrease of RMB322 million from the same period last year. Non-current assets decreased by RMB365 million to RMB23.809 billion, primarily attributable to the depreciation of property, plant and equipment.

### 2.7.2 Comparison of liability items

As of 31 December 2017, consolidated total liabilities of the Company and its subsidiaries were RMB288.975 billion, representing an increase of 35.89% from RMB212.653 billion as of 31 December 2016.

As of 31 December 2017, interest-bearing debts of the Company and its subsidiaries totalled RMB238.039 billion. The interest-bearing debts consist of long-term loans (including those maturing within a year), bonds payable (including those maturing within a year), short-term borrowings, short-term bonds payable and financial leases payable (including those maturing within a year). The interest-bearing debts denominated in foreign currencies amounted to RMB2.660 billion.

As of 31 December 2017, the total liabilities of the operations in Singapore were RMB15.098 billion, representing a decrease of 0.70% from RMB15.205 billion as of 31 December 2016.

### 2.7.3 Comparison of equity items

Excluding the impact of profit and profit appropriations, total equity attributable to the equity holders of the Company increased as of 31 December 2017, including an increase impact arising from the issuances of unsecured perpetual corporate bonds at face value of RMB5 billion in 25 September 2017, a decrease of post-tax impact of RMB854 million arising from disposal of available-for-sale financial assets and fair value changes of available-for-sale financial assets held by the Company and its subsidiaries, an increase of post-tax impact of RMB0.121 billion arising from changes in other comprehensive income of the Company's investees accounted for under equity method, an increase of post-tax impact of RMB0.063 billion arising from fair value changes of cash flow hedge instruments, an increase of RMB113 million from translation difference of the financial statements of foreign operations.

Non-controlling interests as of 31 December 2017 increased by RMB3.789 billion.

## 2.7.4 Major financial position ratios

	2017	2016
Current ratio	0.31	0.28
Quick ratio	0.26	0.23
Ratio of liabilities to equity holders' equity	3.30	2.47
Multiples of interest earned	1.23	2.84

## Formula of the financial ratios:

Current ratio =  $\frac{\text{balance of current assets as of the year end}}{\text{balance of current liabilities as of the year end}}$

Quick ratio =  $\frac{(\text{balance of current assets as of the year end} - \text{net inventories as of the year end})}{\text{balance of current liabilities as of the year end}}$

Ratio of liabilities to equity holders' equity =  $\frac{\text{balance of liabilities as of the year end}}{\text{balance of equity holders' equity (excluding non-controlling interests) as of the year end}}$

Multiples of interest earned =  $\frac{(\text{profit before tax} + \text{interest expense})}{\text{interest expenditure (inclusive of capitalized interest)}}$

The current ratio increased as of 31 December 2017 compared to that of 31 December 2016 mainly due to increase of current assets especially inventories and other current assets. The ratio of liabilities to equity holders' equity as of 31 December 2017 increased compared to that of 31 December 2016 mainly due to the increase in loans at the year end. The multiples of interest earned decreased mainly due to reduced pre-tax profit for the year ended 31 December 2017.



## B. LIQUIDITY AND CASH RESOURCES

## 1. Liquidity

	2017 RMB billion	2016 RMB billion	Change %	
Net cash provided by operating activities	29.198	31.511	-7.34	%
Net cash used in investing activities	-31.749	-17.650	79.88	%
Net cash generated from/(used in) financing activities	4.013	-13.602	-129.50	%
Effect of exchange rate fluctuations on cash held	0.010	0.073	-86.30	%
Net increase in cash and cash equivalents	1.472	0.332	343.37	%
Cash and cash equivalents as at beginning of the year	7.810	7.478	4.44	%
Cash and cash equivalents as at end of the year	9.282	7.810	18.85	%

For the year ended 31 December 2017, net cash provided by operating activities of the Company and its subsidiaries was RMB29.198 billion, representing a decrease of 7.34% from last year, mainly attributable to the comprehensive effect of increased cash outflow for increased fuel price and increased cash inflow for raised power generation and tariff. Net cash provided by operating activities in Singapore was RMB700 million. The net cash used in investing activities was RMB31.749 billion, representing an increase of 79.88% from last year, mainly due to consideration paid for newly acquired entities in 2017. The net cash generated from financing activities was RMB4.013 billion, representing an increase of RMB17.615 billion to the net cash outflow, which was RMB13.602 billion, from the same period last year. This was mainly due to the increase of loans and bonds issued by the Company and its subsidiaries in this year as compared to the same period last year. As of 31 December 2017, the cash and cash equivalents of the Company and its subsidiaries denominated in RMB, Singapore dollar and U.S. dollar were RMB8.130 billion, RMB836 million and RMB316 million, respectively.

As of 31 December 2017, net current liabilities of the Company and its subsidiaries were approximately RMB107.413 billion. Based on the Company's proven financing record, readily available banking facilities and sound credibility, the Company believes it is able to duly repay outstanding debts, obtain long-term financing and secure funding necessary for its operations. The Company has also capitalized on its good credit record to make short-term loans at relatively lower interest rates, thus reducing its interest expenses.

## 2. Capital expenditure and cash resources

### 2.1 Capital expenditure on infrastructure construction and renovation projects

The capital expenditures for the year ended 31 December 2017 were RMB26.045 billion, mainly for construction and renovation of projects, including RMB1.804 billion for Luoyuan Power project, RMB1.526 billion for Rudong Baxianjiao Offshore Wind Power project, RMB1.250 billion for Beijing Co-generation project, RMB775 million for Yantai Bajiao Co-generation project, RMB513 million for Zhanhua PV project, RMB492 million for Guanyun Co-generation, RMB489 million for Zhanhua New Energy project, RMB485 million for Mianchi Co-generation project, RMB453 million for Fuyuan Wind Power project, RMB422 million for Huaining Wind Power project, RMB420 million for Weishan New Energy project, RMB385 million for Luohuang Power project, RMB382 million for Fengjie Wind Power project, RMB381 million for Jiangxi Renewable Energy project, RMB361 million for Zhongxiang Wind Power project, RMB359 million for Jianchang PV project, RMB344 million for Dongguan Combined Cycle project, RMB343 million for Jiuquan Wind Power II project, RMB335 million for Yingkou Xianrendao Co-generation project, RMB309 million for Dalian Co-generation project, RMB297 million for Yushe PV project, RMB279 million for Laiwu Power project, RMB266 million for Taicang Power project, RMB255 million for Yingkou Power Plant project, RMB254 million for Qinbei Power Plant project, RMB254 million for Shantou Haimen project, RMB244 million for Yueyang Power Plant project, RMB230 million for Suzhou Combined Cycle project, RMB228 million for Luoyuan Port, RMB225 million for Dalian Power Plant project, RMB224 million for Dezhou Power Plant project, RMB204 million for Changxing Power Plant project, RMB200 million for Shidongkou Plant I project, RMB200 million for Weihai Power Plant, RMB196 million for Tongshan Wind Power Project, RMB195 million for Wuhan Power Plant project, RMB189 million for Panxian Wind Power project, RMB177 million for Yingcheng Co-generation project and RMB172 million for Chengmai PV project. The capital expenditures of the Company's operations in Singapore were RMB181 million. The expenditures on other projects were RMB9.747 billion.

The above capital expenditures are sourced mainly from internal capital, cash flows provided by operating activities, and debt and equity financing. The Company expects to have significant capital expenditures in the next few years. During the course, the Company will make active efforts to improve project planning process on a commercially viable basis. The Company will also actively develop newly planned projects to pave the way for its long-term growth. The Company expects to finance the above capital expenditures through internal capital, cash flows provided by operating activities, and debt and equity financing.

The cash requirements, usage plans and cash resources of the Company are as following:

(Unit: RMB100 million)

Capital Expenditure Project	Capital Expenditure Plan for 2018	Cash resources arrangements	Financing costs and note on use
Thermal power projects	55.07	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC
Hydropower projects	0.25	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC
Wind power projects	88.70	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC
Coal mining projects	6.28	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC
Photovoltaic power projects	10.15	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC
Port	1.50	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC
Technology renovation	33.15	Including internal cash resources and bank loans	Within the floating range of benchmark lending interest rates of PBOC

## 2.2 Cash resources and anticipated financing costs

The Company expects to finance its capital expenditure and acquisition costs primarily with internal capital, cash flow provided by operating activities, and debt and equity financing.

Good operating results and sound credit status provide the Company with strong financing capabilities. As of 31 December 2017, the undrawn banking facilities available to the Company and its subsidiaries amounted to approximately RMB241.9 billion, which are granted by Bank of China, China Construction Bank and Industrial and Commercial Bank of China, etc.

The Company completed issuances of unsecured super short-term bonds in ten installments on 13 January, 17 February, 16 March, 14 April, 27 June, 17 August, 18 October, 15 November, 22 November, and 1 December 2017, at a principal amount of RMB4 billion, RMB3 billion, RMB3 billion, RMB4 billion, RMB2 billion, RMB4 billion, RMB4 billion, RMB2 billion, RMB1 billion and RMB4 billion with nominal annual interest rates of 3.40%, 3.67%, 3.60%, 3.60%, 4.19%, 3.96%, 4.10%, 4.19%, 4.17% and 4.17%, respectively. Each installment of the notes was denominated in RMB, issued at par value, and would successively mature in 270 days, 270 days, 180 days, 90 days, 150 days, 60 days, 180 days, 180 days, 180 days and 90 days from the value date.

The Company completed issuance of unsecured medium-term notes on 12 July 2017, at a principal amount of RMB5 billion, with a nominal annual interest rate of 4.69%. These notes were denominated in RMB, issued at par value, and would mature in five years from the value date.

The Company completed issuance of unsecured non-public debt financing instrument on 18 July 2017, at a principal amount of RMB0.5 billion, with a nominal annual interest rate of 4.75%. The instrument was denominated in RMB, issued at par value, and would mature in three years from the value date.

The Company completed issuances of unsecured perpetual corporate bonds in two installments on 25 September 2017, each at a principal amount of RMB2.5 billion, with nominal initial distribution rates of 5.05% and 5.17%. The perpetual corporate bonds have no fixed maturing date and are callable at the Company's discretion in whole. The payment of the principal may be deferred for each renewal period as 3 and 5 years.

The Company completed issuance of unsecured corporate bond on 16 November 2017, at a principal amount of RMB2.3 billion, with a nominal annual interest rate of 4.99%. The bond was denominated in RMB, issued at par value, and would mature in three years from the value date.

As of 31 December 2017, short-term loans of the Company and its subsidiaries totalled RMB80.251 billion (2016: RMB57.669 billion). Loans from banks were charged at interest rates ranging from 3.74% to 5.50% per annum (2016: 2.77% to 4.35%).

As of 31 December 2017, short-term bonds payable by the Company and its subsidiaries were RMB11.068 billion (2016: RMB27.311 billion).

As of 31 December 2017, long-term loans (including those maturing within a year) of the Company and its subsidiaries totalled RMB125.129 billion (2016: RMB74.551 billion), including RMB denominated borrowings of RMB110.073 billion (2016: RMB58.876 billion), U.S. dollar denominated loans of approximately US\$348 million (2016: US\$410 million), Euro denominated loans of approximately €30 million (2016: €39 million), Singapore dollar denominated loans of S\$2.539 billion (2016: S\$2.581 billion), and Japanese yen denominated loans of ¥2.593 billion (2016: ¥2.703 billion). Among them, all loans denominated in US dollar and Singapore dollar were floating rate, and loans denominated in all other foreign currencies were fixed rate. As of 31 December 2017, long-term bank loans of the Company and its subsidiaries had interest rates ranging from 0.75% to 6.03% per annum (31 December 2016: 0.75% to 5.65%).

The Company and its subsidiaries will closely monitor any change in the exchange rate and interest rate markets and cautiously assess the currency rate and interest rate risks.

Combining the current development of the power generation industry and the growth of the Company growth, the Company will make continuous efforts to not only meet cash requirements of daily operations, constructions and acquisitions, but also establish an optimal capital structure to minimize the cost of capital and manage financial risks through effective financial management activities, thus maintaining sustainable and stable returns to the shareholders.

### 2.3 Other financing requirements

The objective of the Company is to bring steadily growing returns to equity holders in the long run. In line with this objective, the Company follows a proactive, stable and balanced dividend policy. In accordance with the profit appropriation plan of the board of directors of the Company (subject to the approval at annual general meeting) for 2017, the Company expects to pay a cash dividend of RMB1.52 billion.

### 2.4 Maturity profile of loans and bonds (RMB billion)

Maturity Profile	2018	2019	2020	2021	2022
Principal amount planned for repayment	113.349	24.729	22.706	19.683	17.656
Interest amount planned for repayment	7.883	4.964	3.900	2.964	2.234
Total	121.232	29.693	26.606	22.647	19.890

This table was prepared by the principal and interest amount actually repaid accordingly to contracts already Note: signed. The amount of principle to be paid in 2018 is relatively large because this includes expected repayment of short-term loans and short-term bonds.

### C. LONG-TERM DEVELOPMENT STRATEGY AND PLANNING

The Company is committed to implementing new development initiatives in line with the general trend of China's economic and energy reform and development in the new era. The Company will adhere to the objective of establishing first-class company with international competitiveness, focus on improving the quality and performance of its development, and seek to accelerate transformation and upgrade in accordance with the requirements of market-oriented electricity reform and supply-side structural reform. The Company will also put in place a new mechanism under the principle that management shall be centered on competitiveness improvement, operations shall be centered on customers, development shall be centered on market demands, so as to strengthen the strategic leadership and continuously improve its core competitiveness. The Company aims to consolidate its leading position in the conventional energy sector, speed up the new energy development, improve the synergy within the industry, expand sales and services presence, maintain steady expansion in overseas market, achieve all-around improvement of the Company's operating results, quality performance and corporate vitality, and build the Company into an internationally leading public power producer with standardized management, advanced technologies, energy saving and environment-friendly, reasonable operating structure, outstanding operations, sound corporate governance and superior market value.

The Company is committed to safe, green, efficient and sustainable growth. With insightful understanding of macro-economic environment, systemic reform development, industrial growth and other market trends, the Company aims to grow strategically with innovative initiatives and sound management. It will employ development, mergers and acquisitions and access to capital market and strategic investors at domestic and international markets to consolidate its leading position in clean, efficient conventional energy sector and to accelerate its development in new energy sector. The Company also aims to further enhance its key competitiveness, industry leadership, market influence and risk control with improved integration of resources, logistics, power generation and distribution system that draws strength from its organization, security, management, information and human capital, and strive to build up its modern energy sector system.

#### D. TREND ANALYSIS

In 2018, China's economy will enter a new era which would profoundly affect the energy supply and demand situation. China's economy is expected to move to quality growth from high-speed growth with upgraded economic structure driven by innovation rather than factors and investment. Industrial restructuring and upgrading, gradual reduction of energy demand, and supply-side structural reform will play the leading role in China's efforts towards new development and construction of modern economic system. The tasks to address overcapacity, deleverage and prevent risks still loom large. Continued development of an environmental-friendly civilization presents new requirements for energy production. Accelerated eco-system reform and building of a market-oriented and diversified environmental compensation mechanism will impose stricter environmental protection standards on energy development which will result in continued increase of coal-fired power generating costs and investment in environment protection oriented initiatives. Energy restructuring will maintain fast track development as the government issues policies and regulations on carbon trading, non-hydro renewable energy quota, and solar energy development to guide businesses towards green growth. China will deepen reforming efforts to make state-owned businesses competitive and extensive, improve the top-level design of state-owned enterprise, improve the corporate governance structure of state-owned enterprises, and enhance the competitiveness of enterprises. China will continue to push forward power sector reform and evolve towards a liberalized and competitive power market with market-based power generation, increased power transaction and extensive inter-provincial power exchange. Sectoral boundary and competition landscape are redefined by the ever competitive power sales, expanded reform of power distribution market, and accelerated construction of pilot spot market, which engenders new business models and profit-making models urging enterprises to be more market oriented, thus enhancing overall efficiency of the industry. The national initiative of "The Belt and Road" lend efforts for enterprises to deepen their cooperation with foreign countries and innovate their foreign investment mechanism, and also provides enterprises with ample opportunities for infrastructure investment and asset allocation, including energy and power sectors.

In the electricity market, with consistently favorable economic growth in China, the demand for electricity in 2018 is expected to maintain rapid growth continually. It is predicted by China Electricity Council that in 2018, total electricity consumption nationwide will grow by 5.5%, with newly installed generation capacity of approximately 120 million kW, of which thermal generation units will represent a reduced percentage from last year. In 2018, annual power generation utilization hours nationwide are expected to be 3,710 hours, and utilization hours of thermal generating units are estimated to be 4,210 hours, generally the same with 2017. Curtailment of hydro, wind and solar generated power is expected to be gradually addressed. The State Electricity Reform will progress steadily, power generation market is in the process of steady and planned liberalization, and medium-to-long term market transactions, cross-provincial and cross-regional transactions, spot transactions of clean energy are further expanded. The five-year winter clean heating initiative in northern China promoted by the government will have considerable power substitution effect.

In the fuel market, China will continue implementing policies to phase out obsolete production capacities and release advanced production capacities. It will speed up construction of the northern coal transportation corridors, coordinate efforts on capacity reduction and supply protection, and maintain coal supply and demand balance and price stability. The government will also strive to restore coal price to reasonable range with multiple efforts including accelerated increase of advanced coal production capacities, enhanced enforcement of medium-to-long coal contracts, execution of mutual guaranty agreement among coal producers, transporters and users, and setting up the regulatory system to control minimum and maximum coal inventory.

In the capital market, China has put more emphasis on risk prevention. Prudent monetary policy will have a stabilizing effect on the overall money supply. The credit and capital market will grow at a stable and reasonable pace. China will also strengthen the asset-liability ratio and capital requirements to urge deleveraging by state-owned enterprises. The capital market is expected to see a tight balance, potentially leading to an increase in the cost of capital.

The Company will comply with the overall trend of national economic and energy development in the new era, implement new development concept, pay close attention to policy and market changes, effectively control risks and improve its core competitiveness in line with the requirements of market-oriented electricity reform and supply-side structural reform and achieve the goals of safe, green, efficient and sustainable development.

#### E. PERFORMANCE OF SIGNIFICANT INVESTMENTS AND THEIR PROSPECTS

The Company acquired 25% equity interest in Shenzhen Energy Group for RMB2.39 billion on 22 April 2003. In 2011, Shenzhen Energy Group divided into a remainder company of the same name and a new company Shenzhen Energy Management Company (“SE Management”), and the Company holds 25% equity interests in each of the two successors. The Company acquired 200 million shares from Shenzhen Energy Corporation (“Shenzhen Energy”), a subsidiary of Shenzhen Energy Group in December 2007. Shenzhen Energy allotted shares with its capital surplus in 2011. In February 2013, Shenzhen Energy merged SE Management through the combination of directional seasoned offering and cash payment to shareholders of SE management, Shenzhen State-owned Assets Administration Commission and the Company. After the merger, the Company held 661 million shares of Shenzhen Energy, representing 25.02% of its equity interests. In 2017, Shenzhen Energy distributed RMB1.5 of cash dividend out of every 10 shares to its shareholders, and the Company held 992 million shares of Shenzhen Energy by 31 December 2017. These investments brought a net profit attributable to the equity holders of the Company of RMB187 million for the year ended 31 December 2017 under IFRS. This investment is expected to provide steady returns to the Company.

The Company held 60% direct equity interest in Sichuan Hydropower as of 31 December 2006. In January 2007, Huaneng Group increased its capital investment in Sichuan Hydropower by RMB615 million, thus reducing the Company’s equity interest in Sichuan Hydropower to 49% and making Huaneng Group the controlling shareholder of Sichuan Hydropower. This investment brought a net profit attributable to the equity holders of the Company of RMB109 million for the year ended 31 December 2017 under IFRS. This investment is expected to provide steady returns to the Company.



#### F. EMPLOYEE BENEFITS

As of 31 December 2017, the Company and its subsidiaries had 53,962 employees within and outside the PRC. The Company and its subsidiaries provide employees with competitive remuneration and linked such remuneration to operating results to provide incentives for the employees. Currently, the Company and its subsidiaries do not have any stock or option based incentive plan.

Based on the development plans of the Company and its subsidiaries and the requirements of individual positions, together with consideration of specific characteristics of individual employees, the Company and its subsidiaries tailored various training programs for their employees on management, technology and the skills. These programs enhanced the comprehensive skills of the employees.

#### G. GUARANTEE FOR LOANS AND RESTRICTED ASSETS

As of 31 December 2017, the Company provided guarantees of approximately RMB12.393 billion for the long-term bank loans of Tuas Power.

As of 31 December 2017, the details of secured loans of the Company and its subsidiaries were as follows:

(1) As of 31 December 2017, short-term loans of RMB24 million (2016: RMB126 million) represented the notes receivable that were discounted with recourse. As these notes receivable had not yet matured, the proceeds received were recorded as short-term loans.

(2) As of 31 December 2017, long-term loans of RMB4.605 billion (2016: RMB2.902 billion) of the Company and its subsidiaries were secured by certain property, plant and equipment with net book value of approximately RMB5.166 billion (2016: RMB3.105 billion).

(3) As of 31 December 2017, long-term loans of approximately RMB10.559 billion (2016: RMB9.032 billion) were secured by future electricity and heating revenue of the Company and its subsidiaries.

(4) As of 31 December 2017, the restricted bank deposits of the Company and its subsidiaries were RMB82 million (2016: RMB71 million).

(5) As of 31 December 2017, the property, plant and equipment leased under finance lease of the Company and its subsidiaries with net book value amounted to RMB2.565 billion (2016: RMB1.763 billion).

#### H. ACCOUNTING STANDARDS HAVING MATERIAL IMPACT ON THE COMPANY'S FINANCIAL STATEMENTS

For the accounting standards that have a material impact on the Company's financial statements, please refer to the Note 2 to the financial statements prepared in accordance with IFRS.

## I. IMPAIRMENT SENSITIVITY ANALYSIS

### 1. Goodwill Impairment

The Company and its subsidiaries conducts impairment test on each individually recognized goodwill at the end of each year. In 2017, the management recognized no goodwill impairment based on the impairment assessment.

For goodwill allocated to CGUs in the PRC, changes of assumptions in tariff and fuel price could have affected the results of goodwill impairment assessment. As of 31 December 2017, if tariff had decreased by 1% or 5% from management's estimates with other variables constant with the expectations, the Company and its subsidiaries would have to recognize impairment against goodwill by approximately RMB681 million and RMB3,879 million, respectively. If fuel price had increased by 1% or 5% from the management's estimates with other variables constant with the expectations, the Company and its subsidiaries would have to recognize impairment against goodwill by approximately RMB320 million and RMB2,535 million, respectively.

### 2. Impairment of other non-current assets

The Company and its subsidiaries will test its property, plant and equipment, land use rights and mining rights suffered any impairment whenever an impairment indication exists.

In 2017, impairment losses for certain property, plant and equipment and land use rights of approximately RMB1,047 million and RMB109 million have been recognized, respectively. Factors leading to impairment primarily include lower than expected utilization hours of a subsidiary due to long idle hours of its power generating units and the coal-fire projects in progress was aborted; lower than expected operating results of three subsidiaries in 2017 due to oversupply and fierce competition within the electricity market in the provinces, as well as low profitability of a hydropower plant, a coal-fire project in progress of a subsidiary was aborted as a result of relevant regulation.

Changes of assumptions in tariff and fuel price will affect the result of property, plant and equipment, land use rights and mining rights impairment assessment. As at 31 December 2017, if tariff had decreased by 1% or 5% from management's estimates with other variables constant with the expectation, the Company and its subsidiaries would have to further recognize impairment against property, plant and equipment and land use rights by approximately RMB165 million and RMB1,165 million, respectively; if fuel price had increased by 1% or 5% from the management's estimates with other variables constant with the expectations, the impairment against property, plant and equipment, land use rights and mining rights of the Company and its subsidiaries would increase by approximately RMB45 million and RMB478 million, respectively.

## J. RISK FACTORS

### 1. Risks relating to coal market

In 2017, the high price of coal imposed large pressure on operation of the Company. In 2018, the policy of eliminating obsolete production capacity in the coal industry will continue. The Company will face market risks on three respects. First is resources supply. Generally there should be no shortage of coal supply along with release of advance production capacities, while regional or periodic supply tension could occur. Second is transportation. As coal production is further concentrated in major coal-producing regions with tight railway transportation capacity, supply risk could occur in the event of extreme weather conditions. Third is market price. Coal price is subject to fluctuations due to regional growth, whether conditions, and hydro-power generation. The Company will closely follow the policy and changes in the domestic and international coal markets, make continued efforts to expand coal supply resources, ensure strict compliance with contracts, perform contracts with railway operators completely, strengthen management of inventory, to mitigate risks effectively.

### 2. Risks relating to electricity market

China is accelerating the electricity market reform such as liberalizing the electricity generation plan, electricity sales reform, incremental distribution network, transmission and distribution price and auxiliary services. As a result, the proportion of direct power sales transaction volume is increasing. The share of direct power sales in 2018 will continue to expand while competition will intensify, which will bring uncertainty to the Company's aim of increasing power generation and market share.

The Company will strengthen study of relevant policies, design timely and strategic responses, and actively participate in the research and formulation of plans for construction of regional power market. It will also enhance market awareness and reinforce customer-centric values. The Company will make efforts to develop and cultivate user base, actively pursue power transactions of all kinds, improve coordination of power generation, sale and head generation, and strive to raise the level of power generation.

### 3. Risks relating to electricity tariff

With further reform of power market in China, power transaction will continue to grow and traded power generation will account for a higher percentage. Fierce market competition makes transactional power price significantly lower than the approved price, subjecting the Company to considerable price pressure. Additionally, whether the tariff of electricity generated by coal-firing generating units will be promptly and fully adjusted to reflect higher coal price through the coal-electricity price linkage mechanism is uncertain.

The Company will actively respond to the electric reform and conduct in-depth study on the market trading methods and rules in the region where the Company is located so as to raise the tariff level. It will continue to closely monitor the coal price index changes in various provinces (or cities, districts), measure the linkage demand, promptly communicate with central and local price regulators to present operating conditions of coal-fired power enterprises and push forward the implementation of coal-electricity linkage policies.

#### 4. Risks relating to environmental protection policies

The Action Plan on Air Pollution Prevention and Treatment, Action Plan of Energy Saving, Emission Reduction, Upgrading and Transformation (2014-2020), and Target Missions for Central Generating Enterprises in Energy Saving, Emission Reduction, Upgrading and Transformation (2015), Integrated Reform Plan for Promoting Ecological Progress as well as the new Environmental Protection Law came gradually into force in China. National standards for energy saving environmental protection are increasingly higher, environmental protection restrictions for energy development are further tightened, which will increase the energy saving and transformation costs of the coal-fired generating sets which account for a high percentage of the Company's installed capacity.

Since then, China has successively implemented the sewage discharge permit system and change of environmental protection fee to the tax policy. The supervision, inspection and collection efforts have shown a growing trend.

At present, all the coal-fired generating units in operation of the Company have reached the ultra-low emission standards, and all the power generation enterprises have obtained the sewage discharge permit. The Company will continue to improve the operational performance of environmental protection systems and continuously improve the reliability and economy of environmental protection equipment.

#### 5. Interest rate risks

Regarding RMB denominated debts, the Company is subject to increased interest payment since funding costs in currency and bond markets is expected to increase in anticipation of tightened monetary policy by the PBOC in 2018. Regarding U.S. dollar denominated debts, it is widely expected that the Federal Reserve will phase out quantitative easing by continued rise of interest rates, which is not expected to have material adverse effect on the Company due to its small percentage in the overall debt costs. In the Singaporean capital market, the SOR interest rate will continue to rise as a result of the end of quantitative easing in the U.S. and other major economies, which is anticipated to increase financing costs of Tuas Power.

While ensuring fulfilling funding requirements, the Company will strive to reduce interest rate fluctuation and control financing costs by keeping close watch on changes in domestic and overseas capital markets, making timely adjustment of financing strategies by reasonable selection of financing products.

## CORPORATE GOVERNANCE REPORT

The Company has been consistently stressing the importance of corporate governance. Through years of exploration and practice, it has gradually built up a sound and regulated corporate governance structure and an effective system of rules that caters for the development of the Company. The Company insists on adopting the principle of “maximizing the benefits of the Company and all shareholders” as the starting point and treats all shareholders fairly in order to strive for the generation of long-term, stable and growing returns for shareholders.

The Company has complied with the provisions of the Corporate Governance Code in Appendix 14 to the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the “Listing Rules”) during this Reporting Period. In 2017, in order to fully implement the requirements of the Hong Kong Stock Exchange’s Environmental, Social and Governance Reporting Guide, the Company attaches great importance to organizing and arranging for the preparation and disclosure of the Environmental, Social and Governance Report with good quality to be completed well on time, which further enhanced the good reputation of the Company in the capital market. The Company’s Environmental, Social and Governance Report for the year 2017 will be published on the website of the Company and the website of the Hong Kong Stock Exchange.

### (A) CORPORATE GOVERNANCE PRACTICES

In recent years, the Company adopted the following measures to strengthen corporate governance and to enhance the Company’s operation quality:

#### (1) Enhancing and improving corporate governance

Apart from complying with the provisions of the applicable laws, as a public company listed in three markets both domestically and internationally, the Company is subject to the regulations of the securities regulatory authorities of the three listing venues and the supervision of investors at large. Accordingly, our fundamental principle is to adopt a corporate governance structure that balances and coordinates the decision-making powers, supervisory powers and operating powers, acting with honesty and integrity, complying with the law and operating in accordance with the law.

Over the past years, the Board of the Company has formulated and implemented such various rules as the Rules of Procedures for General Meetings, the Rules of Procedures for the Board Meetings; the Rules of Procedures for the Supervisory Committee Meetings, the Detailed Rules on the Work of the President, the Terms of Reference of the Strategy Committee under the Board of Directors, the Terms of Reference of the Audit Committee under the Board of Directors, the Terms of Reference of the Nomination Committee under the Board of Directors, the Terms of Reference of the Remuneration and Appraisal Committee under the Board of Directors, and the System on Work of Independent Directors, the System on Work of Independent Directors on the Annual Report, the Working Guidelines on Annual Report for the Audit Committee, Board Member Diversity Policy etc.. A standardized and optimized corporate governance structure has been gradually formed, and an effective mechanism with a good match for the Company’s needs in its development has been established and further improved.

In 2017, with the aim of constantly improving the mechanisms for corporate governance, further standardising the preparation and disclosure procedures of the annual report, and giving full play to the role of the independent directors in the review of connected transactions, the Company amended and improved the System on Work of Independent Directors on the Annual Report. In addition to prior approval of the budget of continuing connected transactions as set out in the original System, the amended system required independent directors to conduct an annual review on the execution of the budget of connected transactions, and complete the amendments of relevant systems timely during the reporting period and submit them to the meeting for consideration. The implementation of the revised System strengthens internal control of the Company, and further leverages on the independence of independent directors to protect the legal interest of minority shareholders.

The Board takes joint responsibility for the corporate governance of the Company. During the Reporting Period, the Board has included the following in its scope of powers and duties:

- Formulating and reviewing the Company's corporate governance policy and general rules, and making such amendments as it deems necessary to such policy and rules in order to maintain the effectiveness thereof;
- Reviewing and monitoring the training and sustained professional development of the Company's directors and senior management;
- Reviewing and monitoring the Company's policy and general rules for complying with laws and regulations; Formulating, reviewing and monitoring the codes of conduct and compliance handbook applicable to the Company's directors and employees; and reviewing the Company's compliance with the Code and the disclosures made in the Corporate Governance Report.

(2) Enhancing and improving the information disclosure system

The Company has been stressing the importance of public information disclosure. The Company has established the Information Disclosure Committee comprised of managers of various departments and headed by the Board Secretary and the Chief Accountant, which is responsible for examining the Company's regular reports. The Company has implemented the system of holding regular information disclosure meetings every Monday, chaired by the Board Secretary and the Chief Accountant who will report on the Company's important matters of the week, thereby warranting the Company's performance of the relevant information disclosure obligations. The Company has successively formulated and implemented the relevant information disclosure system, and has made timely amendments thereto according to regulatory requirements. The current systems which have been implemented include the Measures on Information Disclosure Management, the Measures on Connected Transactions Management, the Rules on Investor Relations Management, the Rules on the Work of the Information Disclosure Committee, the Management Measures of Insider Information, the Rules on the Annual Report Information Disclosure Significant Errors Accountability and the Rules on the Management of the Shares held by the Directors, Supervisors and Senior Management of Huaneng Power International, Inc..

Relevant departments of the Company compiled answers (and subsequent updates) to questions regarding the hot topics of market concerns, the Company's production, operation and operating results in a timely manner, which shall become the basis of external communication of the Company after being approved by the Company's management and the authorized representatives of the Information Disclosure Committee.

(3)Regulating financial management system

In 2017, the Company continued to carry out various detailed work on the preparation of financial reports, standardized financial operation and internal control under the principle of acting with honesty and integrity and treating shareholders in a fair manner. The credibility of a listed company, to a large extent, relates to the quality of the preparation of financial statements and a regulated operation of financial activities. In order to regulate its financial management, the Company has completed a large amount of specific and detailed work, including:

1. In order to strictly implement the accounting regulations, accounting standards and accounting systems, to strengthen accounting and accounts supervision, and to truthfully and fairly reflect the financial position, operating results and cash flow, the Company has formulated the Measures on Accounting, the Provisions on Construction Accounting, the Provisions on Fixed Assets Management, Lists of Fixed Assets and the Provisions on Cost Management. The Company's Board, Supervisory Committee and the Audit Committee have examined the Company's financial reports on a regular basis and the Company has fulfilled the requirements of making the Chairman, the President and the Chief Accountant responsible for the authenticity and completeness of the financial reports.

In order to safeguard the independence of the listed company, the Company realized the separation of personnel in organizational structure and specifically established the relevant institution responsible for the entrusted business so that the Company may realize the complete separation of the listed company and the controlling shareholder in terms of personnel, assets and finances according to the laws and regulations of the State and the requirements of regulatory rules.

In regard to fund management, the Company has successively formulated a number of management measures including the Measures on Financial Management, the Measures on the Management of Funds Receipts and Expenses, the Measures on the Appraisal of Management of Funds Receipts and Expenses, the Measures on Use and Management of Funds in Large Sums by the Company, the Measures on the Management of Bills of Exchange, the Measures on Management of Fund Raising, the Measures on the Management of Derivative Financial Product Transactions, the Measures on the Management of External Guarantee and the Measure on the Management of Fund Transfers with Related Parties. The Company's Articles of Association also set out provisions relating to loans, guarantees and investment. In the annual reports of the Company over the previous years, the Company has engaged registered accountants to conduct an examination on the use of funds by the controlling shareholder and other related parties and issue individual statements according to the requirements of the China Security Regulation Commission ("CSRC") and the Shanghai Stock Exchange ("SSE"), and there has not been any violation of rules relating to the use of funds. Moreover, the Company also conducted quarterly checking and clearing with related parties in relation to the operational fund transfers in order to ensure the safety of funds.

#### (4) Risk Management and Internal Control

The Board of Directors attaches great importance to management on enterprise risk and internal control, thus the Company establishes a system of risk monitoring & internal control, and keeps optimizing it to ensure its effectiveness, with a hope to create value for the Company, promote the realization of business development goals, and protects the interests of shareholders and the company assets.

##### 1. Risk Management

To enhance its anti-risk ability and promote the sustainable development, the Company has formulated the “Comprehensive Approach of Risk Management”, which requires in every aspect of the management and operation the basic risk control procedures must be applied. Meanwhile, a comprehensive risk management system is established (including organization, systems, procedures and methodologies, etc.) and the Company has cultivated a good risk management culture and carried out the risk control throughout the Company.

The Company headquarters and all management units have set up a risk management function with a clear definition of their respective responsibilities, and has established a smooth risk reporting and early warning mechanism, so that risk management is carried out throughout the daily work.

Each functional department of the Company is responsible for risk analysis, and they will carry out regular risk assessment and submit reports to the Company’s Risk Management Leading Group Office. The Risk Management Leading Group Office is responsible for collecting information of risks, identifying risks, risk evaluation, and preparing the Company’s periodic risk assessment report and summarizing recommendations on preventive measures for risk control. The Company’s Risk Management Leading Group, as the enforcement body, will manage the Company and its subordinate units to carry out the overall risk control, including but not limited to examining and approving on the general objectives, the system & procedures, working plan and reporting of the Company’s overall risk management. The Strategy Committee of the Board of Directors is responsible for the decision-making of the Company’s overall risk management and listens regularly to the relevant reports, and its responsibilities include but not limited to the examining and approving on the annual report on the overall risk management, the assessment of the risk management and the assessment of its effectiveness and the risk assessment report for significant decisions. The Board of Directors has an Audit Committee to identify and evaluate the fraud risk of senior management and the board of directors and to form an independent fraud risk assessment report.



In 2017, the Strategy Committee of the Board of Directors held two meetings in total to discuss and approve the Company's Overall Risk Management Report for the Year 2017 and the Company's Risk Analysis and Assessment Report for the Half-Year of 2017. The Company's Working Rules of the Strategy Committee of the Board of Directors clarified the right of the Strategic Committee for decision-making on the overall risk management of the Company and emphasized the responsibilities of the Strategic Committee for the Company's risk management. At the same time, the Company's Rules on the Overall Risk Management provided the system guarantee for the Company's overall risk management. During the Reporting Period, the Company has complied with the Corporate Governance Code and the relevant provisions on risk management and internal control.

In 2017, with the joint efforts of the whole company on risk identification, risk assessment, risk prevention and control and implementation of relevant measures, the risk management get more standardized in daily work with continuous improvement, and the company has generally achieved positive results in the prevention and control over major risks and other risks, and minimized the impact of risk on business development.

## 2. Internal Control

The overall objective of the Company's internal control work is to promote the implementation of corporate strategies, in particular, to provide reasonable assurance for the compliance of the Company's operation and management with applicable laws and regulations, the security of the Company's assets and the authenticity and completeness of the Company's financial reports and relevant information, so as to promote the overall improvement in efficiency and effectiveness of operations.

The Company has developed sound system rules for five types of operations including development and construction, production and operation, financial assets, comprehensive management and supervision and evaluation, thereby achieving systematic management. In addition, the Company fully collated the potential internal and external risks and various business processes and compiled the Internal Control Handbook, and in the fifth edition of the Internal Control Handbook it sets out detailed provisions for 23 business processes (including income, procurement of materials, fuel management, fund management) and 19 soft elements (including organizations structure, human resources management, anti-embezzlement, risk management) from five perspectives (control environment, risk evaluation, control process, information and communication, monitoring), fully describes the policy and principles of the Company, clarifies the working procedure and responsibility of each job position in the Company and regulates the standard procedure for dealing in the businesses of the Company, thus setting out clear procedures for its system. The Company has also complied the Internal Control Assessment Handbook to help implement the three-level management system for internal control assessments as well as internal control assessment mode which integrates routine assessments with focused surveillance, with a view to standardize the procedures and assessment method of internal control assessments and regulate the procedures and standards for deficiency definition, striving to standardize and regulate its internal control assessments. Each year, the Company evaluates the applicability and effectiveness of the above systems and makes regular modifications and improvements to them as part of the dynamic maintenance of the internal control system.

The Company has defined 48 items of risks related to 16 categories of business, including strategic management, production and operation, legal affairs, financial management, capital operation, security assurance, energy saving, infrastructure projects and compliance, and assigned risk control to business units at all levels. The Internal Control Handbook provides for control measures against the risks identified and defines key control points through which the responsibility of internal control is allocated to each working position, so that all the staff members of the Company become a part of the internal control construction force. The Company adopts a routine assessment system, where internal control assessors are designated to all the departments and subordinate entities to conduct monthly internal control assessments. It also builds up three levels of assessments (the Company, the regional branches, the grass roots units) through the internal control management system to track the implementation of control in real time. During the year, the Company has successfully completed the 12-month routine internal control assessments and examined the high risk entities based on the risk evaluation results, thereby effectively safeguarding and promoting the sustained and healthy development of the Company's businesses and ensuring the sound and stable operation of the internal control system. Taking into account the new requirements on and changes in its business and management as well as its advanced experience and common issues accumulated over the years, each year the Company organizes all-around multi-level internal control trainings to deliver a full- range propaganda on the philosophy and knowledge for internal control, which helps building up the internal control environment inside the Company.

The internal control management department, the internal audit department and the external auditors made regular report separately on their internal control work to the Audit Committee of the Board of Directors, which ensures the sustained and effective operation of the internal control system. The Company improved constantly the internal control examination system, formulated the "Regulations on the Internal Control Review and Evaluation", and conducted regularly the assessment and comprehensive evaluation on the internal control targets, and the results of the comprehensive evaluation are announced throughout the Company, and appraisal results are timely published to draw all levels' attention to the quality of the internal control work so as to achieve effectively the objective of strengthening management through internal control.

Based on a comprehensive assessment, the Board of Directors consider that, as of 31 December 2017, the Company has maintained effective internal control over financial reporting in all material respects in accordance with the Fundamental Regulatory Guidelines on Enterprise Internal Control (and its guidance) and Section 404 of the Sarbanes-Oxley Act. Besides, the Company has not found any material defect in non-financial reporting about internal control.

During the Reporting Period, the Board of Directors has assessed the risk management and internal control system of the Company and its subordinate enterprises and reviewed their effectiveness and found neither violation of laws, regulations and rules, nor insufficiency or any major mistake in compliance monitoring and risk management. The Board considers that the risk management and internal control systems of the Company and its subordinate enterprises are effective.

The above systems and measures have formed a sound management framework for our production and operation. They ensure the ongoing standardization of operations of the Company and gradual enhancement of corporate management quality. In 2017, the Company received “The Best Listed Company” award and Mr. Liu Guoyue, our Director and President, received “The Best CEO of Listed Company” award in the China Securities Golden Bauhinia Awards Competition, and the Company won the “2017 Outstanding Issuer of Corporate Bonds on Shanghai Stock Exchange Bond Market” award. These honours helped improve further the corporate image of the Company in the domestic and overseas capital markets.

#### (B) SECURITIES TRANSACTIONS BY DIRECTORS

As the Company is listed in three jurisdictions, the Company has strictly complied with the relevant binding provisions on securities transactions by directors imposed by the regulatory authorities of the US, Hong Kong and China and we insist on the principle of complying with the strictest clause, which is, implementing the strictest clause among three places. We have adopted a set of standards not less exacting than the Model Code for Securities Transactions by Directors of Listed Issuers set out in Appendix 10 to the Listing Rules as the model code for securities dealings by Directors of the Company, namely, Management Rules regarding the Company’s Securities Information and Trading. The Company has also formulated and implemented the Management Rules in respect of the Shares of the Company held by the Directors, Supervisors and Senior Management of Huaneng Power International, Inc.. The model codes for the trading of securities by the Company’s Directors include: trading the Company’s shares strictly in accordance with the stipulations under the Company Law and relevant regulations, prohibiting those who are in possession of securities transaction insider information using insider information in securities trading; and setting out detailed rules for those who are in possession of insider information. Following a specific enquiry on all the Directors and senior management of the Company, all the Directors and senior management currently do not hold any shares in the Company and there is no material contract in which the directors and senior management directly or indirectly have material interests.

#### (C) BOARD OF DIRECTORS

The Company’s Eighth Session of the Board of Directors comprised 15 members. Mr. Cao Peixi is the Chairman, and Mr. Guo Junming is the Vice Chairman of the Board; the Executive Directors of the Company are Mr. Cao Peixi, Mr. Liu Guoyue (President) and Mr. Fan Xiaxia (Vice President); the Non-executive Directors are Mr. Guo Junming, Mr. Li Shiqi, Mr. Huang Jian, Mr. Mi Dabin, Mr. Guo Hongbo, Mr. Zhu Yousheng and Ms. Li Song. The Company has five Independent Non-executive Directors comprising one-third of the members of the Company’s Board of Directors, namely, Mr. Li Zhensheng, Mr. Yue Heng, Mr. Geng Jianxin and Mr. Xia Qing, Mr. Xu Mengzhou.

In the Ninth Session of the Board of Directors (the election of the new session of the Board of Directors was held on 13 June 2017), Mr. Cao Peixi is the Chairman, and Mr. Guo Junming is the Vice Chairman (resigned on 9 October 2017 due to work arrangement); the Executive Directors of the Company are Mr. Cao Peixi, Mr. Liu Guoyue (President) and Mr. Fan Xiaxia (Vice President; resigned on 28 February 2018 due to work arrangement); the Non-executive Directors are Mr. Huang Jian, Mr. Wang Yongxiang, Mr. Mi Dabin, Mr. Guo Hongbo, Mr. Cheng Heng and Mr. Lin Chong. The Company has five Independent Non-executive Directors comprising one-third of the members of the Company’s Board of Directors, namely, Mr. Yue Heng, Mr. Xu Mengzhou, Mr. Liu Jizhen, Mr. Xu Haifeng and Mr. Zhang Xianzhi.

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The Board of Directors of the Company had held eleven meetings during this Reporting Period including regular meetings and ad hoc meetings. For details, please see related announcements.

Details of the attendance of directors at the Board meetings are as follows:

Name	Number of meetings to be attended	Number of meetings attended in person	Number of meetings attended by proxy	Attendance rate (%)
<b>Executive Directors</b>				
				90.91% (Attendance by proxy rate: 9.09%)
Cao Peixi	11	10	1	
Liu Guoyue	11	11	0	100 %
<b>Non-executive Directors</b>				
				90.91% (Attendance by proxy rate 9.09%)
Huang Jian	11	10	1	
Wang Yongxiang	7	7	0	100 %
				90.91% (Attendance by proxy rate 9.09%)
Mi Dabin	11	10	1	
				90.91% (Attendance by proxy rate 9.09%)
Guo Hongbo	11	10	1	
Cheng Heng	7	7	0	100 %
Lin Chong	7	7	0	100 %
<b>Independent Non-executive Directors</b>				
Yue Heng	11	11	0	100 %
Xu Mengzhou	11	11	0	100 %
Liu Jizhen	7	7	0	100 %
Xu Haifeng	7	7	0	100 %
Zhang Xianzhi	7	7	0	100 %
<b>Resigned Directors</b>				
				87.50% (Attendance by proxy rate 12.50%)
Guo Junming	8	7	1	
Fan Xiaxia	11	10	1	90.91% (Attendance by proxy

				rate: 9.09%)
				75%
				(Attendance
				by proxy
Li Shiqi	4	3	1	rate 25%)
Zhu Yousheng	4	4	0	100 %
				75%
				(Attendance
				by proxy
Li Song	4	3	1	rate 25%)
Li Zhensheng	4	4	0	100 %
Geng Jianxin	4	4	0	100 %
				75%
				(Attendance
				by proxy
Xia Qing	4	3	1	rate 25%)

As stated in previous Corporate Governance Reports of the Company, the Company's Articles of Association set out in detail the duties and operational procedures of the Board (please refer to the Company's Articles of Association for details). The Board of the Company holds regular meetings to hear and review the report on the Company's operating results. Material decisions on operation shall be discussed and approved by the Board. Ad hoc meetings may be held if necessary to make timely decision. Board meetings include regular meetings and ad hoc meetings. Regular meetings of the Board include: annual meeting, first quarterly meeting, half-yearly meeting and third quarterly meeting.

All arrangements for regular meetings have been notified to all directors at least 14 days in advance and the Company has ensured that each director thoroughly understood the agenda of the meeting and fully expressed his/her opinions, while all Independent Non-executive Directors expressed their independent directors' opinions on their respective duties. Minutes have been taken for all the meetings and filed at the Office of the Board of Directors of the Company.

Moreover, the Independent Non-executive Directors of the Company have submitted their annual confirmation letters of 2017 in relation to their independence according to the requirements of the Listing Rules.

The Directors of the Company complied with the provisions of laws, administrative regulations and the Company's Articles of Association and actively fulfilled their duty of loyalty and diligence. Apart from regular and ad hoc meetings, the directors of the Company obtained adequate information through the Chairman office meetings and the President office meetings in a timely manner in order to monitor the objectives and strategies of the management, the Company's financial position and operating results and the execution and implementation of clauses of material agreements. The directors of the Company reviewed corporate briefings and other data on a regular basis to learn about the production and operation of the Company. The Independent Directors provided opinions and suggestions on operation and management for the Company via on-site survey. The professional committees under the Board proactively performed their duties and made suggestions and proposals for the development of the Company, which provides grounds for the Board to make correct decisions.

During the period when the Board was not in session, the Chairman, together with the Vice Chairman, discharged part of the duties of the Board of Directors, including (1) to examine and approve the establishment or cancellation of proposals to develop construction projects; (2) to examine and approve the proposals of the President in relation to the appointment, removal and transfer of managers of various departments of the Company and managers of external branches; (3) to examine and approve plans on the use of significant funds; (4) to examine and approve proposals on the establishment or cancellation of branch or branch organs; (5) to examine and approve other major issues.

The Board has summarized work for the past year and, in doing so, considered the opinions of the Supervisory Committee and the management. It believes that it has effectively fulfilled its duties and protected the interests of the Company and its shareholders.

The Directors who attended the First Extraordinary General Meeting for year 2017 of the Company held on 24 January 2017 were Liu Guoyue (Director), Mi Dabin (Director), and Geng Jianxin (Independent Director, chief member of the Remuneration and Appraisal Committee). The Directors who attended the Second Extraordinary General Meeting for year 2017 of the Company held on 16 May 2017 was: Liu Guoyue (Director, chief member of the Strategy Committee). The Directors who attended the Annual General Meeting for year 2016 of the Company held on 13 June 2017 were: Liu Guoyue (Director, chief member of the Strategy Committee), Mi Dabin (Director), Yue Heng (Independent Director, chief member of the Audit Committee) and Xu Mengzhou (Independent Director).

**(D) CHAIRMAN AND PRESIDENT**

The Company shall have a Chairman and a President who shall perform their duties respectively according to the Articles of Association. During the Reporting Period, Mr. Cao Peixi acts as Chairman of the Board and Mr. Liu Guoyue acts as President of the Company.

The division of duties of the Board and the senior management is the same as what has been disclosed in previous Corporate Governance Reports.

**(E) NON-EXECUTIVE DIRECTORS**

According to the provisions of the Articles of Association, the term of office of members of the Board of the Company shall not exceed three years (including three years) and the members are eligible for re-election. However, the term of office of Independent Non-executive Directors shall not exceed six years (including six years) according to the relevant provisions of the CSRC.

The respective terms of office of the Non-executive Directors are as follows:

Names of Non-executive Directors	Term of office
Huang Jian	2017.6.13-2020
Wang Yongxiang	2017.6.13-2020
Mi Dabin	2017.6.13-2020
Guo Hongbo	2017.6.13-2020
Cheng Heng	2017.6.13-2020
Lin Chong	2017.6.13-2020

**(F) DIRECTORS' REMUNERATION**

According to the relevant laws of the PRC and the relevant provisions of the Articles of Association, the Board of the Company has established the Remuneration and Appraisal Committee. The committee operates normally under the Detailed Rules on the Work of the Remuneration and Appraisal Committee and is mainly responsible for studying the appraisal standards of the directors and senior management personnel of the Company, conducting appraisals and making proposals; responsible for studying and examining the remuneration policies and proposals of the directors and senior management personnel of the Company. The total remuneration, after examined by the Remuneration and Appraisal Committee, was then submitted to the Board of Directors. The Executive Directors have entered into the director service contracts in compliance with the requirements of the Hong Kong Stock Exchange.

Members of the Eighth Session of the Remuneration and Appraisal Committee comprised seven directors. Members of the Remuneration and Appraisal Committee are Mr. Geng Jianxin, Mr. Liu Guoyue, Mr. Guo Hongbo, Mr. Zhu Yousheng, Mr. Li Zhensheng, Mr. Yue Heng and Mr. Xia Qing, of whom Mr. Geng Jianxin, Mr. Li Zhensheng, Mr. Yue Heng and Mr. Xia Qing are Independent Non-executive Directors. Mr. Geng Jianxin acts as Chief Member of the Remuneration and Appraisal Committee. Members of the Ninth Session of the Remuneration and Appraisal Committee comprised seven directors. Members of the Remuneration and Appraisal Committee are Mr. Zhang Xianzhi, Mr. Liu Guoyue, Mr. Guo Hongbo, Mr. Cheng Heng, Mr. Yue Heng, Mr. Liu Jizhen and Mr. Xu Haifeng, of whom Mr. Zhang Xianzhi, Mr. Yue Heng, Mr. Liu Jizhen and Mr. Xu Haifeng are Independent Non-executive Directors. Mr. Zhang Xianzhi acts as Chief Member of the Remuneration and Appraisal Committee.

The operation of the Remuneration and Appraisal Committee under the Board of Directors properly follows the Detailed Rules on the Work of the Remuneration and Appraisal Committee. The first meeting for 2017 was convened on 20 March 2017, at which the Report of Total Wage Expenses was reviewed and the Company's arrangement for the total wage in 2017 was approved. In the new financial year, the Remuneration and Appraisal Committee will carry out its work in a timely manner pursuant to the above rules on work according to the actual situation.

During the Reporting Period, the attendance of meeting of the Remuneration and Appraisal Committee of the Board was as follows:

Name of meeting	Date of meeting	Members who attended the meeting in person	Members who attended the meeting by proxy
2017 First Meeting of the Remuneration and Appraisal Committee of the Eighth Session of the Board of Directors	20 March 2017	Liu Guoyue, Guo Hongbo, Zhu Yousheng, Li Zhensheng, Yue Heng, Geng Jianxin	Xia Qing

#### (G) NOMINATION OF DIRECTORS

According to the relevant laws of the PRC and the relevant provisions of the Articles of Association, the Board of the Company has established the Nomination Committee. The Committee operates normally under the Detailed Rules on the Work of the Nomination Committee and is mainly responsible for studying the selection standards and procedures for candidates for directors and senior management personnel of the Company according to the directors' qualifications under the Companies Law and Securities Law and the needs of the operational management of the Company, and making proposals thereon to the Board; searching for qualified candidates for directors and suitable persons for senior management personnel on a wide basis; and examining the candidates for directors and suitable persons for senior management personnel and making proposals thereon. Currently, the nomination of the candidates of directors of the Company is mainly made by the shareholders. The nominations, after examination of the relevant qualification by the Nomination Committee, will be submitted to the Board of Directors. The President of the Company was appointed by the Board and the candidates for the Vice President and management were nominated by the President. Such nominations, after examination of the relevant qualification by the nomination Committee, will be submitted to the Board of Directors.



The Nomination Committee of the Board of Directors shall comprise 7 members. Members of the Eighth Session of the Nomination Committee under the Board were Mr. Li Zhensheng, Mr. Fan Xiaxia, Mr. Mi Dabin, Ms. Li Song, Mr. Yue Heng, Mr. Geng Jianxin and Mr. Xu Mengzhou, of which Mr. Li Zhensheng, Mr. Yue Heng, Mr. Geng Jianxin and Mr. Xu Mengzhou are Independent Non-executive Directors. Mr. Li Zhensheng acted as Chief Member of the Nomination Committee.

The Nomination Committee of the ninth session of the Board of Directors comprises 7 members: Mr. Liu Jizhen, Mr. Fan Xiaxia, Mr. Mi Dabin, Mr. Lin Chong, Mr. Yue Heng, Mr. Xu Mengzhou, Mr. Zhang Xianzhi, of which Mr. Liu Jizhen, Mr. Yue Heng, Mr. Xu Mengzhou and Mr. Zhang Xianzhi are Independent Non-executive Directors. Mr. Liu Jizhen acts as Chief Member of the Nomination Committee.

The Nomination Committee of the Board operates normally under the Detailed Rules on the Work of the Nomination Committee of the Company. On 20th March 2017, the Committee held its first meeting for 2017, at which relevant information regarding the candidates of the members of the ninth session of the Board of the Company was examined and a review report on the status of the candidates of the members of the ninth session of the Board was prepared. On 16 May 2017, the Committee held its second meeting for 2017, at which the “Assessment Report on the Qualifications of the candidate of the Board Secretary of the Company” for assessing the qualification of the candidate of the Board Secretary was considered and passed, and submitted the corresponding assessment report to the Board as basis in decision-making and recommendation. In the coming financial year, the Nomination Committee will carry out relevant work in accordance with the aforesaid detailed work rules based on actual conditions at appropriate times.

During the Reporting Period, the attendance of meeting of the Nomination Committee of the Board was as follows:

Name of meeting	Date of meeting	Members who attended the meeting in person	Members who attended the meeting by proxy
2017 First Meeting of the Nomination Committee of the Eighth Session of the Board of Directors	20 March 2017	Li Zhensheng, Fan Xiaxia, Yue Heng, Geng Jianxin, Xu Mengzhou	Mi Dabin, Li Song
2017 Second Meeting of the Nomination Committee of the Eighth Session of the Board of Directors	16 May 2017	Li Zhensheng, Fan Xiaxia, Mi Dabin, Li Song, Yue Heng, Geng Jianxin, Xu / Mengzhou	

#### (H) REMUNERATION OF AUDITORS

KPMG and KPMG Huazhen LLP were appointed as the international and domestic auditors of the Company for 2017, respectively. For the twelve months ended 31 December 2017, the total auditors’ remuneration amounted to RMB64.16 million (including remuneration paid to other auditors in addition to that of the principal auditors).

(I) AUDIT COMMITTEE

According to the requirements of the regulatory authorities of the jurisdictions where the Company is listed and the relevant provisions of the Articles of Association, the Board of Directors of the Company has established the Audit Committee which operates normally under the Detailed Rules on the Work of the Audit Committee and is mainly responsible for assisting the Board of Directors in supervising: (1) the authenticity of the financial statements of the Company; (2) the compliance by the Company with laws and regulatory requirements; (3) the qualification and independence of the independent auditors of the Company; (4) the performance of the independent auditors and the internal audit department of the Company; and (5) the control and management of the related-party transactions of the Company.

The Audit Committee under the Board of the Company holds four regular meetings per annum and has at least two separate meetings with the external auditor of the Company to hear reports on audit plans, work arrangements, audit results, etc. The Board formulates the Management Measures on Hotlines and Mailboxes for Informants, pursuant to which the Audit Committee is responsible for the management of the informants' hotlines and mailboxes.

Members of the Audit Committee of the Board of Directors shall comprise five independent non-executive Directors. Members of the Audit Committee of the Eighth Session of the Board of Directors are Mr. Yue Heng, Mr. Li Zhensheng, Mr. Geng Jianxin, Mr. Xia Qing and Mr. Xu Mengzhou respectively. Mr. Yue Heng acts as the Chief Member.

Members of the Audit Committee of the Ninth Session of the Board of Directors comprised of five Independent Non-executive Directors, namely Mr. Yue Heng, Mr. Xu Mengzhou, Mr. Liu Jizhen, Mr. Xu Haifeng and Mr. Zhang Xianzhi. Mr. Yue Heng acts as the Chief Member.

During the Reporting Period, the Audit Committee had held seven meetings. As per Audit Committee's duties, the Audit Committee interviewed with the Company's legal advisors, external auditors, management and the relevant departments separately and exchanged ideas and communicated with them. With the understandings on the applicable laws and regulations of those jurisdictions in which the shares of the Company are listed, anti-fraud position in the Company, recruitment of staff, implementation and execution of internal control mechanism, audit work carried out by external auditors, and the preparation of the financial statement, the Audit Committee has rendered their views and opinions and made certain proposals.

During the Reporting Period, the attendance of meetings of the Audit Committee was as follows:

Name of meeting	Date of meeting	Members who attended the meeting in person	Members who attended the meeting by proxy
2017 First Meeting of the Audit Committee of the Eighth Session of the Board of Directors	24 February 2017	Yue Heng, Li Zhensheng, Geng Jianxin, Xia Qing, Xu Mengzhou	–
2017 Second Meeting of the Audit Committee of the Eighth Session of the Board of Directors	20 March 2017	Yue Heng, Li Zhensheng, Geng Jianxin, Xu Mengzhou	Xia Qing
2017 Third Meeting of the Audit Committee of the Eighth Session of the Board of Directors	24 April 2017	Yue Heng, Li Zhensheng, Geng Jianxin, Xia Qing, Xu Mengzhou	–
2017 First Meeting of the Audit Committee of the Ninth Session of the Board of Directors	31 July 2017	Yue Heng, Xu Mengzhou, Liu Jizhen, Xu Haifeng, Zhang Xianzhi	–
2017 Second Meeting of the Audit Committee of the Ninth Session of the Board of Directors	16 October 2017	Yue Heng, Xu Mengzhou, Liu Jizhen, Xu Haifeng, Zhang Xianzhi	–
2017 Third Meeting of the Audit Committee of the Ninth Session of the Board of Directors	23 October 2017	Yue Heng, Xu Mengzhou, Liu Jizhen, Xu Haifeng, Zhang Xianzhi	–
2017 Fourth Meeting of the Audit Committee of the Ninth Session of the Board of Directors	12 December 2017	Yue Heng, Xu Mengzhou, Liu Jizhen, Xu Haifeng, Zhang Xianzhi	–

(J) RESPONSIBILITY ASSUMED BY THE DIRECTORS IN RELATION TO THE FINANCIAL STATEMENTS

The Directors of the Company confirm that they shall assume the relevant responsibility in relation to the preparation of the financial statements of the Company, ensure that the preparation of the financial statements of the Company complies with the relevant regulations and applicable accounting standards and also warrant that the financial statements of the Company will be published in a timely manner.

The reporting responsibility statements made by the auditors of the Company in relation to the financial statements of the Company are set out in auditor's reports on pages 113 to 119.

(K) SENIOR MANAGEMENT'S INTEREST IN SHARES

None of the senior management of the Company holds any shares of the Company.

(L) STRATEGY COMMITTEE

According to the requirements of regulatory authorities of the jurisdictions where the Company is listed and the requirements of the Company's Articles of Association, the Board of Directors of the Company set up the Strategy Committee. The Strategy Committee operates normally under the Detailed Rules on the Work of the Strategy Committee and mainly takes the following responsibilities: (1) to study and make suggestions on the Company's long-term development strategies and plans; (2) to study and make suggestions on material investment and financing proposals which require the approval of the Board of Directors; (3) to study and make suggestions on material production and operational decision-making projects which require the approval of the Board of Directors; (4) to study and make suggestions on other material matters that will impact the Company's development; (5) to monitor the implementation of the above matters; (6) to be responsible for the Company's overall risk management and improve the Company's overall anti-risk ability; and (7) other matters required by the Board of Directors.

Members of the Strategy Committee of the Eighth Session of the Board of Directors comprised six Directors, namely Mr. Liu Guoyue, Mr. Fan Xiaxia, Mr. Li Shiqi, Mr. Huang Jian, Mr. Li Zhensheng and Mr. Xia Qing, of whom Mr. Li Zhensheng and Mr. Xia Qing are Independent Non-executive Directors. Mr. Liu Guoyue acts as the Chief Member of the Strategy Committee.

Members of the Strategy Committee of the Ninth Session of the Board of Directors comprised of six Directors, namely Mr. Liu Guoyue, Mr. Fan Xiaxia (resigned on 28 February 2018), Mr. Huang Jian, Mr. Wang Yongxiang, Mr. Liu Jizhen and Mr. Xu Haifeng, of whom Mr. Liu Jizhen and Mr. Xu Haifeng are Independent Non-executive Directors and Mr. Liu Guoyue is the Chief Member of the Committee.

On 25 April 2017, the Strategy Committee discussed and approved the Comprehensive Risk Management Report of Huaneng Power International, Inc. for 2017 and submitted the report to the Audit Committee of the Board of the Company on 31 July 2017 for review. On 27 November 2017, the Strategy Committee considered and approved the Risk Analysis and Assessment Report of Huaneng Power International, Inc. for the Half-Year of 2017.

The risk management work operates effectively to cover all kinds of risks, thus continuously strengthening and improving the internal control and risk management mechanism of the Company.

During the Reporting Period, the attendance of meetings of the Strategy Committee was as follows:

Name of meeting	Date of meeting	Members who attended the meeting in person	Members who attended the meeting by proxy
2017 First Meeting of the Strategy Committee of the Eighth Session of the Board of Directors	25 April 2017	Liu Guoyue, Li Shiqi, Huang Jian, Fan Xiaxia, Li Zhensheng, Xia Qing	–
2017 First Meeting of the Strategy Committee of the Ninth Session of the Board of Directors	27 November 2017	Liu Guoyue, Fan Xiaxia, Huang Jian, Wang Yongxiang, Liu Jizhen, Xu Haifeng	–

#### (M) TRAININGS FOR DIRECTORS AND SENIOR MANAGEMENT

Each year the Company organizes its Directors and Supervisors to attend trainings arranged by regulatory authorities. During the Reporting Period, the Directors and Supervisors of the Company attended the 2017 Training for Directors and Supervisors organized by CSRC Beijing Regulatory Bureau. All new Independent Directors have completed training for eligibility of independent directors. The Secretary to the Board of the Company attended the Continuing Development Training for Board Secretaries and the enhanced Continuing Professional Development Seminars (ECPD) for joint members held by the Hong Kong Institute of Chartered Secretaries.

For every six months, the Company holds a meeting where legal counsels of all three listing jurisdictions meet with the Audit Committee, make presentations to all the Independent Directors of the Audit Committee about latest updates on regulatory requirements, application of the Company's corporate systems and rules and the compliance by the Company with regulations of the listing places.

According to the records provided by the Directors and Supervisors, we set forth below a summary of the trainings received by the Company's Directors and Supervisors during the period from 1 January 2017 to 31 December 2017:

Name of director/supervisor	Type of Continuing Professional Development Plan
Cao Peixi	A, B
Guo Junming	A, B
Liu Guoyue	A, B
Fan Xiaxia	A, B
Li Shiqi	A, B
Huang Jian	A, B
Mi Dabin	A, B
Guo Hongbo	A, B
Zhu Yousheng	A, B
Li Song	A, B
Cheng Heng	A, B
Lin Chong	A, B
Li Zhensheng	A, B
Yue Heng	A, B
Geng Jianxin	A, B
Xia Qing	A, B
Xu Mengzhou	A, B
Liu Jizhen	A, B
Xu Haifeng	A, B
Zhang Xianzhi	A, B
Ye Xiangdong	A, B
Mu Xuan	A, B
Zhang Mengjiao	A, B
Gu Jianguo	A, B
Zhang Xiaojun	A, B
Zhu Daqing	A, B

Notes:

A: attending briefings and/or seminars.

B: reading seminar materials and updates on the latest developments of the Listing Rules and other applicable regulatory requirements.

All the Directors and Supervisors must submit their training records to the Company on a quarterly basis. The Company Secretary will keep the records for regular inspections. Each of the Directors and Supervisors of the Company had received more than 15 hours of trainings in 2017.

The Company attaches great significance to the training and continuing professional development of its senior management personnel, and actively attends all kinds of training programs held by relevant State authorities, industry administrative authorities and associations.

(N) FORMULATION, REVIEW AND INSPECTION OF CODE OF CONDUCT AND COMPLIANCE  
HANDBOOK FOR EMPLOYEES AND DIRECTORS

The Company has formulated the Employee Handbook to set standards of conduct and regulate the employees' behavior. The employees of the Company conscientiously comply with the Employee Handbook to enhance moral standards and strengthen correct value orientations.

(O) SHAREHOLDERS' RIGHTS

To convene extraordinary general meetings

When any shareholders holding, individually or in aggregate, ten percent or more of the shares of the Company request, the Board shall convene an extraordinary general meeting within two months.

The shareholders holding, individually or in aggregate, ten percent or more of the Company's shares shall submit a written request to the Board for convening of an extraordinary general meeting, which shall specify the agenda of such meeting. Upon receipt of the said written request, the Board shall convene an extraordinary general meeting as soon as possible. If the Board does not send any notice of convening the meeting within 30 days upon receipt of the written request, the requesting shareholders may convene the meeting on their own within four months upon the Board's receipt of the request. The procedures for convening such a meeting shall be as close to the procedures adopted by the Board as possible.

To make proposals to the shareholders' meeting

Any shareholder holding, individually or in aggregate, three percent or more of the total voting shares of the Company may, no later than ten days before a shareholders' meeting is held, submit provisional proposals to the Board in writing. The Board shall send out a supplementary meeting notice of details of such proposals within two days of the receipt thereof.

Any shareholder holding, individually or in aggregate, one percent or more of the total issued shares of the Company may propose candidates for independent directors for election at the shareholders' meeting.

To convene extraordinary Board meetings

An extraordinary Board meeting may be held at the request of any shareholders representing one tenth or more of the voting rights of the Company. The Chairman shall, within ten days upon receipt of such request, convene and chair such meeting.

To make enquiries to the Board

The shareholders shall have access to the relevant information of the Company in accordance with the provisions of the Articles of Association, including the Articles of Association of the Company, the share capital, the minutes of shareholders' meetings and the resolutions of Board meetings and meetings of the Supervisory Committee.

**(P)INSURANCE FOR DIRECTORS**

The Company has renewed its Directors' Liability Insurance policy of US\$10 million in 2017.

**(Q)COMPANY SECRETARY**

Mr. Huang Chaoquan has been acting as the Company Secretary of the Company under the Listing Rules of Hong Kong since 22 May 2017, whose resume is set out in the section headed "Profiles of Senior Management". During the Reporting Period, in accordance with the Listing Rules of Hong Kong, Mr. Huang Chaoquan received follow-up eligibility training for board secretaries and participated in the Forty-fifth seminar on enhanced Continuing Professional Development for joint members held by the Hong Kong Institute of Chartered Secretaries.

58

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## SOCIAL RESPONSIBILITY REPORT

The Board of Directors of the Company and all the directors thereof guarantee that this report does not contain any false statement, misleading representation or material omission, and jointly and severally accept as to the truthfulness, accuracy and completeness of the content of this report.

This report systematically summarizes the works of Huaneng Power International, Inc. (the “Company”) in 2017 in fulfilling its economic responsibilities, safety responsibilities, environmental responsibilities, staff responsibilities, social responsibilities and so on, with a view to giving a true presentation of the Company’s concrete achievement in promoting comprehensive, healthy and sustainable development in 2017.

This report has been prepared in accordance with the “Guidelines on Preparation of Corporate Report on Performance of Social Responsibilities” issued by the Shanghai Stock Exchange, and with reference to the “G4 Sustainable Development Reporting Guidelines” issued by Global Reporting Initiative (the “GRI”) and the actual performance by the Company. This report is the Company’s social responsibility report published to the general public and the information and contents contained herein are on the basis of the Company’s domestic business.

## I. CORPORATE OVERVIEW AND CORPORATE GOVERNANCE

### 1. Corporate Overview

Incorporated on 30 June 1994, the core business of the Company is to develop, construct and operate power plants throughout China by making use of modern technology and equipment and financial resources available domestically and internationally. In October 1994, the Company completed its initial global public offering of 1,250,000,000 overseas listed foreign shares (“foreign shares”), and was listed on the New York Stock Exchange (Stock Code: HNP) in the United States by issuing 31,250,000 American depository shares (“ADS”). In January 1998, the foreign shares of the Company were listed on the Hong Kong Stock Exchange by way of introduction (Stock Code: 902). Later in March, the Company completed a global placing of 250,000,000 foreign shares along with a private placing of 400,000,000 domestic shares. In November 2001, the Company successfully completed the issue of 350,000,000 A Shares (Stock Code: 600011) on the Shanghai Stock Exchange (“SSE”), of which 250,000,000 domestic public shares were listed on the SSE. In December 2010, the Company completed the non-public issuance of 1,500,000,000 A Shares and 500,000,000 H Shares. In November 2014, the Company completed the non-public issuance of 365,000,000 H Shares. In November 2015, the Company completed the non-public issuance of 780,000,000 H Shares. Currently, the total share capital of the Company amounts to approximately 15.2 billion shares.

As at 31 December 2017, the Company’s controlling generation capacity and equity-based generation capacity amounted to 104,321 MW and 92,003 MW respectively. The power plants of the Company are widely located in 26 provinces, autonomous regions and centrally-administered municipalities in China. In addition, the Company has a wholly-owned power operating company in Singapore.

Since its incorporation, the Company has been committed to system, technology and management innovations. The Company has been the pioneer and has created various milestones within the domestic power industry in areas such as power technology advancement and power plant construction and management, which dramatically facilitated the great-leap forward development of the power business and technological advancement of the power station equipment manufacturing industry in China, and also greatly contributed to the improvement of technical and management standards of domestic power generation enterprises.

## 2. Corporate Governance

As a public company listed in three stock exchanges both domestic and overseas, the Company has been subject to regulation by securities regulatory authorities of the three domestic and overseas places of listing, and supervision from its vast shareholders. The Company has highly valued the importance of corporate governance by enhancing its corporate governance system, which comprises the general meetings, the Board, the Supervisory Committee and the operation team. It has established an operating mechanism with clear terms of reference among decision authority, supervisory authority and operation authority to enable each of them to perform their respective liabilities subject to balance and coordination among the same parties, so that the right of the Board to make decision over material issues and the right of the Supervisory Committee to supervise relevant matters can be effectively exercised to ensure the operation team can deal with operational issues in an effective way. Through years of exploration and practices, the Company has gradually formulated a regulated, efficient and enhanced corporate governance structure, and also established a sound and effective system that suits the own development needs of the Company.

The Company has been consistently treating all shareholders on a fair basis, and striving for generating long-term, stable and increasing returns for shareholders. The Company has been highly recognized by regulatory authorities and the capital markets by virtue of its regulated integrity, professional transparency and respect for shareholders. In 2017, the Company was awarded “The Best Listed Company” and “The Best CEO of Listed Company” in the China Securities Golden Bauhinia Awards Competition, and was granted with other prizes such as “2017 Outstanding Issuer of Corporate Bonds on Shanghai Stock Exchange Bond Market”. The Company stresses on the importance of information disclosure. Accordingly, the Company has established the Information Disclosure Committee, comprised of managers of various departments (as members thereof) and headed by the Chief Accountant and the Secretary to the Board, which is responsible for reviewing the Company’s regular reports. The Company has also adopted the policy of holding weekly information disclosure meetings chaired by the Chief Accountant / the Secretary to the Board. The Company’s material issues of the week will be reported in the meeting, thereby ensuring the establishment of a system through which the Company is able to duly perform relevant information disclosure obligations. The Company made 10 press releases and 277 announcements in both domestic and overseas markets, and took participation in 6 investment forums organised by investment banks within and outside China in 2017 to reinforce effective communications with investors.

## II. ECONOMIC RESPONSIBILITY OF THE COMPANY

The Company took comprehensive budget management as general guidelines. The Company continued to further strengthen comprehensive budget management, implemented the functions under the budget management, including target-oriented, process control and review guidance, which enabled it to achieve the target of budget management, namely “target secured, transformation progressed and risks prevented”. The Company fully promoted the upgrading of information management, strongly promoted the optimization and utilization of the operation centre and online system. The Company strengthened the information service of the information center for the informatisation of business process and achieved quantitative analysis for principal business, which provided strong support for the Company’s business decisions.

The Company reinforced its marketing efforts in terms of both sales quantity and amount. The Company improved its marketing system, strengthened research on policies, actively responded to power reform and promoted industry self-discipline. It also carried out market transactions according to local conditions, focusing on the increase of power generation and enhancing the efficiency in electricity sales and achieved a year-on-year growth in the main marketing indicators with coal-fired utilization hours ranked first in the industry. Due to the vigorous efforts made by the Company in heat supply market, the heat volume supplied and revenue from heat supply for the whole year recorded substantial increases as compared to the corresponding period of last year. The electricity sales companies under the Company in 10 regions including Guangdong participated in market transactions, and the sales of electricity exceeded by 10.6 percentage points over the capacity share of electricity sold by the electricity sales companies under power generating companies.

The Company exerted strict control over fuel costs. The Company adapted to the government policy of reducing overcapacity of coal supply, proactively coped with the new situation of demand and supply of coal and exerted the advantages of our centralized management system and mechanism to effectively respond to the complicated situation of the fuel market. The Company stabilized coal supply long-term contracts and implemented a number of contract models which were in sync with the market price mechanism. The Company optimized the procurement structure of coal imports and increased the stable import of first hand coal resources to stabilize market price. The Company accurately managed coal price control, strengthened monthly performance appraisal and carried out pilot works on fuel innovation and upgrading. The unit price of standard coal procurement in seven regions led the peers.

In maintaining its leading edge in finance management, the Company has optimized its debt maturity profile by gradually increasing the proportions of medium and long-term debts and reinforcing risk resistance ability. The Company actively carried out low cost direct financing by issuing 10 tranches of ultra short-term commercial papers for a total amount of RMB31.0 billion with the average comprehensive interest rate 5.9% lower than the benchmark interest rate of the People's Bank for the same period.

### III. SAFETY RESPONSIBILITY OF THE COMPANY

The Company has firmly established the concept of safe development and solidly carried out the activities for "Year of Implementing Safe Production Responsibility System". No major or significant safety issues occurred over the year and no accidents that endangered the safe operation of power grids occurred, therefore, the overall production safety was stable. The Company intensified management on unplanned suspension of operation, and benefiting from our highly reliable working units, 26 power plants recorded no unplanned suspension of operation.

The Company has successfully completed its work to guarantee electricity and air quality during the reporting period of "19th National Congress of CPC" and "The Belt and Road Forum" and has withstood the heavy loaded operation and various emergency during the long summer peak.

#### IV. ENVIRONMENT RESPONSIBILITY OF THE COMPANY

In strict compliance with the latest environmental protection laws of the PRC, the Company actively assumed the responsibility of environmental protection, pushed forward technical innovation, improved resources utilization efficiency, vigorously developed clean energy projects, and endeavored to develop quality coal-fired power plants highlighting energy conservation and environment protection, leading to constantly improved results in energy conservation and emission reduction.

Level of clean production was constantly improved. In 2017, the Company has fully accomplished its annual targets as set forth in the Statement of Responsibility for Energy Saving and Environment Protection with no violation of the national environmental laws and regulations and no environmental pollution issue occurred. The Company has reinforced the R&D and application of new technologies and increased efforts in environmental protection projects. The Company's coal-fired units were basically completed the renovation of super low emission and achieved low emission of nitrogen oxide. The standard coal consumed by the Company was 108.8599 million tons of standard coal equivalent, and the average coal consumption for power supply of our domestic coal-fired generating units decreased by 1.21g/kWh as compared to the same period of last year. Sulphur dioxide and nitrogen oxides emission arising from generation of power per unit were 0.11g/kWh and 0.15g/kWh respectively, representing a decrease of 0.06g/kWh and 0.06g/kWh respectively as compared to the same period of last year. Some of the technological and economic indicators continued to maintain the leading position in domestic market, and advanced in international market. The Company's integrated units, 1,000 MW units and all major units took the leading positions in terms of coal consumption for power supply. 53 units were granted with various prizes in the large units competition organized by China Electricity Council. Among which, 14 were granted with the first prize, 5 were recognized as the optimal units in terms of coal consumption for power generation and 5 were honored as the best units in terms of house consumption rate.

Proactive promotion of technological innovation. To adapt to the requirements of national energy strategic development, the Company proactively propelled the improvement in the flexibility of units. In particular, two solid electric thermal storage load shifting projects were put into operation and the second phase generating units of Yingkou Power Plant achieved fully automatic load shifting to 15% of rated load. The Company promoted the research and application of coal-fired biomass coupled power generation technology, vigorously promoted crowd-creation work and encourage grassroots enterprises to carry out micro-innovation and micro-technical reforms. The "Technical Innovation and Application of 660MW Efficient Ultra-supercritical Coal-fired Power Generating Units" project was awarded the China Power Science and Technology Second Prize and the "Research and Demonstration on 660MW High-parameter Ultra-supercritical Secondary Reheating Key Technology" was awarded the Parent Company Technology Progress First Prize.

## V. STAFF RESPONSIBILITY OF THE COMPANY

### 1. Protection of Staff Benefits

#### (1) Staff overview

With the belief that “elites are the forefront important assets”, the Company has actively implemented the strategy of developing the enterprise by talents, focused on the tri-tasks of attracting, training and making good use of talents, accelerated the establishment of a team with high-level and highly skilled talents as core members. As a result, a team of talents with excellent quality, which is well structured, professionally equipped, devoted to careers in Huaneng and in line with the Company’s developmental and strategic needs, has been formed.

As at the end of 2017, the Company had 53,962 employees, 74% of whom had college qualifications or above.

#### (2) Rights protection

The Company has consistently implemented a fair, just and open employment policy, and endeavors to implement requirements of the Employment Contract Law and other laws and regulations. As such, the Company has entered into employment contracts with employees by laws.

The Company has focused on the improvement of the Staff Representative Congress System and the Plant Affairs Publicity System, supporting their active participation in democratic management and guaranteeing their rights to be informed and rights to participate, express and supervise. The Company has improved the accounting system for complaint handling and formulated the special system and standards relevant for interests claims made by employees.<sup>545</sup>

All of the Company’s subsidiaries have established their respective trade unions in accordance with the Trade Union Law, and the rate of staff joining those unions remained at 100%. Trade unions at all levels have earnestly performed their duties, safeguarded legal interests of employees, encouraged employees to participate in management of decision making, jointly accomplished various objectives of the enterprises and assisted in mediating disputes between staff and enterprises.

The Company attaches great importance to staff health and safety. All of its subsidiaries have established a protection mechanism for staff health and safety. The enterprises have organized physical examinations for all staff annually, and special physical examinations for the staff who have been exposed to occupational hazards.

(3) Incentives and protection

The Company has further improved its remuneration allocation system, devised a series of remuneration management procedures in line with the overall strategies, standardized the pay system and criteria and optimized the income allocation structure. The Company has fully implemented the annual salary system for major principals, and management of remuneration has become more regulated. Staff remuneration has been determined in accordance with the principles of “determining salaries based on the specific positions, receiving compensation based on performance, giving priority to efficiency and emphasizing fairness” and linked to individual performance, thereby establishing a scientific and effective incentive mechanism.

In compliance with relevant laws, the Company has established various social insurance schemes and housing provident fund, and made due contribution to these schemes and fund in full, to secure the social benefits of its staff covering pensions, medical, work related injuries, unemployment, maternity and housing. In addition, as required under the national policies, the Company has also established corporate annuities and supplementary medical insurance to serve as a supplement to the basic pension and medical benefits of employees. The Company has concerned about staff’s personal life, and actively organized “warmth and care delivery” activities to provide living supports and assistance for staff in need.

2. Support for Staff Development

(1) Staff training

As the Company emphasizes training for all staff, it has fully capitalize on its systematic training resources and increased cooperation with external training organizations to carry out multi-level, multi-channel and multi-dimensional trainings, targeting to reinforce general quality of the staff. The major types of training include orientation training, post training, skill training and international cooperation training.

As at the end of 2017, the Company had 1 employee recognized as one of the national “Millions of Talents ( )”, 19 entitled to the special government allowance, 13 rated as national technical experts, 114 rated as technical experts of state-owned enterprises and 47 rated as technical experts of the power industry.

(2) Development opportunities

The Company has emphasized provision of growth opportunities for employees so as to realize joint development of both employees and enterprise. To reinforce establishment of leadership, the Company has amended the Provisional Administration Measures on Leadership Establishment and the Administrative Measures on Management Reserve of Common Enterprises of the Company to further emphasize cultivation of management reserve. Besides, the Company has also enhanced the system under which human resources may be efficiently allocated to achieve the optimal arrangement of human resources. Qualifications facilitate learning; contests facilitate training; rotation and assessment facilitate the overall improvement of the staff. The development of skill-based talents is facilitated by the implementation of dual-channels promotion system emphasizing the approach of “positions come first, skills come second”. Wang Jian, an employee of the Company, was rated as a Typical Figure of the Country by All-China Federation of Trade Unions.

## VI. SOCIAL RESPONSIBILITY OF THE COMPANY

The Company has taken the establishment of a “three-color” company as its corporate mission, i.e. a “red” company that serves the socialism country with the special characteristics of China, a “green” company with focuses on scientific and technological advancement and environment protection, and a “blue” company that keeps abreast of the latest development and is open world widely for innovative learning. The Company has capitalized on its capacity of a “three-color” company to guide positive culture, seek for sustainable development, serve the Country, benefit the society, proactively fulfill social responsibilities, create a sound internal and external environment, work together with all interested parties to promote economic and social development and share corporate development achievements in order to make its own contribution to construction of a harmonious socialist society.

The Company attaches great importance to fulfilling social responsibilities by implementing social responsibilities work to all aspects of production and operation. To ensure the supply of electricity and thermal power, all power plants have formulated corresponding emergency work plans and measures to ensure the safe and stable power and heat generation in important time slots. In response to the severe situation of lack of coal in the northeast region and gas shortage in the Beijing-Tianjin-Hebei region, the Company has set up a security work team to fully coordinate and successfully solved the problems of resources and transportation shortage. In the case of an emergency plan for the shortage of coal supply in Heilongjiang Province, the Company allocated some of the coal for Huaneng Daqing Cogeneration to Daqing Oilfield Power Plant, which was more urgently in need for coal. In the case that the inventory of Huaneng Xinhua Power Plant is approaching the warning line, the Company maintained dual-machines operation which supported power grids, and received compliment from the provincial government. The coal-fired machine of Huaneng Beijing Thermal Power Plant successfully undertook the emergency task during the peak seasons of summer and winter.

The Company has actively participated in social public welfare activities, including new socialism-based rural development, poverty alleviation, education assistance and charitable donations, and positively reciprocated the society and showed our care via a variety of innovative cooperative services. In 2017, the Company donated a total of RMB10.0018 million under its name to support local public welfare activities.

In the future, the Company will continue to strive for delivery of long-term, stable and increasing returns for shareholders, provision of adequate, reliable and environmental friendly power for the society, and developing itself as a global first-class listed power producer with leading technology, excellent management, reasonable layout, optimized structure, industry synergy and remarkable efficiency.

## INVESTOR RELATIONS

### PHILOSOPHY OF INVESTOR RELATIONS

Huaneng International always highly values the management of investor relations since its listing. The Company communicates with all investors in a wholehearted, equal and respectful manner through timely and diversified two-way channels, enhancing and perfecting the management of investor relations of the Company. In addition, the Company also values the two-way interactive communication of “disclosure” and “adoption”. With its investors “disclosure”, the Company discloses information including financial position and operating performance to investors accurately, fairly and comprehensively in a responsible manner, which helps investors to understand and recognize the current situation and future development strategy of the Company. As to “adoption”, the Company makes ready various channels to collect opinions of investors to adopt suggestions and ideas related to its operating activities. Such two-way communication effectively improves the operation management ability of the Company and ultimately maximizes the interests of the Company as a whole and all shareholders.

### MECHANISM OF INVESTOR RELATIONS

Establishing meticulous organization and enhancing system development

The Company sets up specific information disclosure organizations (Information Disclosure Committee and Information Disclosure Work Team) and holds routine information disclosure meetings every Monday, making clear the work flow for information disclosure of the Company and guaranteeing the compliance and time effectiveness of information disclosure.

In the meantime, the Company has established the “Measures on Information Disclosure Management”, the “Measures on Connected Transactions Management”, the “Rules on Investor Relations Management”, the “Detailed Rules on the Work of the Information Disclosure Committees”, “Measures on Insider Information Management” and the “Regulations on Accountability for Significant Errors in Annual Report Information Disclosure”, setting out in detail the basic principles, targets, procedures, contents of disclosure, registration and filing of insider information and related accountability. The promulgation and implementation of these regulations further enhanced the information disclosure system of the Company, strengthened the discipline of the Company’s information disclosure, prevented and minimized the insider dealing activities, improved the authenticity, accuracy, completeness and timeliness of information disclosure, so as to protect the legal interests of shareholders.

In addition, the Company has also formulated the “Internal Control System” according to the relevant requirements of the state and Sections 302 and 404 of the “Sarbanes-Oxley Act of 2002”, as well as prepared the “Internal Control Handbook”, further enhancing our corporate governance and ensuring truthful, timely, accurate and complete information disclosure.

Having established a complete and effective control system targeting at the entire process of the Company’s information disclosure, the Company has been able to control potential risks in information disclosure effectively and ensure that all information disclosed by the Company is regulated and effective since its listing. With its timely, accurate and sufficient information disclosure, the Company has been well recognized by domestic and overseas investors and won various awards granted by domestic and overseas investment institutions and professional institutions.



#### ☛ Diversified channels and effective communication

In view of the different needs and nature of different investors – existing investors, potential investors, institutional investors and retail investors, the Company actively holds a variety of investor relations activities in various forms, including phone enquiries, emails, analyst conferences, one-on-one meetings, investment forums, roadshows and reverse roadshows, according to the characteristics of different investors, with a view to achieve all-round and effective communication and establish long-term and stable relations of mutual trust.

The Company insists on handling daily calls and visits made by investors properly. By consistently updating and sorting out the investor database, expanding the investor communication network of the Company, and holding two-way interactive investor relations activities, the Company is able to enhance the understanding and knowledge of investors about the Company, adopt suggestions and ideas put forward by investors, create two-way communication channels and platforms for smooth communication with investors and maximize the interests of the Company and investors.

#### ☛ Timely disclosure and continuous follow-up

The Company discloses its information in a truthful, accurate, complete and timely manner strictly according to the requirements of the regulatory authorities of its listing places, thereby increasing the transparency of and drawing market attention to the Company and enhancing the image of the Company in capital markets. In the meantime, the Company follows up feedbacks from investors consistently and ensures effective communication, with a view to establish stable investor relations.

The Company made 10 overseas press releases and issued 277 announcements within and outside China in 2017.

### NOTE TO SHAREHOLDERS

#### ☛ Dividend distribution

The Board proposed a dividend of RMB0.1 (inclusive of tax) per share for 2017. Dividends will be denominated and declared in Renminbi. Dividends on domestic shares will be paid in Renminbi. Save as the dividends on foreign shares traded on the Hong Kong Stock Exchange that will be paid in Hong Kong dollars, dividends on other foreign shares will be paid in US dollars. Exchange rates for dividends paid in US dollars and Hong Kong dollars are USD1 to RMB6.5342 and HK\$1 to RMB0.8359 respectively. All the dividends payable to shareholders shall be subject to shareholders' approval at the annual general meeting of the Company. The Company expects to complete the final dividend payment on or before 17 July 2018.

### DIVIDENDS

#### ☛ Dividend policy

The Company's Articles of Association clearly define the Company's cash dividend policy, i.e. when the Company's earnings and accumulative undistributable profits for the current year are positive, and on the condition that the Company's cash flow is able to meet the need for its ordinary operation and sustainable development, the Company shall adopt a cash dividend policy on the principle that the cash dividend payout shall be no less than 50% of the realized distributable profit stated in the consolidated financial statement that year.

In addition, in order to allow all shareholders to better share the development results of the Company, after considering the Company's strategic planning and development targets, industry development trends and other factors, the Company decided to further increase the proportion of cash dividends to investors in the next three years, and accordingly formulated the Shareholders Return Plan for the Next Three Years (2018 to 2020) of Huaneng Power International, Inc. according to relevant regulations. Detailed terms and the proportion of the Company's cash dividends in the next three years are: when the profit and accumulated undistributed profits in the current year are positive, and on condition that the Company's cash flow is able to meet the need for its ordinary operation and sustainable development, the Company shall distribute dividends in cash and the annual cash dividend payout shall, in principle, be no less than 70% of the realised distributable profits stated in the consolidated financial statement that year and such dividend shall be no less than RMB0.1 per share.

In the future, the Company will continue to adhere to a proactive, balanced and stable dividend policy, persistently enhance its profitability, striving for realization of increasing returns to shareholders.

#### Declaration of dividends

Since listing, Huaneng International has been given tremendous support and concern by shareholders. The Company has also rewarded shareholders with a persistent, stable and increasing return over the years. The Company has been declaring dividends to shareholders every year since 1998. The accumulated dividend paid amounted to RMB54.653 billion.

Dividend Year	Dividend per share (RMB)	Earnings per share (RMB)	Payout Ratio
1994		0.17	
1995		0.24	
1996		0.27	
1997		0.33	
1998	0.08	0.33	24.24%
1999	0.09	0.33	27.27%
2000	0.22	0.44	50.00%
2001	0.30	0.60	50.00%
2002	0.34	0.65	52.31%
2003*	0.50	0.90	55.56%
2004	0.25	0.44	56.82%
2005	0.25	0.40	62.50%
2006	0.28	0.50	56.00%
2007	0.30	0.51	58.82%
2008	0.10	-0.33	N/A
2009	0.21	0.41	51.22%
2010	0.20	0.28	71.43%
2011	0.05	0.08	62.50%
2012	0.21	0.39	53.85%
2013	0.38	0.74	51.35%
2014	0.38	0.76	50.00%
2015	0.47	0.94	50.00%
2016	0.29	0.56	51.74%
2017**	0.10	0.10	100.00%



\*The Company's profit distribution plan for 2003 included a cash dividend of RMB5 together with bonus issue of 10 shares for every 10 shares.

\*\*The profit distribution plan of the Company for 2017 will be subject to shareholders' approval at the annual general meeting.

## INVESTOR RELATIONS ACTIVITIES

### Conferences

In 2017, the Company organized one Hong Kong press conference, one large-group presentation with investment analysts in Hong Kong, one large-group presentation with investment analysts and fund managers in China, two global telephone conferences for the quarterly results and one global telephone conference for interim results.

### Roadshows

Roadshow is a commitment of the Company to investors and a specific reflection of respect shown to them. The Company believes that regular face-to-face meetings with investors are instrumental in promoting mutual understanding and providing better services to shareholders. Since its listing, the Company has all along attached importance to communication with investors and has a good reputation in the investment sector.

In 2017, the Company held annual non-deal roadshows in Canada and the United States. The management attended nearly 20 "one on one" meetings and group meetings with the Company's former investors, existing shareholders and potential investors, to introduce the operation, future development and outlook of the Company in detail. The meetings effectively improved the communication between the Company and investors and provided investors with in-depth understanding of the Company and the industry. The meetings were welcomed by investors.

### Visits by and general enquiries from investors

The Company received nearly 30 groups of institutional investors for company visits and nearly 100 phone enquiries from investors during the year.

### Investment forums

In 2017, the Company attended 6 large investment forums within or outside China, in which over 100 institutional investors were met.

## MAJOR CHANGES IN THE ARTICLES OF ASSOCIATION

In 2017, there was no major change in the Articles of Association.

## REPORT OF THE BOARD OF DIRECTORS

The Directors hereby submit their annual report together with the audited financial statements for the year ended 31 December 2017.

## RESULTS SUMMARY

The Board of Directors (the “Board”) of Huaneng Power International, Inc. (the “Company” or “Huaneng International”) hereby announces the audited operating results of the Company and its subsidiaries for the year ended 31 December 2017.

For the twelve months ended 31 December 2017, the Company realized operating revenue of RMB152.459 billion, representing an increase of 33.95% compared to the same period last year, and net profit attributable to equity holders of the Company amounted to RMB1.580 billion, representing a decrease of 81.46% as compared with the same period last year. Earnings per share amounted to RMB0.10. The Board is satisfied with the Company’s results last year.

The Board of the Company proposed to declare a cash dividend of RMB0.10 (inclusive of tax) for each ordinary share of the Company held by shareholders. The distribution plan will be submitted to the Company’s 2017 annual general meeting to be held on 3 May 2018 for consideration. In addition, in order to allow all shareholders to better share the development results of the Company, after considering the Company’s strategic planning and development targets, industry development trends and other factors, the Company decided to further increase the proportion of cash dividends to investors in the next three years, and accordingly formulated the Shareholders Return Plan for the Next Three Years (2018 to 2020) of Huaneng Power International, Inc. according to relevant regulations. Detailed terms and the proportion of the Company’s cash dividends in the next three years are: when the profit and accumulated undistributed profits in the current year are positive, and on condition that the Company’s cash flow is able to meet the need for its ordinary operation and sustainable development, the Company shall distribute dividends in cash and the annual cash dividend payout shall, in principle, be no less than 70% of the realised distributable profits stated in the consolidated financial statement that year and such dividend shall be no less than RMB0.1 per share.

Details of the operating results are set out in the financial information.

## BUSINESS REVIEW OF YEAR 2017

In 2017, the Company proactively adapted to the new charges in the power system reform, grasping opportunities while at the same time tackling challenges. Throughout the year, we maintained leading position in the industry for safe and clean production, constantly optimised the power structure, realised increases in both quantity and price in power generation, strengthened the ability of securing fuel supply and cost control, and achieved outstanding result in capital operation. As a result, the annual business objectives were achieved in a better way.

### 1. Operating Results

For the twelve months ended 31 December 2017, the Company realized operating revenue of RMB152.459 billion, representing an increase of 33.95% compared to the same period last year. Net profit attributable to equity holders of the Company amounted to RMB1.580 billion, representing a decrease of 81.46% as compared with the same period last year, which was mainly because coal price rose drastically in 2017. Earnings per share amounted to RMB0.10.

As at the end of 2017, net assets (excluding non-controlling interests) per share of the Company amounted to RMB5.77, representing an increase of 1.91% as compared with the same period last year.

The Audit Committee of the Company convened a meeting on 12 March 2018 and reviewed the 2017 annual results of the Company.

### 2. Power Generation

Total power generated by the Company's domestic operating power plants for the year of 2017 on consolidated basis amounted to 394.481 billion kWh, representing a year-on-year increase of 25.76%. The electricity sold amounted to 371.399 billion kWh, representing a year-on-year increase of 25.56%. The annual average utilization hours of the Company's domestic power plants reached 3,951 hours, representing a year-on-year increase of 30 hours. The utilization hours of coal-fired power generating units was 4,194 hours, representing a year-on-year increase of 87 hours. In most of the areas where the Company's coal-fired power plants are located, the utilization hours of the Company were in a leading position within those areas. Total heat supplied by the Company's domestic operating power plants for the year of 2017 on consolidated basis amounted to 176 million GJ, representing an increase of 79 million GJ over the same period of last year, or a year-on-year increase of 81.44%.

### 3. Cost Control

Throughout 2017, the Company procured coal in an aggregate of 168 million tons. By continuously reinforcing cooperation with major coal mines, innovating cooperation mode and procurement strategy, optimizing regional supply structure, accurately judging coal market trends, adopting effective measures, and reducing the unit procurement price of standard coal, the Company controlled the fuel procurement costs in a better way, while the market price of coal remained high throughout the year. The unit fuel cost of our domestic power plants throughout the year occurred for sales of power was RMB225.92/MWh, representing a year-on-year increase of 32.41%.

#### 4. Energy Saving and Environmental Protection

The Company has always placed energy saving and environmental protection as its utmost priority. In 2017, the Company continued to lead its peers in terms of production safety, technical, economic and energy consumption indicators. The average equivalent availability ratio of coal-fired units of the Company's domestic power plants was 94.55% and its weighted average house consumption rate was 4.66%. The average yearly coal consumption rate of the Company's coal-fired units for the power generated was 288.28 grams/kWh, which was 2.05 grams/kWh lower than that of the same period last year. The Company's average coal consumption rate for power sold was 306.48 grams/kWh, representing a decrease of 1.21 grams/kWh from that of the same period last year.

The Company attaches great importance to energy saving and environmental protection and has so far equipped all of its coal-fired generating units with desulphurization, denitrification and dust removal devices, with each indicators meeting with the requirements for environmental protection. In addition, according to the State's plan of implementing ultra-low emission of coal-fired generating units, the Company has carried out technological upgrades for all coal-fired generating units, completing the task required by the State early.

#### 5. Project Development

The Company progressed smoothly in construction of power supply projects. During the year, the controlled generation capacity of the newly commissioned coal-fired cogeneration units, gas-fired generating units, wind generating units and photovoltaic units was 150 MW, 1,660 MW, 888 MW and 628 MW, respectively. As of 31 December 2017 and 13 March 2018, the Company's controlled and equity-based generation capacity was 104,321 MW and 92,003 MW, respectively.

#### 6. Overseas Business

In 2017, Tuas Power Ltd. ("Tuas Power"), a wholly-owned subsidiary of the Company in Singapore, maintained safe and stable operation of the generation units throughout the year. The total market share of Tuas Power in the power generation market for the whole year was 21.9%, representing a year-on-year increase of 0.4 percentage point, and the net loss attributable to equity holders of the Company amounted to RMB477 million, representing an increased in the loss of RMB237 million as compared with the same period of last year, mainly attributable to the increase in the unit price of natural gas, and the persistent low tariff as affected by ongoing oversupply in the electricity market in Singapore and the generation units put into operation in recent years, the combined effect of which resulted in the continued decrease in profit margin contribution of electricity sales.

The Company continues to deliver promising performance in the capital markets. It was awarded "The Best Listed Company" and "The Best CEO of Listed Company" awards in the 2017 China Securities Golden Bauhinia Awards Competition, and the "2017 Outstanding Issuer of Corporate Bonds on Shanghai Stock Exchange Bond Market" award. Besides, the Company was on the list of "Platts Top 250 Global Energy Listed Companies Award" for nine consecutive years and ranked 59th in 2017.

## PROSPECTS FOR 2018

In 2018, the Company will implement thoroughly development strategies to cater its needs and will proactively respond to market risks. It will adhere to focus on quality and efficiency so as to further promote quality improvement, efficiency enhancement, transformation and upgrading. The Company will focus on its objective of building a globally leading power generation listed company and continuously improve its business performance, so as to create more values for the nation, the society and its shareholders.

In respect of safe production, the Company will endeavor to prepare and arrange for thorough implementation of the State's reform of and development in promoting safe production. It will consistently launch highly reliable task-specific actions, concretely procure "no unplanned operation suspension" of its power plants and unceasingly enhance the safe and stable operation of generating units. The Company will persistently improve the standard of smart power generation and clean power generation as well as diligently promote energy conservation reform and optimize its operation so as to reinforce its leading position in energy saving and environmental protection areas. The Company will strive for clean, energy-saving and efficient power generation.

In respect of the power market, the Company will actively adapt to the market changes and grasp market opportunities. The Company will carry out a double-edged mechanism by increasing the volume on power generation and enhancing the efficiency in electricity sales, advance the two-dimensional cohesion of power generation and supply of thermal heating, strengthen the coordination of regionalization and information management. The Company will proactively engage in various types of market transactions to ensure its market share being higher than capacity share. The Company will strive for a leading position in the region in terms of utilization hour benchmark and diligently achieve a domestic power generation of 410 billion kWh and average utilization of around 4,000 hours for the year. The Company will demonstrate and build up heat supply operation, continuously enhance heat supply service and increase the contribution of heat supply in the power generation business. The Company will ensure the electricity tariff of new generating units and environmental protection tariff are timely and fully implemented.

In respect of the fuel market, the Company will reinforce policy research and market analysis, and enhance the insights and stability in fuel procurement. The Company will dynamically optimize channels for resources based on the structural outlay and region characteristics of resources. Leveraging on its scale of procurement and centralized management, the Company will strengthen strategic cooperation with large and medium-scale coal enterprises. The Company will stick to the procurement mode of "long-term contract plus spot purchase" and work hard to increase the proportion of long-term contract. The Company will continue to leverage the advantages of its port and shipping resources to establish a firm and effective fuel supply chain. The Company will reinforce the optimization of the coordination in fuel supply and power generation and strengthen the whole process in fuel procurement management so as to achieve a reduction in the fuel cost.

In respect of the capital market, the Company will continue to pursue its objectives of "volume guarantee, risk control and cost reduction" and adhere to traditional credit facility as the major financing channel, further deepen the cooperation between banks and enterprises and ensure the smooth access to credit and finance channels. The Company will expand the scale of direct financing, diversify the varieties of bond financing products and use direct financing as one of the main channels for safeguarding its funds. The Company will innovate equity financing methods so as to optimize capital structure and ensure the safeguard of funds.



The Company will fully reinforce the management of market value and enhance its brand value. The Company will steadily introduce reforms and innovations to strengthen the dynamics for innovation in business development. The Company will safeguard the sound implementation of its various business plans by its solid and efficient basic management standards.

#### SUMMARY OF FINANCIAL INFORMATION AND OPERATING RESULTS

Please refer to the Financial Highlights on page 8 for the summary of the operating results and assets and liabilities of the Company and its subsidiaries as at 31 December 2017 and for the accounting year ended 31 December 2017.

Please refer to pages 120 to 121 of the financial statements for the operating results of the Company and its subsidiaries for the accounting year ended 31 December 2017, which have been reviewed by the Company's Audit Committee.

#### DISTRIBUTABLE RESERVE

The distributable reserve as at 31 December 2017 calculated in accordance with the Company's Articles of Association is set out in Note 23 to the financial statements prepared under the International Financial Reporting Standards (the "IFRS").

#### DIVIDENDS

Since the listing of the Company, shareholders have given great support to and cared much for the Company. The Company has also generated returns that have been growing continuously and steadily over the years. The Company has been paying dividends to shareholders every year since 1998, with an accumulated dividend distribution of RMB54.653 billion.

The Company's Articles clearly defines the Company's cash dividend policy, i.e. when the Company's earnings and accumulative undistributed profits for the current year are positive, and on condition that the Company's cash flow can satisfy the Company's normal operation and sustainable development, the Company shall adopt a cash dividend appropriation policy on principle that the cash dividend payout will not be less than 50% of the distributable profit realized in the then year's consolidated financial statements.

In the future, the Company will continue to follow a proactive, balanced and stable dividend policy and persistently enhance its profitability, striving for realization of increasing returns to shareholders.

In accordance with the requirements of relevant laws and regulations and the articles of association of the Company, the Company adheres to the profit distribution policy whereby the distributable profits shall be the lower of distributable profits as stated in the financial statements prepared under the China Accounting Standards for Business Enterprises and the International Financial Reporting Standards.

With respect to the dividend distribution plan for 2017, the Company proposed to declare a cash dividend of RMB0.1 (inclusive of tax) for each share to all shareholders. All dividends payable to shareholders will be subject to shareholders' approval at the annual general meeting of the Company.

In accordance with the "Enterprise Income Tax Law of China" and its implementation regulations which came into effect on 1 January 2008, the Company is required to withhold and pay enterprise income tax at the rate of 10% on behalf of the non-resident enterprise shareholders whose names appear on the register of members for H share of the Company when distributing final dividends to them. For H shares of the Company registered other than in the name(s) of individual(s), including HKSCC Nominees Limited, other nominees, trustees, or other organizations or groups, shall be deemed to be shares held by non-resident enterprise shareholder(s). On the basis, enterprise income tax shall be withheld from dividends payable to such shareholder(s).

The Company has decided to convene the 2017 Annual General Meeting on 3 May 2018. Information regarding the record date(s) and the period(s) for closure of register for determining the eligibility to attend and vote at the 2017 annual general meeting and the entitlement to the final dividend were set out in the notice of the 2017 Annual General Meeting published on 14 March 2018.

The Company shall comply with the relevant rules and regulations to withhold and pay enterprise income tax on behalf of the relevant shareholders with reference to the register of members of the Company as of the record date.

In addition, in order to allow all shareholders to better share the development results of the Company, after considering the Company's strategic planning and development targets, industry development trends and other factors, the Company decided to further increase the proportion of cash dividends to investors in the next three years, and accordingly formulated the Shareholders Return Plan for the Next Three Years (2018 to 2020) of Huaneng Power International, Inc. according to relevant regulations. Detailed terms and the proportion of the Company's cash dividends in the next three years are: when the profit and accumulated undistributed profits in the current year are positive, and on condition that the Company's cash flow is able to meet the need for its ordinary operation and sustainable development, the Company shall distribute dividends in cash and the annual cash dividend payout shall, in principle, be no less than 70% of the realised distributable profits stated in the consolidated financial statement that year and such dividend shall be no less than RMB0.1 per share.

The standard and amendments to published standards adopted by the Company and its subsidiaries for the current year, which are effective for accounting year beginning on 1 January 2017 and relevant to the Company and its subsidiaries, are set out in Note 2 to the financial statements prepared under the IFRS.

#### PRINCIPAL BUSINESS

The domestic power plants of the Company and its subsidiaries are located in 26 provinces, autonomous regions and municipalities. The Company also has a wholly-owned power plant in Singapore. The core business of the Company is to develop, construct and operate large-scale power plants throughout China by making use of modern technology and equipment and financial resources available domestically and internationally. The power plant facilities of the Company are technically advanced, highly efficient and stable.

#### SUBSIDIARIES AND ASSOCIATES

Please refer to Notes 9 and 8 to the financial statements prepared under the IFRS for details of the Company's subsidiaries and associates.

#### BONDS

During the year, the Company successfully issued bonds with a total principal amount of RMB38.8 billion in meeting its operational needs. Please refer to Note 26 and 30 to the financial statements prepared under the IFRS for details.

#### BANK LOANS AND OTHER BORROWINGS

Please refer to Notes 25 and 31 to the financial statements prepared under the IFRS for details of bank loans and other borrowings of the Company and its subsidiaries as at 31 December 2017.

#### CAPITALIZED INTERESTS

Please refer to Note 7 to the financial statements prepared under the IFRS for details of the capitalized interests of the Company and its subsidiaries during the year.

#### PROPERTIES, PLANTS AND EQUIPMENT

Please refer to Note 7 to the financial statements prepared under the IFRS for details of properties, plants and equipment of the Company and its subsidiaries during the year.

#### RESERVES

Please refer to the consolidated statement of changes in equity on pages 125 to 126 of the financial statements prepared under the IFRS for details of statutory reserves of the Company and its subsidiaries during the year.

#### PRE-EMPTIVE RIGHTS

According to the Articles of the Company and the laws of the PRC, there are no provisions for pre-emptive rights requiring the Company to offer new shares to the existing shareholders of the Company in proportion to their shareholdings.

#### LARGEST SUPPLIERS AND CUSTOMERS

The five largest suppliers of the Company and its subsidiaries for 2017 were China Huaneng Group Fuel Co., Ltd., China Energy Investment Corporation Limited, Zhalaينوer Coal Mining Company Ltd., China National Coal Group Corporation and Shanxi Yangquan Coal Industry (Group) Company Limited respectively. The total purchase from them amounted to approximately RMB40.2 billion, representing approximately 44% of the total coal purchase of the year.

As a domestic power producer, the Company sells the electricity generated by its power plants through local grid operators only and has no other customer. The five largest customers of the Company and its subsidiaries for 2017 were State Grid Shandong Electric Power Company, State Grid Jiangsu Electric Power Company, State Grid Zhejiang Electric Power Company, Guangdong Power Grid Corporation and State Grid Henan Electric Power Company. The five customers accounted for approximately 44.11% of the operating revenue for the year while the largest customer, namely State Grid Shandong Electric Power Company, accounted for approximately 18.80% of the operating revenue.

None of the directors, supervisors of the Company and their respective close associates (as defined under the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (the "Listing Rules")) had any interest in the five largest suppliers and customers of the Company mentioned above in 2017.

## CONTINUING CONNECTED TRANSACTIONS AND CONNECTED TRANSACTIONS

The following are the major continuing connected transactions and connected transactions of the Company in 2017 according to the requirements of the Listing Rules:

### Continuing Connected Transactions

#### 1. Continuing Connected Transactions with Huaneng Group, Huaneng Finance and Tiancheng Leasing

The major continuing connected transactions of the Company are those transactions conducted between the Company and its subsidiaries and certain subsidiaries and/or associates of China Huaneng Group (“Huaneng Group”). HIPDC, as the controlling shareholder of the Company, holds 33.33% of the total issued share capital of the Company. Huaneng Group holds a 75% direct interest and a 25% indirect interest in HIPDC. In addition, Huaneng Group holds a 10.23% direct equity interest in the Company, a 3.11% indirect equity interest in the Company through China Hua Neng Group Hong Kong Limited, a wholly-owned subsidiary of Huaneng Group, and a 0.49% indirect equity interest in the Company through China Huaneng Finance Corporation Limited (“Huaneng Finance”), a controlling subsidiary of Huaneng Group. Huaneng Group and the Company holds 50% and 20% equity interests respectively in Huaneng Finance. Huaneng Tiancheng Financial Leasing Co., Ltd. (“Tiancheng Leasing”) is a controlling subsidiary of Huaneng Group which in aggregate holds a 80% equity interest, whilst the remaining 20% equity interest is held by the Company. Therefore, Huaneng Group, Huaneng Finance and Tiancheng Leasing are connected persons to the Company and transactions between the Company and the subsidiaries and/or associates of Huaneng Group constitute connected transactions of the Company under the Listing Rules. The purposes of the Company to enter into such continuing connected transactions with those connected persons were to meet the operational needs of the Company and to get the most favourable terms and conditions from the market from the Company’s perspective. The relevant information regarding the continuing connected transactions was set out in the announcement dated 6 December 2016 and the circular dated 19 January 2017 published by the Company, particulars of which are summarized as follows:

- Huaneng Group Framework Agreement was entered into between the Company and Huaneng Group on 5 December 2016 for a term commencing on 1 January 2017 and expiring on 31 December 2017. Pursuant to the
- (i) Framework Agreement, the Company would conduct the following transactions with Huaneng Group and its subsidiaries and associates on an ongoing basis:

Purchase of ancillary equipment and parts relevant to the production operation for the infrastructure construction work for power plants, at terms and the prices to be negotiated at arm’s length terms, taking into account the then prevailing market conditions; but in any event at the terms and prices no less favourable than those offered to the Company by independent third parties for the same or similar type of ancillary equipment and parts. In addition, the payment of the consideration will be settled in cash in arrears, or in accordance with the payment terms agreed by the relevant parties in the contracts to be entered into pursuant to the Framework Agreement.

For the year ended 31 December 2017, the annual cap of the purchase of ancillary equipment and parts was RMB1.4 billion (inclusive of value-added tax (“VAT“)). The actual transaction amount for the year ended 31 December 2017 was RMB396 million (inclusive of VAT) and RMB347 million (exclusive of VAT).

Purchase of fuel and transportation services for power generation, at prices and charges calculated by reference to RMB/ton and the actual weight of carriage, with arm's length terms taking into account the then market conditions, and in any event the coal price and the terms of the purchase of fuel transportation service shall be no less favourable than those offered by independent third parties to the Company for the same or similar type of coal supply or transportation services. The payment of the consideration will be settled in cash in arrears, or in accordance with the payment terms agreed by the relevant parties in the contracts to be entered into pursuant to the Framework Agreement.

For the year ended 31 December 2017, the annual cap of the purchase of fuel and transportation services was RMB38.7 billion (inclusive of VAT). The actual transaction amount for the year ended 31 December 2017 was RMB22.937 billion (inclusive of VAT) or RMB19.946 billion (exclusive of VAT).

Leasing of facilities, land and office spaces (mainly power transmission and transformation assets, vessels, power plants land and office spaces, etc.) for operational needs, at terms and prices to be negotiated at arm's length terms, taking into account the then prevailing market conditions; but in any event at the leasing terms and prices no less favourable than those offered to the Company by independent third parties for the leasing of the same or similar type of facilities, land and office spaces. In addition, the payment of the consideration will be settled in cash in arrears, or in accordance with the payment terms agreed by the relevant parties in the contracts to be entered into pursuant to the Framework Agreement.

For the year ended 31 December 2017, the annual cap of the leasing of facilities, land and office spaces was RMB300 million. The actual transaction amount for the year ended 31 December 2017 was RMB258 million.

Purchase of technical services, engineering contracting services and other services (mainly includes the provision of maintenance services for power plants' monitoring systems, real-time consolidation of project data, trial run of generating units, supervision of manufacture of facilities for construction works in progress and insurance services by Huaneng Group and its subsidiaries and associates to the Company and its subsidiaries, and the provision of operation/production and related coastal port supportive services by the Company and its subsidiaries to Huaneng Group and its subsidiaries and associates) for the Company's operation and production needs, at terms and prices to be negotiated at arm's length terms, taking into account the then prevailing market conditions; but in any event at the terms and prices no less favourable than those offered to the Company by independent third parties for the same or similar type of technical services and engineering contracting services. In addition, the payment of the consideration will be settled in cash in arrears, or in accordance with the payment terms agreed by the relevant parties in the contracts to be entered into pursuant to the Framework Agreement.

For the year ended 31 December 2017, the annual cap of the purchase of technical services, engineering contracting services and other services was RMB2.4 billion (inclusive of VAT). The actual transaction amount for the year ended 31 December 2017 was RMB1,144 million (inclusive of VAT) or RMB1,024 million (exclusive of VAT).

Provision of entrusted sale services by the Company and its subsidiaries for Huaneng Group and its subsidiaries and associates (involving mainly the use of power generation quota of the Company and its subsidiaries by Huaneng Group and its subsidiaries and associates for substituted power generation) at the terms and prices to be negotiated at arm's length terms, taking into account the then prevailing market conditions; but in any event at the terms and prices no less favorable than those offered by the Company to independent third parties for the same or similar type of services. The payment of the consideration will be settled in cash in arrears, or in accordance with the payment terms agreed by the relevant parties in the contracts to be entered into pursuant to the Framework Agreement.

For the year ended 31 December 2017, the annual cap of the provision of entrusted sale services was RMB300 million (inclusive of VAT). The actual transaction amount for the year ended 31 December 2017 was RMB69 million (inclusive of VAT) or RMB59 million (exclusive of VAT).

Sales of products (i.e. sales of coal), at coal prices and charges calculated by reference to RMB/ton and the actual weight of carriage, with arm's length terms taking into account the then market conditions, and in any event the terms of the coal price and other related products shall be no less favourable than those offered by independent third parties to the Company for the same or similar type of coal supply or other related products. The payment of the consideration will be settled in cash in arrears, or in accordance with the payment terms agreed by the relevant parties pursuant to the agreement.

For the year ended 31 December 2017, the annual cap of the sales of products was RMB3.6 billion. The actual transaction amount for the year ended 31 December 2017 was RMB1,304 million (inclusive of VAT) or RMB1,114 million (exclusive of VAT).

Huaneng Finance Framework Agreement was entered into between the Company and Huaneng Finance on 5 (ii) December 2016 for a term of three years commencing on 1 January 2017 and expiring on 31 December 2019, so as to replace the framework agreement between the Company and Huaneng Finance on 22 April 2014.

Pursuant to the Huaneng Finance Framework Agreement, the Company would from time to time place deposits with Huaneng Finance at rates which would be no less favourable than those offered by independent third parties for provision of similar services to the Company in China. As no security over the assets of the Company is granted in respect of the note discounting services and loan advancement services provided by Huaneng Finance, such transactions are exempt from reporting, announcement and independent shareholders' approval requirements under Rule 14A.90 of the Listing Rules.

For the period from 1 January 2017 to 31 December 2017, the outstanding balances of the deposits to be placed by the Company and its subsidiaries with Huaneng Finance on a daily basis would not exceed RMB13 billion. For the year ended 31 December 2017, the maximum balance of deposits placed by the Company and its subsidiaries with Huaneng Finance on a daily basis was RMB12.958 billion.

- (ii) Tiancheng Leasing Framework Agreement was entered into between the Company and Tiancheng Leasing on 5 December 2016 for a term of three years commencing on 1 January 2017 and expiring on 31 December 2019.

Pursuant to the Tiancheng Leasing Framework Agreement, the finance lease business conducted by the Company and its subsidiaries with Tiancheng Leasing includes but is not limited to direct lease, leaseback and trusted lease. In conducting finance lease with the Company and its subsidiaries, Tiancheng Leasing shall offer terms in respect of such transactions to the Company and its subsidiaries that are normal commercial terms which shall in any event be no less favourable than those terms can be obtained by the Company and its subsidiaries from independent third parties. Lease Interest will be determined by the parties after arm's length negotiations, taking into account the market conditions and referring to the benchmark lending rates for term loans promulgated by the People's Bank of China from time to time, and will be no less favourable than the terms offered to the Company by domestic independent third parties for provision of similar services. Handling fee (if any) may be charged by Tiancheng Leasing from the Company and its subsidiaries at the time of conclusion of the finance leases under the Tiancheng Leasing Framework Agreement on terms no less favourable than those offered to the Company and its subsidiaries by independent third parties and at such rate as fixed by reference to, among others, the charge rates of other major financial institutions in the PRC for finance leases of assets of the same or similar type or the applicable rate (if any) published by the People's Bank of China from time to time in relation to such services and as set forth in the relevant written financial lease(s).

For the period from 1 January 2017 to 31 December 2017, the maximum daily balances of the Lease Principal were RMB11 billion and the Lease Interest for 2017 was set at RMB600 million. For the year ended 31 December 2017, the maximum daily balances of the Lease Principal between the Company and its subsidiaries and Tiancheng Leasing was RMB5.11 billion, and the Lease Interest was RMB210 million.

2. Continuing Connected Transactions with Temasek and its subsidiaries and associates

Upon the completion of the acquisition of SinoSing Power Pte. Ltd. by the Company, TPGS Green Energy Pte. Ltd. became an indirect non-wholly owned subsidiary of the Company, of which 75% is owned by Tuas Power Ltd., an indirect wholly-owned subsidiary of the Company, and the remaining 25% is owned by Gas Supply Pte. Ltd., which is a wholly-owned subsidiary of Temasek Holdings (Private) Limited ("Temasek").

Temasek therefore became a substantial shareholder of a subsidiary of the Company and a connected person of the Company, and the on-going transactions between certain subsidiaries of the Company and the associates of Temasek ("Continuing Connected Transactions with Associates of Temasek") became continuing connected transaction of the Company under the Listing Rules.

The Company considers that Temasek meets the criteria for a passive investor under Rule 14A.100 of the Listing Rules. As such, any connected transactions or continuing connected transactions of a revenue nature in the ordinary and usual course of our business and on normal commercial terms with an associate of Temasek, pursuant to Rule 14A.99 of the Listing Rules, will be exempt from reporting, annual review, announcement and independent shareholders' approval requirement under the Listing Rules. This exemption will be applicable to, amongst other things, the types of Continuing Connected Transactions with Associates of Temasek.



If the exemption is no longer applicable in relation to the Continuing Connected Transactions with Associates of Temasek, the Company will comply with the applicable reporting, annual review, announcement and independent shareholders' approval requirements.

#### Connected Transactions

##### 1. Connected Transaction Regarding Transfer of Taishan Power Interest

On 28 September 2017, Huaneng Shandong Power Generation Limited ("Shandong Company", 80% equity interest of which was owned by the Company) entered into the transfer agreement with Huaneng Energy and Transportation (Holding) Company Limited ("HETHC", a wholly-owned subsidiary of Huaneng Group) for transferring its 56.53% equity interests in Huaneng Taishan Power Generation Limited ("Taishan Power") to HETHC at the consideration of RMB780.7774 million. Under the Listing Rules, the transfer was a connected transaction of the Company.

Since Taishan Power had no investment projects that were in line with development strategy of the Company in the next few years and in order to increase the efficiency in use of capital, Shandong Company transferred its equity interest in Taishan Power to recoup its investment. The transfer was conducive to the Company by focusing on developing high quality resource business, which is consistent with development strategy of the Company. Following completion, Shandong Company would no longer hold any interest in Taishan Power, and Taishan Power would no longer be included in the consolidated financial statements of the Company. The sale proceeds would be used as the Company's working capital and the funds for developing investment projects in the future.

For details on the above transaction, please refer to the Company's announcements dated 29 September 2017 and 10 October 2017.

##### 2. Connected Transaction Regarding Contribution to Capital Increase of Hainan Nuclear

On 28 December 2017, the Company signed a capital increase agreement with Huaneng Nuclear Power Development Company Ltd ("Huaneng Nuclear"), China National Nuclear Power Co., Ltd. ("China National Nuclear") and Hainan Nuclear Power Limited Liability Company ("Hainan Nuclear") ("Capital Increase Agreement"). Pursuant to which, the Company shall directly hold 30% shares of Hainan Nuclear, while Huaneng Nuclear (a wholly owned subsidiary of Huaneng Group) shall hold 19% shares of Hainan Nuclear. Under the Listing Rules, this capital increase was a connected transaction of the Company.

Pursuant to the capital increase agreement, the shareholders of Hainan Nuclear shall contribute the new capital in cash in proportion to their original shareholding. The Company subscribed RMB69,654,000 in aggregate of part new capital of Hainan Nuclear; China National Nuclear subscribed RMB118,411,800 and Huaneng Nuclear subscribed RMB44,114,200. Upon completion of this capital increase, Hainan Nuclear's investing parties and their shareholding percentages were respectively as follows: the Company (30%), China National Nuclear (51%) and Huaneng Nuclear (19%). The consideration for such capital increase was satisfied in cash with the Company's owned funds.

This capital increase satisfies the capital requirements for project construction, increase total capital, and further enhancing financing ability so as to satisfy its annual capital requirements for project construction of Hainan Nuclear; it is expected that the capital increase will bring stable growth in investment return to the Company in future.

For details on the transaction, please refer to the Company's announcement dated 29 December 2017.

In accordance with the requirements of Rule 14.55 & 14A.71 of the Listing Rules of Hong Kong, the Independent Directors of the Company confirmed that the continuing connected transactions above to which the Company was a party:

- (i) had been entered into by the Company and/or any of its subsidiaries in the ordinary and usual course of its business;
- (ii) had been entered into on normal commercial terms or better; and
- (iii) had been entered into according to the agreements governing them on terms that are fair and reasonable and in the interests of the shareholders of the Company as a whole.

Further, the Company has engaged its external auditor to report on the Company's continuing connected transactions in accordance with Hong Kong Standard on Assurance Engagements 3000 (Revised) "Assurance Engagements Other Than Audits or Reviews of Historical Financial Information" and with reference to Practice Note 740 "Auditor's Letter on Continuing Connected Transactions under the Hong Kong Listing Rules" issued by the Hong Kong Institute of Certified Public Accountants. In accordance with Rule 14A.71 of the Listing Rules, the Board of the Company confirmed that the external auditor of the Company had made a confirmation statement on the issues mentioned in Rule 14A.56 of the Hong Kong Listing Rules. The external auditor has issued an unqualified letter containing their findings and conclusions in respect of the continuing connected transactions set out in item 1 above. A copy of the auditor's letter has been provided by the Company to the Hong Kong Stock Exchange.

Several related party transactions as disclosed in Note 37 to the financial statements prepared in accordance with the IFRS fall under the definition of "continuing connected transaction" in Chapter 14A of the Listing Rules. The Company has complied with the disclosure requirements regarding connected transactions in accordance with Chapter 14A of the Listing Rules.

#### BUSINESS COMPETITION WITH CONTROLLING SHAREHOLDERS

The ultimate controlling shareholder of the Company, Huaneng Group, is also engaged in the power industry in China. HIPDC, the direct controlling shareholder of the Company, is also engaged in the power industry in China. The Company and Huaneng Group (ultimate controlling shareholder) have power plants located in certain same regions. Huaneng Group and the Company have already entrusted mutually to manage certain of their power plants, and Huaneng Group was also entrusted to manage certain coal assets of the Company.

On 17 September 2010, the Company received an undertaking from Huaneng Group regarding further avoidance of business competition. On the premises of continuing the undertaking previously provided, Huaneng Group further undertook that: (1) it should treat the Company as the only platform for integrating the conventional energy business of Huaneng Group; (2) with respect to the conventional energy business assets of Huaneng Group located in Shandong Province, Huaneng Group undertook that it would take approximately 5 years to improve the profitability of such assets and when the terms become appropriate, it would inject those assets into the Company. The Company had a right of first refusal to acquire from Huaneng Group the newly developed, acquired or invested projects which are engaged in the conventional energy business of Huaneng Group located in Shandong Province; (3) with respect to the other non-listed conventional energy business assets of Huaneng Group located in other provincial administrative regions, Huaneng Group undertook that it would take approximately five years, and upon such assets meeting the conditions for listing, to inject such assets into the Company, with a view to supporting the Company's continuous and stable development; and (4) Huaneng Group would continue to perform each of its undertakings to support the development of its listed subsidiaries.

On 28 June 2014, with a view to further clarify the scope of the relevant agreement and in line with the requirements under the "Regulatory Guidelines for Listed Companies No. 4 – Undertakings and performance by Listed Companies and Listed Companies' de facto Controllers, Shareholders, Related Parties and Acquirers", and taking into account the actual situation, Huaneng Group further enhanced the aforesaid non-compete undertaking as follows: 1. the Company would be the sole platform for integrating the conventional energy business of Huaneng Group; 2. with respect to the conventional energy business assets of Huaneng Group located in Shandong Province, Huaneng Group undertook that it would, by the end of 2016, inject into the Company such assets of which the profitability should have been improved and meet with the requirements for injecting into a listed company (such as those assets with clean titles, the injection of which should not reduce the earnings per share of Huaneng Power, of no material non-compliance issues, with positive effect on preservation of and value appreciation of state owned assets, and waiver of pre-emptive rights being obtained from other shareholders of the assets), in addition, the Company should have the right of first refusal to acquire from Huaneng Group the newly developed, acquired or invested projects as engaged in the conventional energy business of Huaneng Group located in Shandong Province; 3. with respect to the other non-listed conventional energy business assets of Huaneng Group located in other provincial administrative regions, Huaneng Group undertook that it would, by the end of 2016, inject into the Company such assets of which the profitability should have been improved and meet with the requirements for injecting into a listed company (such as those assets with clear titles, the injection of which should not reduce the earnings per share of Huaneng Power, of no material non-compliance issues, with positive effect on preservation of and value appreciation of state owned assets, and waiver of pre-emptive rights being obtained from other shareholders of the assets), so as to support a sustainable and stable development of the Company; 4. Huaneng Group would continue to perform each of its aforesaid undertakings in order to support the development of its subordinated listed companies.

Huaneng Group has diligently examined and analyses its performance on the 2014 undertakings, of which items (1) and (4) are long term undertaking and are being currently performed.

As of 31 December 2016, all coal fired generation assets of Huaneng Group located in Shandong region under the scope of undertakings had been injected into the Company, thus performance of the undertaking item (2) was completed within the term of the undertaking period.

As of 31 December 2016, all other non-listed coal fired power generation assets of Huaneng Group located in provincial administrative regions other than Shandong which met the conditions had been injected into the Company, thus performance of the undertaking item (3) was completed.

Huaneng Group will continue to perform the undertaking as made previously that it will procure relevant parties such as Huaneng Energy and Transportation (Holding) Company Limited to inject non-listed conventional energy assets located in Shandong to the Company within 24 months after completion of the significant asset disposal transaction announced on 30 September 2017 by Shandong Xinneng Taishan Power Generation Co., Ltd.. The Company will be entrusted of such assets if the above mentioned assets fail to meet the conditions for injection into the Company.

Currently, the Company has 13 directors and only four of them have positions in Huaneng Group and/or HIPDC. According to the articles of the Company, in case a conflict of interest arises, the relevant directors shall abstain from voting in the relevant resolutions. Therefore, the operation of the Company is independent from Huaneng Group and HIPDC and the operation of the Company is conducted for its own benefit.

#### DISCLOSURE PURSUANT TO RULE 14A.63 OF THE LISTING RULES

Reference is made to the announcement of the Company dated 14 March 2018 (the “Announcement”).

As disclosed in the Announcement, Huaneng Group guaranteed that the audited actual net profit for 2017, 2018 and 2019 for each of Huaneng Laiwu Power Generation Limited, Huaneng Jiaxiang Power Generation Limited, Huaneng Jining Canal Power Generation Limited, Huaneng Liaocheng Thermal Power Limited and Huaneng Yantai Power Generation Limited being certain subsidiaries of Huaneng Shandong Power Generation Limited as acquired by the Company) (collectively, “Profit Forecast Companies”, and individually, “Each Profit Forecast Company”) would not be less than the forecasted net profit. For 2017, the forecasted net profit for Each Profit Forecast Company was as follows:

Unit: RMB10,000

Company name	Direct or indirect Percentage of shareholding of Huaneng Group at acquisition day	Forecasted net profit for 2017
Huaneng Laiwu Power Generation Limited	80.00%	69,036.17
Huaneng Jiaxing Power Generation Limited	50.00%	6,728.82
Huaneng Jining Canal Power Generation Limited	98.35%	15,033.53
Huaneng Liaocheng Thermal Power Limited	75.00%	8,153.75
Huaneng Yantai Power Generation Limited	100.00%	2,941.38

According to the report for the difference between actual net profit/(loss) and the forecasted net profit, which was audited by KPMG Huazhen LLP, the aggregate of the differences between actual net profit/(loss) (net of the non-recurring items) and the forecasted net profit for 2017 for the Profit Forecast Companies was RMB991.83 million. As the Actual Net Profit of Each Profit Forecast Company for 2017 fell short of the forecasted net profit, Huaneng Group should compensate the Company according to the terms and compensation formula set out in the profit forecast compensation agreement dated 14 October 2016 entered into between the Company and Huaneng Group (“Profit Forecast Compensation Agreement”). Accordingly, the aggregate amount of cash compensation for 2017 for the Profit Forecast Companies is RMB615.01 million, which shall be payable by way of cash by Huaneng Group to the Company within 20 working days from the date of disclosure of the specific audit report.

As at the date of this report, Huaneng Group had not yet fulfilled its payment obligation under the Profit Forecast Compensation Agreement.



## PURCHASE, SALE OR REDEMPTION OF SHARES OF THE COMPANY

The Company and its subsidiaries did not sell, purchase or redeem any shares or other securities of the Company in 2017.

## DIRECTORS OF THE COMPANY

The directors of the Company during the year were as follows:

Name of Director	Position	Date of appointment
Cao Peixi	Chairman	Appointed on 27 August 2008
Liu Guoyue	Director	Appointed on 23 May 2008
Huang Jian	Director	Appointed on 27 August 2008
Wang Yongxiang	Director	Appointed on 13 June 2017
Mi Dabin	Director	Appointed on 18 September 2014
Guo Hongbo	Director	Appointed on 21 February 2012
Cheng Heng	Director	Appointed on 13 June 2017
Lin Chong	Director	Appointed on 13 June 2017
Yue Heng	Independent Director	Appointed on 18 September 2014
Xu Mengzhou	Independent Director	Appointed on 23 June 2016
Liu Jizhen	Independent Director	Appointed on 13 June 2017
Xu Haifeng	Independent Director	Appointed on 13 June 2017
Zhang Xianzhi	Independent Director	Appointed on 13 June 2017

## Resigned Directors

Guo Junming	Vice Chairman	Appointed on 18 September 2014 Resigned on 9 October 2017
Fan Xiaxia	Director	Appointed on 13 May 2008 Resigned on 28 February 2018
Li Shiqi	Director	Appointed on 18 September 2014 Resigned on 13 June 2017
Zhu Yousheng	Director	Appointed on 25 June 2015 Resigned on 13 June 2017
Li Song	Director	Appointed on 18 September 2014 Resigned on 13 June 2017
Li Zhensheng	Independent Director	Appointed on 18 September 2014 Resigned on 13 June 2017
Geng Jianxin	Independent Director	Appointed on 25 June 2015 Resigned on 13 June 2017
Xia Qing	Independent Director	Appointed on 25 June 2015 Resigned on 13 June 2017

#### MODEL CODE FOR SECURITIES TRANSACTIONS BY DIRECTORS AND SUPERVISORS

On 31 March 2009, the Company's Board considered and approved the Amended Management Guidelines Regarding the Holding of the Company's Shares by the Directors, Supervisors and Senior Management of Huaneng Power International, Inc. The standard of such guidelines is no less exacting than those set out in the Model Code for Securities Transactions by Directors of Listed Issuers as set out in Appendix 10 to the Listing Rules. Enquiry has been made with all Directors and Supervisors and all of them confirmed that they have complied with the code throughout 2017.

#### DIRECTORS', CHIEF EXECUTIVES' AND SUPERVISORS' RIGHT TO PURCHASE SHARES

For the year ended 31 December 2017, none of the Directors, Chief Executives, Supervisors of the Company or their respective associates had any interests in the shares of the Company or any associated corporations (within the meaning of the Securities and Futures Ordinance (the "SFO"), Cap. 517 of the laws of Hong Kong) which are (a) required to be notified to the Company and the Hong Kong Stock Exchange pursuant to Divisions 7 and 8 of Part XV of the SFO; or (b) required to be recorded in the register kept by the Company pursuant to Section 352 of the SFO; and (c) required to be notified to the Company and the Hong Kong Stock Exchange pursuant to the Model Code for Securities Transactions by Directors of Listed Issuers.

For the year ended 31 December 2017, none of the Directors, Chief Executives, Supervisors, senior management of the Company or their spouses and children under the age of 18 was given the right to acquire any shares, underlying shares or debentures of the Company or any associated corporations (within the meaning of the SFO).

#### INDEPENDENT DIRECTORS' CONFIRMATION OF INDEPENDENCE

Each of the independent directors of the Company, namely Mr. Yue Heng, Mr. Xu Mengzhou, Mr. Liu Jizhen, Mr. Xu Haifeng and Mr. Zhang Xianzhi has signed a confirmation letter by independent non-executive directors for 2017 on 12 March 2018 and the Company considers them to be independent.

#### EMOLUMENTS OF DIRECTORS AND SUPERVISORS

Details of the emoluments of Directors and Supervisors of the Company are set out in Note 39 to the financial statements prepared under the IFRS.

#### THE FIVE HIGHEST PAID EMPLOYEES

Details of the five highest paid employees of the Company are set out in Note 39 to the financial statements prepared under the IFRS.

**PUBLIC FLOAT**

As at the date of this announcement, the Company has maintained the prescribed public float under the Listing Rules and as agreed with the Hong Kong Stock Exchange, based on the information that is publicly available to the Company and within the knowledge of the directors.

**STRUCTURE OF SHARE CAPITAL**

As at 31 December 2017, the entire issued share capital of the Company amounted to 15,200,383,440 shares, of which 10,500,000,000 shares were domestic shares, representing 69.08% of the total issued share capital, and 4,700,383,440 shares were foreign shares, representing 30.92% of the total issued share capital of the Company. In respect of foreign shares, Huaneng Group held 472,000,000 shares through its wholly owned subsidiary, China Hua Neng Group Hong Kong Limited, representing 3.11% of the total issued capital of the Company. In respect of domestic shares, Huaneng International Power Development Corporation (“HIPDC”) owned a total of 5,066,662,118 shares, representing 33.33% of the total issued share capital of the Company, while Huaneng Group held 1,555,124,549 shares, representing 10.23% of the total issued share capital of the Company, and held 74,139,853 shares through its controlling subsidiary, China Huaneng Finance Corporation Limited, representing 0.49% of the total issued share capital of the Company. Other domestic shareholders held a total of 3,804,073,480 shares, representing 25.03% of the total issued share capital.

**MAJOR SHAREHOLDING STRUCTURE OF THE COMPANY**

The following table sets out the shareholdings of the top ten shareholders of the Company as at 31 December 2017:

Name of shareholder	Number of Shares held at year end	Percentage of Shareholding (%)
Huaneng International Power Development Corporation	5,066,662,118	33.33
HKSCC Nominees Limited	3,981,387,979	26.19
* China Huaneng Group Co., Ltd.	1,555,124,549	10.23
Hebei Construction & Investment Group Co., Ltd.	527,548,946	3.47
China Hua Neng Group Hong Kong Limited	472,000,000	3.11
Jiangsu Provincial Investment & Management Limited Liability Company	416,500,000	2.74
China Securities Finance Corporation Limited	413,567,472	2.72
Fujian Investment & Development Group Co., Ltd.	372,818,249	2.45
Liaoning Energy Investment (Group) Limited Liability Company	362,200,740	2.38
Dalian Construction Investment Group Co., Ltd.	301,150,000	1.98

On 29 December 2017, China Huaneng Group completed the industrial and commercial registration on company \*restructuring. Following the restructuring, the company was changed from an enterprise under collective ownership to a wholly state-owned company, and the name was changed to China Huaneng Group Co., Ltd..



**MATERIAL INTERESTS AND SHORT POSITIONS IN SHARES AND UNDERLYING SHARES OF THE COMPANY**

As at 31 December 2017, the interests or short positions of persons who were entitled to exercise or control the exercise of 5% or more of the voting power at any of the Company's general meetings (excluding the Directors, Supervisors and chief executive) in the shares and underlying shares of equity derivatives of the Company as recorded in the register required to be kept under Section 336 of the Securities and Futures Ordinance (Hong Kong Law Cap. 571) (the "SFO") were as follows:

Name of shareholder	Class of shares	Number of shares held (share)	Capacity	Approximate percentage of shareholding in the Company's total issued share capital	Approximate percentage of shareholding in the Company's total issued domestic shares	Approximate Percentage of shareholding in the Company's total issued H Shares
Huaneng International Power Development Corporation <sup>(Note 2)</sup>	Domestic shares	5,066,662,118 (L)	Beneficial owner	33.33%(L)	48.25%(L)	–
China Huaneng Group <sup>(Note 3)</sup>	Domestic shares	1,629,264,402 (L)	Beneficial owner	10.72%(L)	15.52%(L)	–
China Huaneng Group <sup>(Note 4)</sup>	H Shares	472,000,000 (L)	Beneficial owner	3.11%(L)	–	10.04%(L)
Hebei Construction & Investment Group Co., Ltd.	Domestic shares	603,000,000 (L)	Beneficial owner	3.96%(L)	5.74%(L)	–
Blackrock, Inc. <sup>(Note 5)</sup>	H Shares	374,815,065 (L)	Interest of controlled corporation	2.46%(L)	–	3.56%(L)
		28,946,000 (S)	Interest of controlled corporation	0.19%(S)	–	0.27%(S)
JPMorgan Chase & Co. <sup>(Note 6)</sup>	H Shares	75,198,672 (L)	Beneficial owner	0.49%(L)	–	0.71%(L)
		4,485,219 (S)	Beneficial owner	0.02%(S)	–	0.04%(S)
		247,304,911 (L)		1.62%(L)	–	2.35%(L)
		11,160 (L)	Investment manager	0.00007%(L)	–	0.0002%(L)
		100,609,122 (P)	Trustee Custodian	0.66%(L)	–	0.95%(L)

Note:

(1) The letter “L” denotes a long position. The letter “S” denotes a short position. The letter “P” denotes interest in a lending pool.

(2) As of the Latest Practicable Date, Huaneng Group holds 75% direct interests and 25% indirect interests in HIPDC.

(3) Of the 1,629,264,402 domestic shares, China Huaneng Group through its controlling subsidiary, Huaneng Finance, held 74,139,853 domestic shares.

(4) China Huaneng Group held 472,000,000 H shares through its wholly owned subsidiary, China Hua Neng Group Hong Kong Limited.

(5) Long position of 1,035,920 shares and short position of 5,724,000 were held through cash settled derivatives (on exchange).

Long position of 367,200 shares and short position of 268,720 shares were held through physically settled derivatives (on exchange). Short position of 1,952,000 shares was held through cash settled derivatives (on exchange). Short position of 584,499 shares were held through physically settled derivatives (off exchange). Long position of 2,138,000 shares and short position of 204,000 shares were held through cash settled derivatives (off exchange).

Save as stated above, as at 31 December 2017, in the register required to be kept under Section 336 of SFO, no other persons were recorded to hold any interests or short positions in the shares or underlying shares of the equity derivatives of the Company.

## DIRECTORS' AND SUPERVISORS' INTEREST IN CONTRACTS AND SERVICE CONTRACTS

Save for the service contracts mentioned below, as at the end of 2017, the directors and supervisors of the Company did not have any material interests in any contracts entered into by the Company.

No director and supervisor has entered into any service contract which is not terminable by the Company within one year without payment of compensation (other than statutory compensation).

Each and every Director and Supervisor of the Company had entered into a service contract with the Company for a term of three years commencing from the signing of the contract.

## REMUNERATION POLICY

The Company unceasingly improves its remuneration and distribution system and, in accordance with the overall development strategy of the Company, has formulated a set of remuneration management rules. Employees' salaries are determined by reference to the job positions they hold and calculated based on their job performance. Giving consideration to both efficiency and fairness, the Company creates a methodic and effective incentive mechanism by linking the employees' remuneration with their personal performance and the business performance of the Company as well. The remuneration of the Directors, Supervisors and senior management of the Company mainly consists of the following:

### (1) Salaries and allowances

The basic salary is mainly set by an evaluation of the job position and a factor analysis, and with reference to the salary level of the relevant position in the labor market. It accounts for about 35% of the total remuneration.

### (2) Discretionary bonus

Discretionary bonus is based on the operating results of the Company, the performance of the Directors, Supervisors and senior management. It accounts for about 50% of the total remuneration.

### (3) Payments on pension, etc.

Contributions for various pension schemes such as social insurances, corporate annuity and housing fund established by the Company for the Directors, Supervisors and senior management accounts for about 15% of the total remuneration.

According to the resolution at the general meeting, the Company pays each independent Director a subsidy amounted to RMB60,000 (after tax) each year. The Company also reimburses the independent Directors for the expenses they incur in attending board meetings and general meetings and other reasonable expenses they incur while fulfilling their obligations under the Company Law and the Company's Articles of Association (including travelling expenses and administrative expenses). Besides these, the Company does not give the independent Directors any other benefit.

#### STAFF HOUSING

The Company made allocation to the housing fund for the employees of the Company and its subsidiaries in accordance with the relevant PRC regulations.

#### STAFF WELFARE QUARTERS

According to the relevant PRC regulations, the Company has not provided welfare quarters to its staff.

#### STAFF MEDICAL INSURANCE SCHEME

According to the requirements as prescribed by the relevant local governments, the Company and its subsidiaries have joined a medical insurance scheme for its staff, and have taken measures for its implementation according to planning.

#### RETIREMENT SCHEMES

The Company and its subsidiaries have implemented a series of specified retirement contribution schemes based on the local conditions and policies of the places where the Company and its subsidiaries have operations.

Pursuant to the specified retirement contribution schemes, the Company and its subsidiaries have paid contributions according to the contracted terms and obligations set out in the publicly administered retirement insurance plans. The Company has no other obligations to pay further contributions after paying the prescribed contributions. The contributions payable from time to time will be regarded as expenses for the period and capital construction expenditure during the year they are made and accounted for as labor cost.

#### GENERAL MEETINGS

During the Reporting Period, the Company convened one annual general meeting and two extraordinary general meetings.

1. The Company's 2016 Annual General Meeting was held on 13 June 2017. The resolutions passed at the meeting were published in China Securities Journal and Shanghai Securities News on 14 June 2017.
2. The Company's 2017 First Extraordinary General Meeting was held on 24 January 2017. The resolutions passed at the meeting were published in China Securities Journal and Shanghai Securities News on 25 January 2017.
3. The Company's 2017 Second Extraordinary General Meeting was held on 16 May 2017. The resolutions passed at the meeting were published in China Securities Journal and Shanghai Securities News on 17 May 2017.

## DISCLOSURE OF MAJOR EVENTS

1. On 13 June 2017, the Company convened the Annual General Meeting, at which the resolution regarding the change of session of the Board of Directors of the Company, the resolution regarding the change of session of the Supervisory Committee of the Company were approved, and the members of the Ninth Session of the Board of Directors and the Supervisory Committee were elected at the meeting. On the same date, the Company convened the first meeting of the Ninth Session of the Board of Directors the first meeting of and the Ninth Session of the Supervisory Committee respectively at its office, at which the Chairman, Vice Chairman and Chief Members and members of the committees of the new session of the Board of Directors and the Chairman and Vice Chairman of the new session of the Supervisory Committee were elected. The new session of the Board of Directors elected Mr. Cao Peixi as the Chairman and Mr. Guo Junming as the Vice Chairman of the Ninth Session of the Board of Directors. Mr. Ye Xiangdong was elected as the Chairman and Mr. Mu Xuan was elected as the Vice Chairman of the Ninth Session of the Supervisory Committee. It was confirmed that Mr. Yue Heng and Mr. Zhang Xianzhi are the financial expertise in the Audit Committee.

2. Due to change in work, Mr. Guo Junming tendered his resignation report to the Board of Directors of the Company on 9 October 2017, requesting resignation from the positions of Vice Chairman and Director of the Company. The resignation of Mr. Guo Junming was effective and announced on that date.

3. The Company convened the 27th Meeting of the Eighth Session of the Board of Directors on 16 May 2017, at which the resignation of Mr. Du Daming as the Vice President and the Secretary to the Board of Directors of the Company (qua “company secretary” under the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited) was considered and approved, and agreed that Mr. Huang Chaoquan will take over the position as the secretary to the Board of Directors of the Company. On 22 May 2017, The Stock Exchange of Hong Kong Limited approved the appointment of Mr. Huang Chaoquan to take over the position as the secretary to the Board of Directors of the Company officially.

4. Due to change in work, Mr. Fan Xiaxia tendered his resignation report to the Board of Directors of the Company on 28 February 2018, requesting resignation from the positions of Director, Deputy General Manager, member of the Strategy Committee and the Nomination Committee of the Company. The resignation of Mr. Fan Xiaxia was effective and announced on that day.

## OTHER DISCLOSURE

An analysis of the Company’s performance using key financial performance indicators and a discussion on the principal risks and uncertainties facing by the Company are set out in the section headed “Management’s Discussion and Analysis” in this annual report. Particulars on the significant events affecting the Company during the year can be found in the section headed “Major Corporate Events in 2017” in this annual report. In addition, discussions on the Company’s environmental policies and performance, relationship with its major stakeholders, permitted indemnity provisions provided by the Company to its Directors and compliance with the relevant laws and regulations which have a significant impact on the Company are included in the sections headed “Management’s Discussion and Analysis”, “Corporate Governance Report” and “Social Responsibility Report” in this annual report. These discussions form part of this Report of the Board of Directors.

#### REQUIREMENTS UNDER THE ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORTING GUIDE

In 2017, in order to fully implement the requirements under the Environmental, Social and Governance Reporting Guide of the Hong Kong Stock Exchange, the Company made considerable organization and reasonable arrangement with much attention paid thereto, which in turn enabled the Company to complete preparation and disclosure of the Environmental, Social and Governance Report in due time and accordingly improved its corporate image in capital market. The ESG Report of the Company for 2017 will be published on the websites of the Company and the Hong Kong Stock Exchange, respectively.

#### CODE OF CORPORATE GOVERNANCE PRACTICES

During the year, save as otherwise disclosed below, the Company has complied with the Corporate Governance Code as set out in Appendix 14 of the Listing Rules. The annual report of the Company will contain a corporate governance report prepared in accordance with the requirements under the Listing Rules.

#### DESIGNATED DEPOSIT

As at 31 December 2017, the Company and its subsidiaries did not have any designated deposit with any financial institutions within the PRC nor any overdue fixed deposit which could not be recovered.

#### DONATION

During the year, the Company made a donation of RMB10.0018 million.

#### LEGAL PROCEEDINGS

As at 31 December 2017, the Company and its subsidiaries were not involved in any material litigation or arbitration and no material litigation or claim was pending or threatened or made against the Company and its subsidiaries.

#### CHANGES OF INFORMATION OF DIRECTORS AND SUPERVISORS DURING THE REPORTING PERIOD

During the reporting period, as the term of the Eighth Session of the Board of Directors of the Company expired, Mr. Li Shiqi, Mr. Zhu Yousheng and Ms. Li Song ceased to act as the Directors of the Company due to work arrangement. Mr. Li Zhensheng, Mr. Geng Jianxin and Mr. Xia Qing ceased to act as the Independent Non-executive Directors of the Company due to work arrangement. For the sake of not affecting the corporate governance structure, the Board of Directors of the Company held the election of the new session of the Board timely. Mr. Wang Yongxiang, Mr. Cheng Heng and Mr. Lin Chong were appointed as Directors of the Company effective on 13 June 2017. Mr. Liu Jizhen, Mr. Xu Haifeng and Mr. Zhang Xianzhi were appointed as Independent Non-executive Directors of the Company effective on 13 June 2017.

2. Due to work arrangement, Mr. Guo Junming resigned from the position of Vice Chairman of the Board of Directors of the Company on 9 October 2017.

3. Due to work arrangement, Mr. Fan Xiaxia resigned from the positions of Director, Deputy General Manager, member of the Strategy Committee and the Nomination Committee of the Company on 28 February 2018.

#### ANNUAL GENERAL MEETING AND CLOSURE OF REGISTER

The Company will convene the 2017 annual general meeting at 9:00 a.m. on 3 May 2018 at Conference Room A102, the headquarters of the Company, Huaneng Building, 6 Fuxingmennei Street, Xicheng District, Beijing, the People's Republic of China. The record date(s) and the period(s) for closure of register for determining eligibility to attend and vote at the 2017 annual general meeting and for determining the entitlement to the final dividend will be set out in the notice of the 2017 annual general meeting to be published on 14 March 2018.

#### AUDITORS

As approved at the 2016 Annual General Meeting of the Company, KPMG and KPMG Huazhen LLP were appointed as the Company's international and PRC auditors respectively for the year 2017. As proposed by the Audit Committee of the Company, the Board has resolved to continue to appoint KPMG Huazhen LLP as the Company's domestic and U.S. 20F Annual Report auditor for 2018, and appoint KPMG as the Company's Hong Kong auditor for 2018. Such proposal is subject to the approval by the Shareholders at the 2017 annual general meeting.

By Order of the Board  
Cao Peixi  
Chairman

Beijing, the PRC  
13 March 2018

REPORT OF THE SUPERVISORY COMMITTEE  
TO ALL SHAREHOLDERS:

In 2017, the Supervisory Committee of the Company (the “Supervisory Committee”) fully performed the functions of supervision by effectively safeguarding the interests of the Company and shareholders’ rights in strict accordance with the Company Law, the Securities Law, the Articles of Association of the Company and other relevant laws and regulations. All members of the Supervisory Committee presented at Board meetings and attended general meetings, acted honestly and in good faith, and diligently fulfil their duties and responsibilities conferred by laws and regulations in strict compliance with laws applicable to the places where the Company is listed as well as the Articles of Association of the Company. We hereby report the major work during the reporting period as follows:

I. OVERALL EVALUATION ON THE COMPANY’S MANAGEMENT BEHAVIOUR AND PERFORMANCE IN 2017

The successful holding of the 19th Session of the National Congress of CPC in 2017 signified the entrance of the socialism with Chinese characteristics into a new era, with fundamental changes in major social contradictions, constant optimisation of economic structure, sustaining improvement in industrial policies, gradual strengthening of the driving force and guidance of innovation, and substantial improvement in the quality and effectiveness of economic development. Since the beginning of this year, the domestic power market reform has been deepened and the pilot implementation of diversified market entities and power market trading system fully rolled out. However, under the influence of factors such as the change in the model of economic growth and high fuel cost in the market, the operation of the power industry remained severe and the operating results of power generation enterprises general by declined sharply, hence structural adjustment is urgently required. In face of the complicated and ever changing market environment, the Directors made rapid adjustment to strategies. The management team adhered to the principle of problem-oriented, bottom line thinking and leading standards, and all staff across the Company worked diligently together, focusing and working strenuously on major problems including enhancing efficiency, controlling assets, supplementing equities and lowering debts. Through various means such as strengthening market development, lowering cost and increasing efficiency, reversing and reducing loss, carrying out capital operation, implementing structural adjustment and deepening enterprise reform, we accomplished the four major performance targets for the year to a good extent and continued to lead in operating results.

During the reporting period, the Board operated in an effective and compliant manner, carefully executed resolutions of the general meetings with earnest performance, without any behavior which may harm the interests of the Company and its shareholders. The approval procedure for any board resolution is in compliance with applicable laws and regulations such as the Company Law and the Articles of Association, and the subject matter involved in the resolutions is proposed for the requirements of management and development. The operating team has carefully implemented each board resolution and conducted transactions based on its various systems. There is no behavior breaking relevant provisions. The Company’s corporate governance was highly recognized by the stock market and regulatory authorities.



## II. PARTICULARS OF WORK PERFORMED BY THE SUPERVISORY COMMITTEE DURING THE REPORTING PERIOD

### 1. Particulars on convention of the meetings of the Supervisory Committee

During the reporting period, in accordance with the applicable laws and regulations, the Articles of Association of the Company and the practical needs of the Company's development, the Supervisory Committee of the Company convened five meetings during the year, of which two were held on-site and three via communication conference. At the meetings, the Supervisory Committee reviewed and examined 15 issues in 2017 including election of the new session, working report of the Supervisory Committee, financial reports, regular reports, profit distribution plans, the proposal on provision for impairment of the Company's major assets, annual assessment reports on internal control by the Board and social responsibility reports, thereby effectively performing the duties of supervision and examination. These meetings were convened in strict compliance with the relevant requirements of the Company Law and the Articles of Association of the Company. Agenda and resolutions of these meetings have been disclosed and announced timely in accordance with relevant provisions regarding information disclosure.

### 2. Training for the members of the Supervisory Committee

All the Supervisors of the Company place great emphasis on study of the relevant knowledge, so as to get an understanding of the most updated development of the laws and regulations and relevant policies of the place where the Company is listed in a timely basis. The Supervisors proactively attended the special trainings and follow-up trainings for directors and supervisors organized by the SSE and the relevant regulators. In 2017, the Supervisors of the Company have attended a total of two of the aforesaid trainings, and further enhanced their capability to perform their duty and improve their practice through study. All Supervisors have acted with integrity, self-discipline and dedication, making positive contribution to the constant improvement of our corporate governance.

## III. PARTICULARS OF DISCHARGING DUTIES OF SUPERVISION AND ISSUING INDEPENDENT OPINIONS

### 1. Legality of the Company's operations

During the reporting period, through various approaches including presenting at Board meetings, attending general meetings, the Chairman office meetings and the President office meetings and keeping itself abreast of the particulars of the Company's production and operations on site and in real time, the Supervisory Committee performed effective supervision and examination on the procedures for convening general meetings and board meetings and the resolutions thereof, the implementation of resolutions of general meetings by the Board, the performance of duties by Directors and the senior management of the Company and the implementation of internal control system of the Company, and expressed its opinions and views timely according to relevant laws and regulation of the State.

The Supervisory Committee is of the view that Company strictly complied with the Articles of Association of the Company and applicable laws of the jurisdictions in which the Company's shares are listed. The Supervisory Committee has not identified any breach of relevant laws and regulations in the performance of decision-making procedures by the Company. Directors and senior management of the Company have performed duties dutifully, diligently and earnestly and carefully implemented resolutions of the general meeting and Directors. The Supervisory Committee has not identified any breach of laws, regulations and the Articles of Association of the Company or any issue that has caused damages to the interests of the Company in the performance of duties by the aforesaid persons.

### 2. Examining the financial information and regular reports of the Company

The Supervisory Committee has reviewed all the regular financial reports in regular meetings in 2017, and carefully audited the final financial reports of the Company for 2017, the profit distribution plan of the Company for 2017, the annual report of the Company for 2017 and the auditor's reports for 2017 issued by the domestic and international auditors respectively at the annual meeting held on 13 March 2018.

The Supervisory Committee is of the view that the preparation and consideration procedures of the regular reports have complied with the requirements of relevant laws and regulations including the Company Law, the Securities Law and the Articles of Association of the Company. The content of the reports have truly, accurately and completely reflected the financial position and operating results of the Company for 2017. The domestic and international auditors of the Company have issued their audit report for the Company for 2017 which is unqualified and stated that there are no false statement, misleading representation or material omission.

### 3. Examining the use of funds raised by the Company

In 2017, the Supervisory Committee attached great importance to the implementation process and results of the Board's resolution regarding the fund-raising activities, and attended the meeting to review the Board's resolution regarding the relevant fund-raising activities. During the reporting period, as approved and authorised by the general meeting, the Company completed the issuance of perpetual corporate bonds of RMB5 billion on 25 September 2017 and the issuance of corporate bonds of RMB2.3 billion on 6 November 2017. The issuances effectively satisfied the capital requirement of the Company for production and operation of the year.

The Supervisory Committee is of the view that the Company has strictly complied with relevant regulations applicable to the places where the Company is listed, relevant requirements as prescribed by the "Management Rules on Fund Raising by Companies Listed in the Shanghai Stock Exchange" and the "Management Rules on Fund Raising by Huaneng Power International, Inc." for the application of funds raised. The actual use of funds has been in accordance with the commitment and there has been no change to the project funds.

4. Checking on particulars of major acquisitions, disposal of assets and connected transactions

During the reporting period, the Supervisory Committee considered and passed five proposals regarding major acquisition, disposal of assets and connected transactions, namely the “Proposal relating to the Transfer of Equity Interests in Huaneng Taishan Power Generation Limited by Huaneng Shandong Power Generation Limited, the Proposal relating to Daily Connected Transactions with Hebei Hanfeng in 2018, the Proposal relating to Daily Connected Transactions with Huaneng Group in 2018, the Proposal relating to Capital Increase to Hainan Nuclear and the Proposal relating to the Acceptance of the Guaranteed Loans for Working Capital relating to Sahiwal Project in Pakistan by Shandong Company”.

The Supervisory Committee is of the view that the Company implemented a strict system and decision-making process to carry out work involved in the aforesaid proposals, which ensured the fairness and reasonableness of the acquisition and disposal of the Company’s assets and the considerations paid for relevant connected transactions. No violation in the approval procedures and disclosure obligation related to material operation event, significant unfair in pricing of transactions, major decision not in line with the requirement of the Company’s business development or any damages to the interests of the Company and minority shareholders was identified.

5. Checking on particulars of the Company’s information disclosure

During the reporting period, the Supervisory Committee carefully examined the procedures for and the contents of information disclosure made by the Company by attending the Chairman office meetings, the President office meetings and other daily operation and management meetings. The Supervisory Committee placed great emphasis on and presented the annual meetings of the Board for 2017 and 2018 and supervised the review process related to the annual reports of the Company. In addition, the Supervisory Committee convened meetings at which its members reviewed the Company’s annual reports and listened to the reports on work related to information disclosure.

The Supervisory Committee is of the view that the Company’s control over, and procedures on, the information disclosure was complete and effective. The procedures of information disclosure strictly complied with the “Administrative Measures for Information Disclosure” and the “Measures on Investor Relations Management”, and met the regulatory requirements of the Company’s listing places.

6. Reviewing the Board’s self-assessment report on internal control

The Supervisory Committee attended the Board meetings in 2017 and 2018 to conscientiously listen to relevant reports on the Company’s internal control, convened supervisor meetings to review the Board’s assessment report on internal control and carried out detailed and comprehensive review of the establishment and operation of internal control of the Company during the reporting period.

The Supervisory Committee is of the view that, the Company has established a sound internal control system according to its own situation and the requirement of laws and regulations, and the system has been effectively implemented. The internal control system is in accordance with relevant requirement of laws and regulations of the State and the actual needs of the Company, and has played a good role in risk prevention and control for the operation and management of the Company. The 2017 assessment report on internal control of the Company truly and objectively reflected the establishment and operation of the Company's internal control.

In 2018, the Supervisory Committee will further implement the principle of steady progress of development and step up efforts to improve its own performance, and faithfully and diligently discharge their duties. Focusing on the objectives of "developing into a global leading listed power generation company, implementing corporate governance by rules, reform and innovation and strengthening party discipline", it will effectively safeguard and protect the legitimate interests of the Company and its shareholders, provide necessary assistance to general meetings and Board meetings and help to standardize and improve the Company's corporate governance, so as to ensure a more steady growth of the Company's operating results and further enhancement of the Company's strength.

Supervisory Committee  
Huaneng Power International Inc

Beijing, the PRC  
13 March 2018

PROFILES OF DIRECTORS,  
SUPERVISORS & SENIOR MANAGEMENT

CAO Peixi, aged 62, is the Chairman of the Company and Huaneng Group. He graduated from Shandong University, majoring in electrical engineering. He is a postgraduate with master's degree in engineering awarded by the Party School of the Central Committee, and is a researcher-grade senior engineer.

LIU Guoyue, aged 54, is a Director and the President of the Company, the Vice President of Huaneng Group, an Executive Director of Huaneng International Power Fuel Limited Liability Company, the Chairman of Shanghai Times Shipping Limited Company, a Director of SinoSing Power Pte. Ltd., and the Chairman of Tuas Power Ltd., Tuas Power Supply Pte Ltd., Tuas Power Utilities Pte Ltd., Huaneng Shidaowan Nuclear Power Co., Ltd. and Huaneng Shangdong Shidaowan Nuclear Power Co., Ltd.. He graduated from North China Electric Power University, majoring in thermal engineering. He holds a Doctor's degree in engineering. He is a senior engineer.

HUANG Jian, aged 55, is a Director of the Company, an assistant to the President of Huaneng Group, a Director of Huaneng Capital Services Co., Ltd. and the Chairman of the Supervisory Committee of Huaneng Renewables Corporation Limited. Mr. Huang graduated from the Department of Accounting of Institute of Fiscal Science of the Ministry of Finance with a postgraduate degree of master in economics. He is a senior accountant.

WANG Yongxiang, aged 52, is a Director of the Company, the chairman of HIPDC, the Chief of Power Development Business Division and the Shale Gas Exploitation and Utilization Office, and the president of GreenGen Co., Ltd.. He graduated from Tsinghua University where he majored in hydraulic engineering and holds a postgraduate degree of master in engineering.

MI Dabin, aged 49, is a Director of the Company, the Vice President of Hebei Construction & Investment Group Co., Ltd., the Chairman of Hebei Xingtai Power Generation Limited ( ) and the Vice President of Hebei Xingtai Power Generation Co., Ltd.. He was the Chief Engineer, Vice President and President of Qinhuangdao Power Generation Co., Ltd., the Chairman of Qinhuangdao Thermal Power Generation Co., Ltd., an assistant to the President and the Head of Production and Operation Department of Hebei Xingtai Power Generation Group Co., Ltd., the President of Qinhuangdao Power Generation Co., Ltd. and Qinhuangdao Thermal Power Generation Co., Ltd. He graduated from China Electric Power University, majoring in power engineering, and holds a master's degree. He is a senior engineer.

GUO Hongbo, aged 49, is a Director of the Company, the Chairman of Liaoning Energy Investment (Group) Limited Liability Company, the Chairman of Shenyang Jinshan Energy Limited ( ), and the vice chairman of Liaoning Industrial Equity Investment Fund Limited ( ). He was the president and vice chairman of Liaoning Energy Investment (Group) Limited Liability Company. Mr. Guo graduated from Liaoning University, majoring in administrative management, and holds a master's degree in administrative management, and holds an MBA degree. He is a researcher-grade senior engineer.

CHENG Heng, aged 54, is a Director of the Company, the vice president of Jiangsu Provincial Investment Management Co., Ltd., the Chairman of Jiangsu Power Generation Co., Ltd., Jiangsu Yushan Power Generation Co., Ltd. and Jiangsu Huadian Qishuyan Thermal Power Co., Ltd., deputy manager of the Planning Department of Jiangsu International Trust and Investment Corporation, Vice President of China International Trust and Investment Corporation and general manager of Energy Investment Division 2 of Jiangsu Provincial Investment Management Co., Ltd.. He is a university graduate, an economist.

LIN Chong, aged 54, is a Director of the Company, the Vice President of Fujian Investment & Development Group Co., Ltd., the Chairman of Fujian Offshore Wind Power Co., Ltd., the Vice Chairman of Fujian Sanming Nuclear Power Co., Ltd., the Vice Chairman of China Sanming Nuclear Power Co., Ltd., the director of Fujian Motor Industry Group Co., Ltd., the director of Fujian Fuqing Nuclear Power Co., Ltd. and the director of Fujian Fuqing Nuclear Power Co., Ltd. He has formerly served as the assistant to the general manager of Fujian Investment & Development Group Co., Ltd., the Director of Fujian Fuzhou Baiyun Pumped Storage Hydropower Station, and the Chairman of Fujian Zhongmin Energy Investment Co., Ltd. He graduated from Fujian University where he majored in electric power system and its automation and holds a master's degree of science in engineering. He is a senior engineer.

YUE Heng, aged 43, is an Independent Director of the Company, an Associate Professor of Singapore Management University. He is the winner of the first session of China National Funds for Distinguished Young Scientists, the winner of New Century Excellent Talents of the Ministry of Education 2012, the leading accounting talent of Ministry of Finance, the Councilor of Accounting Society of China and the Deputy Editor-in-Chief of CJAS magazine of Accounting Society of China. He was the Associate Professor, Professor, Dean and Doctorate Mentor of Accounting Department of Guanghua Management School of Peking University. He graduated from Tulane University in the United States with a doctor's degree in accounting.

XU Mengzhou, aged 67, is an Independent Director of the Company, a professor of Renmin University of China (RUC), an Independent Director of Shandong Hualu-Hengsheng Chemical Co., Ltd. (600221) and ENN Ecological Holdings Co. Ltd., (600221). He served as a professor of RUC Law School and School of International Studies of Renmin University of China. He graduated from the RUC, with a doctor's degree in Economic Laws.

LIU Jizhen, aged 66, is an Independent Director of the Company, a Director of the National Key Laboratory of New Energy Power System of North China Electric Power University, a chief scientist of the 973 Program, the Vice President of the China Electricity Council, the Vice President of the Chinese Society for Electrical Engineering, the Vice President of the Chinese Society of Power Engineering, a fellow of the Institution of Engineering and Technology (FIET) and an independent director of Datang International Power Generation Co., Ltd. Mr. Liu was formerly the President of Wuhan University of Hydraulic and Electrical Engineering and the President of North China Electric Power University. He graduated from Huazhong University of Science and Technology in Higher Education. He is a professor, a doctoral supervisor and an academician of the Chinese Academy of Engineering.

XU Haifeng, aged 62, is an Independent Director of the Company. He successively served as the Chairman and President of China Railway Express Co., Ltd., the director and Vice President of Beijing-Shanghai High Speed Railway Co., Ltd., the Managing Commander-in-Chief of the General Headquarters for the Construction of Beijing-Shanghai High Speed Railway of the Ministry of Railways, and the Vice Chairman and President of Beijing-Shanghai High Speed Railway Co., Ltd. He graduated from Beijing Jiaotong University where he majored in transportation organization and automation. He has an EMBA degree from the Guanghua School of Management of Peking University.

ZHANG Xianzhi, aged 60, is an Independent Director of the Company, a professor and a doctoral supervisor of Dongbei University of Finance and Economics. He is serving concurrently as independent director at CGN Nuclear Technology Development Co., Ltd., Dalian Zhiyun Automation Co., Ltd., Yingkou Port Liability Co., Ltd. and Dalian Tianbao Green Foods Co., Ltd.. Mr. Zhang was formerly an accountant of Dalian City Transportation Bureau, a researcher of Dalian Economic Commission, professor and vice dean of the accounting school of Dongbei University of Finance and Economics, and director of Sino-German Management and Control Research Centre, etc.. He graduated from Dongbei University of Finance and Economics with a major in industrial economics and holds a doctorate degree.

#### Supervisors

YE Xiangdong, aged 50, is the Chairman of the Supervisory Committee of the Company, the Vice President of Huaneng Group, a Director of HIPDC, the Executive Director of Huaneng Coal Mining Corporation Company and the Chairman of Xi'an Thermal Power Research Institute Co., Ltd. He was the Executive Director and President of Huaneng Hulunbeier Energy Development Company Ltd. and the Chief Engineer of Huaneng Group. He graduated from Chongqing University, majoring in thermal energy, and holds a master's degree in Engineering. He is a senior engineer.

MU Xuan, aged 42, is the Vice Chairman of the Supervisory Committee of the Company, the Vice President of Dalian Construction Investment Group Co., Ltd., the Director and President of Dalian LNG Pipeline Co., Ltd.. He was the assistant to the President of Dalian Construction Investment Co., Ltd. and the assistant to the President of Dalian Construction Investment Group Co., Ltd.. He graduated from Dongbei University of Finance and Economics, majoring in Technical Economy and Management. He is a master degree postgraduate and a registered accountant.

ZHANG Mengjiao, aged 53, is a Supervisor of the Company and the Manager of the Finance Department of HIPDC. She was the Deputy Manager of the Finance Department of the Company. She graduated from Xiamen University, majoring in accounting. She is a master's degree postgraduate in economics and is a senior accountant.



GU Jianguo, aged 51, is a Supervisor of the Company, the Chairman of Nantong Investment & Management Limited Company and the Vice President of Nantong State Owned Assets Investment Holdings Co., Ltd.. He was the Chief of Nantong Investment Management Centre, Director and President of Nantong Investment & Management Limited Company. He graduated from Shanghai Jiao Tong University with a master's degree. He is an economist.

ZHANG Xiaojun, aged 51, is a Supervisor and the Vice Chairman of Labour Union of the Company. She was Deputy Manager of the Administration Department of the Company. She graduated from the Central Party School of the Communist Party of China, majoring in economic management, and holds a bachelor's degree. She is an accountant.

ZHU Daqing, aged 45, is a Supervisor and the Manager of Auditing Department of the Company. He was Deputy Manager of Finance Department of the Company. He graduated from the Central University of Finance and Economics, and holds a master's degree in finance & accounting, and a bachelor's degree in management. He is a senior accountant.

#### Biographies of Senior Management

LIU Guoyue, aged 54, is a Director and the President of the Company, the Vice President of Huaneng Group, an Executive Director of Huaneng International Power Fuel Limited Liability Company, the Chairman of Shanghai Times Shipping Limited Company, a Director of SinoSing Power Pte. Ltd., and the Chairman of Tuas Power Ltd., Tuas Power Supply Pte Ltd., Tuas Power Utilities Pte Ltd., Huaneng Shidaowan Nuclear Power Co., Ltd. and Huaneng Shangdong Shidaowan Nuclear Power Co., Ltd.. He graduated from North China Electric Power University, majoring in thermal engineering. He holds a Doctor's degree in engineering. He is a senior engineer.

ZHAO Ping, aged 55, is the Vice President of the Company. He was the Chief Engineer of the Company. He graduated from Tsinghua University, majoring in thermal engineering, is a postgraduate with a master's degree in science. He is a researcher-grade senior engineer.

ZHOU Hui, aged 54, is the Vice President of the Company. She was the Vice President and Chief Accountant of the Company. She graduated from Renmin University of China, majoring in Financial Accounting, and is a postgraduate with a master's degree in Economics. She is a senior accountant.

WU Senrong, aged 56, is currently a Party member and the Secretary of the Discipline Inspection commission of the Company. He was the Vice President of the Company. He graduated from the Economic Management School of Tsinghua University with an EMBA degree. He is a researcher-grade senior engineer.

SONG Zhiyi, aged 57, is the Vice President of the Company. He was the Head of Construction Department of Huaneng Group. He graduated from the Guanghua Management Institute of Peking University, with an MBA degree. He is a senior engineer.

LI Jianmin, aged 56, is the Vice President of the Company. He was the Deputy Chief Economist of the Company. He graduated from North China Electricity College, majoring in power plant and electricity system, with a bachelor's degree in science. He is a researcher grade senior engineer.

LIU Ranxing, aged 55, is the Vice President of the Company. He was the President of Huaneng Energy & Communications Holdings Co., Ltd. He graduated from Harbin Institute of Technology, majoring in management engineering, with a master's degree in science. He is a researcher-grade senior engineer.

HUANG Lixin, aged 51, is currently the Chief accountant of the Company. He was the Manager of the Finance Department of the Company, and the Head of the Finance Department of Huaneng Group. He graduated from the Economic Management School of Tsinghua University with an EMBA degree. He is a senior accountant.

HE Yong, aged 59, is the Chief Engineer of the Company. He was the Deputy Chief Engineer of the Company. He graduated from Wuhan University, majoring in corporate management, is a postgraduate with a master's degree in management. He is a researcher-grade senior engineer.

HUANG Chaoquan, aged 52, is currently the Secretary to the Board and Manager of the Corporate Management Department of the Company. He graduated from Harbin University of Science and Technology with a postgraduate degree in Management Engineering. He is a senior economist.

#### RESIGNED DIRECTORS, SENIOR MANAGEMENT

GUO Junming, aged 52, was the Vice Chairman of the Company, the Chief Accountant of Huaneng Group and a Director of HIPDC during the reporting period. He was the Chief Accountant of Huaneng Group and the Chairman of the Supervisory Committee of the Company. He graduated from Shanxi University of Finance and Economics with a degree in Business, Finance and Accounting. He is a senior accountant. Mr. Guo Junming ceased to be the Vice Chairman of the Company on 9 October 2017.

FAN Xiaxia, aged 55, was a Director and the Vice President of the Company, and also Vice President of Huaneng Group during the reporting period. He graduated from the Economic Management School of Tsinghua University with an EMBA degree. He is a senior engineer. Mr. Fan Xiaxia ceased to be the Director and Vice President of the Company on 28 February 2018.

LI Shiqi, aged 61, was a Director of the Company, director and president of HIPDC and the head of the power development division of Huaneng Group. He previously served as the chairman of Huaneng Carbon Asset Management Co., Ltd.. He graduated from Renmin University of China, majoring in finance. He was a college graduate. He was a senior accountant. He ceased to be the Director of the Company on 13 June 2017.

ZHU Yousheng, aged 52, was a Director of the Company and the general manager of the Energy Department of Jiangsu Guoxin Asset Management Group Co., Ltd. during the reporting period. He previously served as the project manager of Jiangsu Province Investment Management Limited Liability Company, deputy general manager of Xutang Power Limited Liability Company, deputy general manager and general manager of safety production department of Jiangsu Provincial Investment Management Co., Ltd., deputy general manager of Jiangsu Province Investment Management Limited Liability Company and general manager of Jiangsu Guoxin Yangzhou Power Generation Co., Ltd.. He graduated from Nanjing University of Aeronautics and Astronautics with a master's degree in power engineering. He was a senior engineer at the researcher level. He ceased to be the Director of the Company on June 13, 2017.

LI Song, aged 60, was a Director of the Company, Vice President of Fujian Provincial Investment and Development Group Co., Ltd., vice chairman of CNOOC Fujian Natural Gas Co., Ltd., vice chairman of CNOOC Fujian Gas Power Generation Co., Ltd., deputy director of CNOOC Fujian Zhangzhou Natural Gas Co., Ltd. Long, vice chairman of Fujian Zhonghai Emergency Maintenance Co., Ltd. during the reporting period. She graduated from the Xiamen Jimei Finance and Commerce College majoring in finance, Open College of Party School of the Central Committee majoring in economic management, and holds a bachelor's degree from Party School of the Central Committee. She was an accountant. She ceased to be the Director of the Company on 13 June 2017.

LI Zhensheng, aged 73, was an Independent Director of the Company and Qingdao Tellus Electric Co., Ltd. during the reporting period. He previously served as the Head of Shanxi Electric Power and Industrial Bureau, the Chief of Rural Power Department of State Power Corporation, the Chief Economist and Consultant of State Grid Corporation. Mr. Li graduated from Hebei University of Technology with a bachelor's degree. He is also a professor-grade senior engineer. He ceased to be the Independent Director of the Company on 13 June 2017.

GENG Jianxin, aged 62, was an Independent Director of the Company, a Professor and Doctorate Mentor of Renmin University of China, an Independent Director of Shenzhen Qixin Construction Co., Ltd. (28145;22323;22855;20449;24314;35373;32929;20221; \*) and Triangle Tyre Co., Ltd. (19977;35282;36650;32974;32929;20221; \*) during the reporting period. He previously served as an assistant accountant of the Geophysical Exploration Company of the Ministry of Metallurgical Industry and associate professor of Hebei University of Economics and Business. He graduated from the Renmin University of China specializing in accounting and holds a doctor's degree. He ceased to be the Independent Director of the Company on 13 June 2017.

XIA Qing, aged 60, was an Independent Director of the Company, a professor and chairman of the Academic Degrees Committee of the Electrical Engineering Department of Tsinghua University, an Independent Director of Tellhow Sci-Tech Co. Ltd., and the Independent Director of Shanghai Zhixin Electricity and Gas Limited (19978;28023;32622;20449; 27683;32929;20221; \*) during the reporting period. He was an Independent Director of Datang International Power Generation Co., Ltd. and Yunnan Wenshan Electric Power Co., Ltd. He graduated from Tsinghua University specializing in electric power system and automation and holds a doctor's degree. He ceased to be the Independent Director of the Company on 13 June 2017.

GU Biquan, aged 60, was the Vice President and General Counsel of the Company during the reporting period. He was the Vice President and Secretary to the Board of the Company. He graduated from Beijing Radio and Television University, majoring in Electronics, and is a college graduate. He is an engineer. Due to age reason, Mr. Gu Biquan retired from the positions of Vice President and General Counsel of the Company on 31 August 2017.

DU Daming, aged 51, was the Vice President and the Secretary to the Board of the Company during the reporting period. He was the Vice President and General Counsel of the Company. He graduated from North China Electric Power University, majoring in electric system and automation, is a postgraduate with a master's degree in science. He is a senior engineer. Mr. Du Daming ceased to be the Vice President and Secretary to the Board on 9 March 2017 and 22 May 2017, respectively.

CORPORATE INFORMATION

Legal Address of the Company Huaneng Building  
6 Fuxingmennei Street  
Xicheng District  
Beijing  
The People's Republic of China

Company Secretary Huang Chaoquan  
Huaneng Building  
6 Fuxingmennei Street  
Xicheng District  
Beijing  
The People's Republic of China

Authorized Representatives Liu Guoyue  
Huang Chaoquan

Hong Kong Share Registrar Hong Kong Registrars Limited  
Shops 1712-1716  
17th Floor, Hopewell Centre  
183 Queen's Road East  
Hong Kong

Depository The Bank of New York  
Investor Relations  
P.O. Box 11258  
Church Street Station  
New York  
NY 10286-1258 USA

LEGAL ADVISERS TO THE COMPANY

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15 Queen's Road Central  
Central  
Hong Kong

As to PRC law Haiwen & Partners  
20th Floor, Fortune Finance Center  
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As to US law Skadden, Arps, Slate, Meagher & Flom  
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The Landmark  
15 Queen's Road Central  
Central

Hong Kong

109

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AUDITORS OF THE COMPANY

Annual Report Auditors KPMG Huazhen LLP  
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1 East Chang An Avenue,  
Beijing, PRC  
Postcode: 100738

KPMG  
8/F Prince's Building  
10 Charter Road  
Central, Hong Kong

LISTING INFORMATION

H Shares: The Stock Exchange of Hong Kong Limited  
Stock Code: 902

ADSs: The New York Stock Exchange, Inc.  
Ticker Symbol: HNP

A Shares: Shanghai Stock Exchange  
Stock Code: 600011

PUBLICATIONS

The Company's interim reports and annual reports (A share version and H share version) was published in August 2017 and April 2018, respectively. As required by the United States securities laws, the Company will file an annual report in Form 20-F with the Securities and Exchange Commission of the U.S. before 30 April 2018. As the Company's A shares have already been issued and listed, the Company shall, in compliance of the relevant regulations of the China Securities Regulatory Commission and the Shanghai Stock Exchange, prepare quarterly reports. Copies of the interim and annual reports as well as the Form 20-F, once filed, will be available at:

Beijing Huaneng Power International, Inc.  
Huaneng Building  
6 Fuxingmennei Street  
Xicheng District  
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Tel: (8610)-6322 6999  
Fax: (8610)-6322 6888  
Website: <http://www.hpi.com.cn>

Hong Kong Wonderful Sky Financial Group Limited  
9/F, The Center,  
99 Queen's Road Central,  
Hong Kong

Tel: (852) 2851 1038  
Fax: (852) 2815 1352



## GLOSSARY

Equivalent Availability Factor (EAF): Percentage on duration of usable hours on generating units in period hour, i.e.

$$\text{EAF} = \frac{\text{Available Hours (AH)} - \text{Equivalent Unit Derated Hours}}{\text{Period Hour (PH)}} \times 100\%$$

Gross Capacity Factor (GCF):

$$\text{GCF} = \frac{\text{Gross Actual Generation (GAAG)}}{\text{Period Hour (PH)} \times \text{Gross Maximum Capacity (GMC)}} \times 100\%$$

Weighted Average Coal Consumption Rate for Power Sold: The standard of measurement on average consumption of coal for the production of every one kWh of electricity from a coal-fired generating unit. Unit: gram/kWh or g/kWh.

Weighted Average Coal Consumption Rate for Power Generated: The standard of measurement on average consumption of coal for the generation of every one kWh of electricity from a coal-fired generating unit. Unit: gram/kWh or g/kWh.

Weighted Average House Consumption: The rate of electricity consumption during power production versus power generating unit: %.

Utilization Hour: The operation hour coefficient converted from actual gross power generation of generating units to maximum gross capacity (or fixed capacity).

Capacity Rate: Ratio between average capacity and maximum capacity which indicates the difference in capacity. The larger the ratio, the more balanced the power production, and the higher the utilization of facilities.

Power Generation: Electricity generated by power plants (generating units) during the Reporting Period, or "power generation". It refers to the consumed generated electricity produced by generating units with power energy being processed and transferred, or the product of actual consumed electricity generated by generating units and actual operation hours of generating units.

Electricity Sold: Electricity for consumption or production sold by power producers to customers or power-producing counterparts.

GW: Unit of power generation, =  $10^9$ W, gigawatt

MW: =  $10^6$ W, megawatt

kW: =  $10^3$ W, kilowatt

kWh: Unit of power, kilowatt hour

## INDEPENDENT AUDITOR'S REPORT

To the shareholders of Huaneng Power International, Inc.  
(Incorporated in the People's Republic of China with limited liability)

### OPINION

We have audited the consolidated financial statements of Huaneng Power International, Inc. (the "Company") and its subsidiaries (the "Group") set out on pages 120 to 269, which comprise the consolidated statement of financial position as at 31 December 2017, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the year then ended and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the consolidated financial statements give a true and fair view of the consolidated financial position of the Group as at 31 December 2017 and of its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards ("IFRSs") issued by the International Accounting Standards Board ("IASB") and have been properly prepared in compliance with the disclosure requirements of the Hong Kong Companies Ordinance.

### BASIS FOR OPINION

We conducted our audit in accordance with International Standards on Auditing ("ISAs"). Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the consolidated financial statements section of our report. We are independent of the Group in accordance with International Ethics Standards Board for Accountants Code of Ethics for Professional Accountants ("the IESBA Code") together with the ethical requirements that are relevant to our audit of the consolidated financial statements in the People's Republic of China and we have fulfilled our other ethical responsibilities in accordance with these requirements and the IESBA Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### KEY AUDIT MATTERS

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

KEY AUDIT MATTERS (Cont'd)

Impairment of non-current assets

Refer to notes 7, 11, 12, 13, 15 and 16 to the consolidated financial statements and the accounting policies in note 2(k).

The key audit matter

As at 31 December 2017, the Group's non-current assets principally comprised property, plant and equipment, goodwill, power generation licenses, land use rights and mining rights.

Impairment losses for non-current assets for the year ended 31 December 2017 are significant in the context of the Group's consolidated financial statements.

Management assessed whether there was any impairment of the carrying values of goodwill, power generation licenses with indefinite useful lives and other non-current assets as at 31 December 2017 using value-in-use ("VIU") calculations for each smallest identifiable group of assets that generate independent cash flows (a cash-generating unit). Preparing the VIU calculations requires management to exercise significant judgement, particularly in relation to estimating future sales volumes and the related revenue growth rates, future on-grid tariffs, future capital expenditure and future fuel prices as well as in the estimation of the discount rates applied.

We identified impairment of non-current assets as a key audit matter because the carrying values of these assets are material to the consolidated financial statements and also because of the significant management judgement and estimation required in assessing potential impairment which could be subject to error or potential management bias.

How the matter was addressed in our audit

Our audit procedures to assess potential impairment of non-current assets included the following:

- assessing management's identification of cash-generating units ("CGUs") and the allocation of assets to each CGU with reference to our understanding of the Group's business and the requirements of the prevailing accounting standards;
- assessing management's VIU calculation for each CGU by comparing the assumptions adopted by management with our understanding of the Group's business and the industry in which the Group operates, in particular, for the assumptions relating to future sales volumes and the related revenue growth rates, future on-grid tariffs, future capital expenditure, future fuel prices, future other operating costs and the discount rates applied;
- challenging management's rationale for adopting cash flow projections over a period greater than five years;
- engaging our internal valuation specialists to assess whether the discount rates applied in the VIU calculations were within the range adopted by other companies in the same industry;
- performing sensitivity analyses on the discount rates applied and other key assumptions adopted by management to assess what changes thereto, either individually or collectively, would result in a different conclusion being reached and assessing whether there were any indicators of management bias in the selection of key assumptions;
- comparing the actual results for the current year with management's estimates in their VIU calculations for the previous year in order to assess the historical accuracy of the management's

forecasting process.

KEY AUDIT MATTERS (Cont'd)

Recognition of deferred tax assets

Refer to note 32 to the consolidated financial statements and the accounting policies in note 2(v)(iii).

The key audit matter

How the matter was addressed in our audit

As at 31 December 2017, the Group had recognised significant deferred tax assets in respect of the future benefit of deductible temporary differences and accumulated tax losses which management considered would probably be utilised or recovered in the future through the generation of future taxable profits by the relevant group entities or by set-off against deferred tax liabilities.

In addition, a significant amount of deferred tax assets had not been recognised at the reporting date due to the uncertainty of the relevant group entities being able to generate future taxable profits against which the tax losses may be utilised before they expire.

The recognition of deferred tax assets relies on the exercise of significant judgement by management in respect of assessing the sufficiency of future taxable profits and the probability of such future taxable profit being generated and future reversals of existing taxable temporary differences.

We identified the recognition of deferred tax assets as a key audit matter because of its significance to the consolidated financial statements and because of the significant management judgement and estimation required in the forecasting future taxable profits which could be subject to error or potential management bias.

Our audit procedures to assess the recognition of deferred tax assets included the following:

- assessing and challenging the assumptions and judgements exercised by management in respect of the forecasts of future taxable profits by comparing the assumptions adopted by management with our understanding of the Group's business and the industry in which the Group operates, in particular, for the assumptions relating to future sales volumes, future on-grid tariffs, future fuel prices and future other operating costs;
- considering the historical accuracy of forecasts of future taxable profits made by management by comparing the actual taxable profits for the current year with management's estimates in the forecasts made in the previous year and assessing whether there were any indicators of management bias in the selection of key assumptions;
- assessing whether the Group's disclosures in the consolidated financial statements of the application of judgement in estimating recognised and unrecognised deferred tax asset balances appropriately reflect the Group's deferred tax position with reference to the requirements of the prevailing accounting standards.

KEY AUDIT MATTERS (Cont'd)

Accounting for the acquisition of subsidiaries

Refer to note 41 to the consolidated financial statements and the accounting policies in note 2(b)(i).

The key audit matter	How the matter was addressed in our audit
<p>During the year ended 31 December 2017, the Group completed the acquisition of 80% equity interests in Huaneng Shandong Power Generation Co., Ltd. (“Shandong Power”), 100% equity interests in Huaneng Jilin Power Generation Co., Ltd. and Huaneng Heilongjiang Power Generation Co., Ltd., and 90% equity interests in Huaneng Henan Zhongyuan Gas Power Generation Co., Ltd. from China Huaneng Group Co., Ltd. (the “Acquisition”) and paid a total consideration of RMB15,501 million (after certain adjustments). In addition, according to the profit compensation agreement associated with the Acquisition, China Huaneng Group Co., Ltd. should compensate the Company in cash based on the shortfall of accumulated actual net profit compared with the accumulated forecast net profit of certain subsidiaries of Shandong Power during the compensation period, i.e. from year 2017 to 2019. Further details are set out in note 41 to the consolidated financial statements.</p>	<p>Our procedures to assess the accounting for the Acquisition included the following:</p> <ul style="list-style-type: none"> <li>• inspecting the agreements related to the Acquisition and evaluating management’s accounting treatment related to the acquisitions with reference to the terms set out in these agreements;</li> <li>• obtaining and inspecting the valuation assessment prepared by the external valuers engaged by the directors and on which the directors’ assessment of the fair values of the assets and liabilities acquired and the profit compensation forecast were based;</li> <li>• assessing the external valuers’ qualifications experience and expertise and considering their objectivity and independence;</li> <li>• engaging our internal valuation specialists to assist us in challenging the key assumptions adopted in the assessment of the fair value of the identifiable assets and liabilities and the profit compensation forecast, including the assumptions relating to future sales volumes and the related revenue growth rates, future on-grid tariffs, future capital expenditure, future fuel prices, future other operating costs and the discount rates applied;</li> <li>• with the assistance of our internal valuation specialists, assessing the valuation methodologies adopted with reference to industry standards and the requirements of the prevailing accounting standards;</li> </ul>
<p>Goodwill arising from the Acquisition represented the excess of the consideration paid over the Group’s share of the fair value of the identifiable net assets, which is significant in the context of the Group’s consolidated financial statements for the year ended 31 December 2017.</p>	
<p>The fair values of the identifiable assets and liabilities acquired in the Acquisition were assessed by the directors based on independent valuation prepared by external valuers which required the exercise of significant judgement and estimation, particularly in relation to the forecast of future performance of the businesses acquired. And the amount of profit compensation from China Huaneng Group Co., Ltd. was determined provisionally as at 31 December 2017 and are subject to adjustment.</p>	
<p>We identified the accounting for the Acquisition and the associated profit compensation as a key audit matter because of the significant impact on the consolidated financial statements and because the valuation of assets and liabilities acquired and forecast of profit compensation amount can be inherently subjective and requires significant judgement and estimation which increases the risk of error or potential management bias.</p>	

- assessing the Group's disclosures in the consolidated financial statements in respect of the Acquisition with reference to the requirements of the prevailing accounting standards.

#### INFORMATION OTHER THAN THE CONSOLIDATED FINANCIAL STATEMENTS AND AUDITOR'S REPORT THEREON

The directors are responsible for the other information. The other information comprises all the information included in the annual report, other than the consolidated financial statements and our auditor's report thereon.

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

#### RESPONSIBILITIES OF THE DIRECTORS FOR THE CONSOLIDATED FINANCIAL STATEMENTS

The directors are responsible for the preparation of the consolidated financial statements that give a true and fair view in accordance with IFRSs issued by the IASB and the disclosure requirements of the Hong Kong Companies Ordinance and for such internal control as the directors determine is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the directors are responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

The directors are assisted by the Audit Committee in discharging their responsibilities for overseeing the Group's financial reporting process.

#### AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. This report is made solely to you, as a body, and for no other purpose. We do not assume responsibility towards or accept liability to any other person for the contents of this report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.



AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS  
(Cont'd)

As part of an audit in accordance with ISAs, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations or the override of internal control.

Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.

Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the directors.

Conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the Audit Committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Audit Committee with a statement that we have complied with relevant ethical requirements regarding independence and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence and, where applicable, related safeguards.

AUDITOR'S RESPONSIBILITIES FOR THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS  
(Cont'd)

From the matters communicated with the Audit Committee, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this independent auditor's report is Ho Ying Man Simon.

KPMG  
Certified Public Accountants

8th Floor, Prince's Building  
10 Chater Road  
Central, Hong Kong

13 March 2018

118

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CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME  
FOR THE YEAR ENDED 31 DECEMBER 2017

(Prepared in accordance with International Financial Reporting Standards)

(Amounts expressed in thousands of RMB, except per share data)

		For the year ended 31	
		December	
	Note	2017	2016
Operating revenue	5	152,459,444	113,814,236
Tax and levies on operations		(1,376,312 )	(1,177,818 )
Operating expenses			
Fuel	6	(92,737,304 )	(56,617,542 )
Maintenance		(4,347,723 )	(4,343,349 )
Depreciation		(20,180,830 )	(14,815,620 )
Labor		(10,590,084 )	(8,043,406 )
Service fees on transmission and transformer facilities of HIPDC		(95,894 )	(138,038 )
Purchase of electricity		(3,787,032 )	(3,066,415 )
Others	6	(10,160,875 )	(7,234,308 )
Total operating expenses		(141,899,742)	(94,258,678)
Profit from operations		9,183,390	18,377,740
Interest income		198,906	147,063
Financial expenses, net			
Interest expense	6	(9,749,004 )	(6,817,526 )
Exchange gain/(loss) and bank charges, net		144,359	(250,076 )
Total financial expenses, net		(9,604,645 )	(7,067,602 )
Share of profits less losses of associates and joint ventures	8	425,215	1,298,889
Gain/(loss) on fair value changes of financial assets/liabilities	6	856,786	(12,986 )
Other investment income	6	1,742,081	1,070,034
Profit before income tax expense	6	2,801,733	13,813,138
Income tax expense	34	(1,217,526 )	(3,465,151 )
Net profit		1,584,207	10,347,987

	For the year ended 31 December	
Note	2017	2016
Other comprehensive (loss)/income, net of tax		
Items that may be reclassified subsequently to profit or loss:		
Fair value changes of available-for-sale financial assets	281,663	(148,041 )
Gain on disposal of available-for-sale financial assets reclassified to profit or loss	(1,135,356)	(741,648 )
Share of other comprehensive income/(loss) of investees accounted for under the equity method	121,208	(180,572 )
Effective portion of cash flow hedges	62,853	1,015,103
Translation differences of the financial statements of foreign operations	84,418	540,442
Other comprehensive (loss)/income, net of tax	(585,214 )	485,284
Total comprehensive income	998,993	10,833,271
Net profit attributable to:		
– Equity holders of the Company	1,579,836	8,520,427
– Non-controlling interests	4,371	1,827,560
	1,584,207	10,347,987
Total comprehensive income/(loss) attributable to:		
– Equity holders of the Company	1,023,118	9,005,227
– Non-controlling interests	(24,125 )	1,828,044
	998,993	10,833,271
Earnings per share attributable to the equity holders of the Company (expressed in RMB per share)		
– Basic and diluted	35 0.10	0.56

The notes on pages 130 to 269 are an integral part of these financial statements.

## CONSOLIDATED STATEMENT OF FINANCIAL POSITION

AS AT 31 DECEMBER 2017

(Prepared in accordance with International Financial Reporting Standards)

(Amounts expressed in thousands of RMB)

	As at 31 December		
	Note	2017	2016
<b>ASSETS</b>			
Non-current assets			
Property, plant and equipment	7	284,328,093	223,061,809
Investments in associates and joint ventures	8	19,517,623	19,632,113
Investment property		217,406	–
Available-for-sale financial assets	10	1,604,993	3,406,032
Land use rights	11	11,264,785	8,456,347
Power generation licenses	12	3,916,246	3,849,199
Mining rights	13	1,646,271	1,646,271
Deferred income tax assets	32	2,300,091	1,263,957
Derivative financial assets	14	75,328	99,721
Goodwill	15	15,484,120	12,135,729
Other non-current assets	16	7,696,845	4,321,945
Total non-current assets		348,051,801	277,873,123
Current assets			
Inventories	17	7,385,411	6,879,143
Other receivables and assets	18	6,081,517	5,533,770
Accounts receivable	19	25,447,595	16,393,471
Derivative financial assets	14	258,364	278,602
Bank balances and cash	36	9,364,823	7,881,630
Total current assets		48,537,710	36,966,616
Total assets		396,589,511	314,839,739

		As at 31 December	
	Note	2017	2016
<b>EQUITY AND LIABILITIES</b>			
Capital and reserves attributable to equity holders of the Company			
Share capital	21	15,200,383	15,200,383
Perpetual corporate bonds	22	5,068,550	–
Capital surplus		24,114,400	24,760,331
Surplus reserves	23	8,140,030	8,140,030
Currency translation differences		(675,054 )	(787,881 )
Retained earnings		35,793,257	38,690,132
		87,641,566	86,002,995
Non-controlling interests		19,973,038	16,183,742
Total equity		107,614,604	102,186,737
Non-current liabilities			
Long-term loans	25	107,030,958	64,990,361
Long-term bonds	26	15,993,833	12,182,971
Deferred income tax liabilities	32	4,566,680	2,262,752
Derivative financial liabilities	14	148,486	201,169
Other non-current liabilities	27	5,284,462	2,819,498
Total non-current liabilities		133,024,419	82,456,751
Current liabilities			
Accounts payable and other liabilities	28	38,900,132	28,746,617
Taxes payable	29	1,302,210	1,089,105
Dividends payable		1,735,426	1,575,180
Derivative financial liabilities	14	62,178	133,569
Short-term bonds	30	11,068,357	27,311,103
Short-term loans	31	80,251,348	57,668,874
Current portion of long-term loans	25	18,098,458	9,560,885
Current portion of long-term bonds	26	3,997,033	3,294,736
Current portion of other non-current liabilities	27	535,346	816,182
Total current liabilities		155,950,488	130,196,251
Total liabilities		288,974,907	212,653,002
Total equity and liabilities		396,589,511	314,839,739

These financial statements were approved for issue by the Board of Directors on 13 March 2018 and were signed on its behalf.

Cao Peixi   Liu Guoyue  
Director   Director

The notes on pages 130 to 269 are an integral part of these financial statements.

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY  
FOR THE YEAR ENDED 31 DECEMBER 2017  
(Prepared in accordance with International Financial Reporting Standards)  
(Amounts expressed in thousands of RMB)

	Attributable to equity holders of the Company						Subtotal	Surplus reserve	Currency translation differences
	Share capital	Share premium	Hedging reserve	Available-for-sale financial assets revaluation reserve	Other capital reserve	Capital surplus			
Balance as at 1 January 2016	15,200,383	22,226,889	(1,039,187)	2,516,173	1,111,614	24,815,489	8,140,030	(1,327,830)	
Profit for the year ended 31 December 2016	—	—	—	—	—	—	—	—	
Other comprehensive income/(loss):									
Fair value changes of available-for-sale financial assets – gross	—	—	—	(197,529)	—	(197,529)	—	—	
Gain on disposal of available-for-sale financial assets reclassified to profit or loss – gross	—	—	—	(988,865)	—	(988,865)	—	—	
Fair value changes of and gain on disposal of available-for-sale financial assets – tax	—	—	—	296,705	—	296,705	—	—	
Shares of other comprehensive income of investees–accounted for under the equity method – gross	—	—	—	(242,217)	—	(242,217)	—	—	
Shares of other comprehensive income of investees–accounted for under the equity method – tax	—	—	—	61,645	—	61,645	—	—	

Changes in fair value of effective portion of cash flow hedges – gross	–	–	574,455	–	–	574,455	–	–
Changes in fair value of effective portion of cash flow hedges – tax	–	–	(95,407)	–	–	(95,407)	–	–
Cash flow hedges recorded in shareholders' equity reclassified to inventories – gross	–	–	603,527	–	–	603,527	–	–
Cash flow hedges recorded in shareholders' equity reclassified to inventories – tax	–	–	(102,600)	–	–	(102,600)	–	–
Cash flow hedges recorded in shareholders' equity reclassified to exchange gain and bank charges, net – gross	–	–	(55,838)	–	–	(55,838)	–	–
Cash flow hedges recorded in shareholders' equity reclassified to exchange gain and bank charges, net – tax	–	–	9,492	–	–	9,492	–	–
Cash flow hedges recorded in shareholders' equity reclassified to interest expense – gross	–	–	101,889	–	–	101,889	–	–
Cash flow hedges recorded in shareholders' equity reclassified to interest expense – tax	–	–	(20,415)	–	–	(20,415)	–	–
Currency translation differences	–	–	–	–	–	–	–	539,958
Total comprehensive income/(loss) for the year ended	–	–	1,015,103	(1,070,261)	–	(55,158)	–	539,958



31 December 2016									
Dividends relating to 2015	-	-	-	-	-	-	-	-	-
Net capital injection from non-controlling interests of subsidiaries	-	-	-	-	-	-	-	-	-
Balance as at 31 December 2016	15,200,383	22,226,889	(24,084 )	1,445,912	1,111,614	24,760,331	8,140,030	(787,881	

	Attributable to equity holders of the Company							Subtotal	Surplus reserve	C tr d
	Capital surplus				Available- for-sale financial assets revaluation reserve	Other capital reserve				
	Share capital	Perpetual corporate bonds	Share premium	Hedging reserve						
Balance as at 1 January 2017	15,200,383	–	22,226,889	(24,084 )	1,445,912	1,111,614	24,760,331	8,140,030	(	
Profit for the year ended 31 December 2017	–	68,600	–	–	–	–	–	–	–	
Other comprehensive income/(loss):										
Fair value changes of available-for-sale financial assets – gross	–	–	–	–	375,742	–	375,742	–	–	
Gain on disposal of available-for-sale financial assets reclassified to profit or loss-gross	–	–	–	–	(1,581,994)	–	(1,581,994 )	–	–	
Fair value changes of and gain on disposal of available-for-sale financial assets – tax	–	–	–	–	352,646	–	352,646	–	–	
Shares of other comprehensive income of investees – accounted for under the equity method – gross shares of other comprehensive income of investees – accounted for under the equity method – tax	–	–	–	–	162,858	–	162,858	–	–	
	–	–	–	–	(41,650 )	–	(41,650 )	–	–	

Changes in fair value of effective portion of cash flow hedges – gross	–	–	–	85,558	–	–	85,558	–
Changes in fair value of effective portion of cash flow hedges – tax	–	–	–	(16,239 )	–	–	(16,239 )	–
Cash flow hedges recorded in shareholders' equity reclassified to inventories – gross	–	–	–	(109,817)	–	–	(109,817 )	–
Cash flow hedges recorded in shareholders' equity reclassified to inventories – tax	–	–	–	18,669	–	–	18,669	–
Cash flow hedges recorded in shareholders' equity reclassified to exchange gain and bank charges, net – gross	–	–	–	(2,657 )	–	–	(2,657 )	–
Cash flow hedges recorded in shareholders' equity reclassified to exchange gain and bank charges, net – tax	–	–	–	452	–	–	452	–
Cash flow hedges recorded in shareholders' equity reclassified to interest expense – gross	–	–	–	107,233	–	–	107,233	–
Cash flow hedges recorded in shareholders' equity reclassified to interest expense – tax	–	–	–	(20,346 )	–	–	(20,346 )	–
Currency translation differences	–	–	–	–	–	–	–	–
Total comprehensive	–	68,600	–	62,853	(732,398 )	–	(669,545 )	–

income/(loss) for  
the year ended 31  
December 2017

Business  
combination

(Note 41) — — — — — — — —

Issue of perpetual  
corporate bonds

(Note 22) — 4,999,950 — — — — — —

Dividends  
relating to 2016

(Note 24) — — — — — — — —

Net capital  
injection from  
non-controlling  
interests of  
subsidiaries

— — — — — — — —

Disposal of  
non-controlling  
interests of a  
subsidiary

— — 28,054 — — — 28,054 —

Acquisition of  
non-controlling  
interests of a  
subsidiary

— — (4,440 ) — — — (4,440 ) —

Disposal of  
subsidiaries (Note  
6)

— — — — — — — —

Balance as at 31

December 2017 15,200,383 5,068,550 22,250,503 38,769 713,514 1,111,614 24,114,400 8,140,030

The notes on pages 130 to 269 are an integral part of these financial statements.

CONSOLIDATED STATEMENT OF CASH FLOWS  
FOR THE YEAR ENDED 31 DECEMBER 2017

(Prepared in accordance with International Financial Reporting Standards)  
(Amounts expressed in thousands of RMB)

	For the year ended 31 December	
	2017	2016
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Profit before income tax expense	2,801,733	13,813,138
Adjustments to reconcile profit before income tax expense to net cash provided by operating activities:		
Depreciation	20,180,830	14,815,620
Provision for impairment loss on property, plant and equipment	1,046,195	1,063,735
Provision for impairment on land use rights	108,590	51,981
Provision for other non-current assets	5,008	–
Amortization of land use rights	341,125	225,707
Amortization of other non-current assets	113,878	121,388
Amortization of employee housing subsidies	653	866
Recognition of provision for doubtful accounts	27,682	89,498
Reversal of provision for inventory obsolescence	(263 )	(256 )
(Gain)/Loss on fair value changes of financial assets/liabilities	(856,786 )	12,986
Other investment income	(1,742,081 )	(1,070,034 )
Net loss on disposals of non-current assets	616,456	590,049
Unrealized exchange (gain)/loss, net	(157,056 )	195,055
Share of profits less losses of associates and joint ventures	(425,215 )	(1,298,889 )
Interest income	(198,906 )	(147,063 )
Interest expense	9,749,004	6,817,526
Others	171,611	(213,089 )
Changes in working capital:		
Inventories	714,045	(1,270,582 )
Other receivables and assets	(199,023 )	(20,810 )
Accounts receivable	(6,201,149 )	(838,272 )
Restricted cash	9,670	(11,566 )
Accounts payable and other liabilities	2,414,376	1,912,034
Taxes payable	2,543,863	1,279,505
Interest received	136,134	84,806
Income tax paid	(2,003,011 )	(4,692,509 )
Net cash provided by operating activities	29,197,363	31,510,824

	For the year ended 31 December	
Note	2017	2016
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Payment for the purchase of property, plant and equipment	(25,798,009)	(20,144,903)
Proceeds from disposal of property, plant and equipment, land use rights and other non-current assets	286,609	144,346
Prepayments of land use rights	(213,928 )	(89,430 )
Payment for the purchase of other non-current assets	(33,498 )	(50,653 )
Cash dividends received	1,419,380	1,057,642
Payment for investment in associates and joint ventures	(301,916 )	(276,118 )
Cash paid for acquiring available-for-sale financial assets	(5,600 )	–
Cash consideration paid for acquisition of subsidiaries, net of cash acquired	41 (10,817,107)	157,421
Cash received from disposal of a subsidiary	530,437	–
Cash received from disposal of available-for-sale financial assets	2,186,758	1,474,301
Others	998,049	77,748
Net cash used in investing activities	(31,748,825)	(17,649,646)

## CASH FLOWS FROM FINANCING ACTIVITIES

Issuance of short-term bonds	30,988,679	32,982,340
Repayments of short-term bonds	(47,000,000 )	(25,000,000)
Proceeds from short-term loans	107,564,128	85,689,874
Repayments of short-term loans	(96,378,054 )	(77,904,489)
Proceeds from long-term loans	32,706,327	15,978,023
Repayments of long-term loans	(17,390,982 )	(20,702,421)
Issuance of long-term bonds	7,800,000	4,200,000
Repayments of long-term bonds	(3,300,000 )	(11,500,000)
Interest paid	(10,080,102 )	(7,344,781 )
Net proceeds from the issuance of perpetual corporate bonds	4,999,950	—
Net capital injection from non-controlling interests of subsidiaries	838,084	285,620
Dividends paid to shareholders of the Company	(4,352,973 )	(7,206,220 )
Dividends paid to non-controlling interests of subsidiaries	(2,184,145 )	(2,695,378 )
Government grants	590,629	233,276
Payment for finance leasing	(695,019 )	(571,485 )
Others	(93,342 )	(46,209 )
Net cash generated from/(used in) financing activities	4,013,180	(13,601,850)
Effect of exchange rate fluctuations on cash held	10,171	72,923
NET INCREASE IN CASH AND CASH EQUIVALENTS	1,471,889	332,251
Cash and cash equivalents as at beginning of the year	7,810,501	7,478,250
CASH AND CASH EQUIVALENTS AS AT END OF THE YEAR	36 9,282,390	7,810,501

The notes on pages 130 to 269 are an integral part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS  
FOR THE YEAR ENDED 31 DECEMBER 2017

(Prepared in accordance with International Financial Reporting Standards)

(Amounts expressed in thousands of RMB unless otherwise stated)

## 1 COMPANY ORGANIZATION AND PRINCIPAL ACTIVITIES

Huaneng Power International, Inc. (the “Company”) was incorporated in the People’s Republic of China (the “PRC”) as a Sino-foreign joint stock limited company on 30 June 1994. The registered address of the Company is Huaneng Building, 6 Fuxingmennei Street, Xicheng District, Beijing, the PRC. The Company and its subsidiaries are principally engaged in the generation and sale of electric power to the respective regional or provincial grid companies in the PRC and in the Republic of Singapore (“Singapore”). The Company conducts its business in Singapore through SinoSing Power Pte Ltd. (“SinoSing Power”) and its subsidiaries.

The directors consider Huaneng International Power Development Corporation (“HIPDC”) and China Huaneng Group Co., Ltd. (“Huaneng Group”) as the parent company and ultimate parent company of the Company, respectively. Both HIPDC and Huaneng Group are incorporated in the PRC. HIPDC does not produce financial statements available for public use.

## 2 PRINCIPAL ACCOUNTING POLICIES

The principal accounting policies adopted in the preparation of these financial statements are set out below. These policies have been consistently applied to all the years presented, unless otherwise stated.

### (a) Basis of preparation

These financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRS”) as issued by the International Accounting Standards Board (the “IASB”) and the disclosure requirements of the Hong Kong Companies Ordinance. These financial statements also comply with the applicable disclosure provisions of the Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited. These financial statements have been prepared under the historical cost convention, as modified by the revaluation of available-for-sale financial assets, financial assets at fair value through profit or loss and derivative financial assets and liabilities.

The preparation of financial statements in conformity with IFRS requires the use of certain critical accounting estimates. It also requires management to exercise its judgment in the process of applying the Company and its subsidiaries’ accounting policies. The areas involving a higher degree of judgment or complexity, or areas where assumptions and estimates are significant to the financial statements are disclosed in Note 4.

As at 31 December 2017, the Company and its subsidiaries have net current liabilities of approximately RMB107.4 billion, portion of the Company and its subsidiaries’ funding requirements for capital expenditures were satisfied by short-term financing. Taking into consideration of the expected operating cash flows of the Company and its subsidiaries and the undrawn available banking facilities of approximately RMB241.9 billion as at 31 December 2017, the Company and its subsidiaries are expected to refinance certain of its short-term loans and bonds and also to consider alternative sources of financing, where applicable and when needed.

Therefore, the directors of the Company are of the opinion that the Company and its subsidiaries will be able to meet its liabilities as and when they fall due within the next twelve months and accordingly, these consolidated financial statements are prepared on a going concern basis.





## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (a) Basis of preparation (Cont'd)

The IASB has issued several amendments to IFRSs that are first effective for the current accounting period of the Company and its subsidiaries. None of these developments have had a material effect on how the Company and its subsidiaries' results and financial position for the current or prior periods have been prepared or presented. However, additional disclosure has been included in Note 36 to satisfy the new disclosure requirements introduced by the amendments to IAS 7, Statement of cash flows: Disclosure initiative, which require entities to provide disclosures that enable users of financial statements to evaluate changes in liabilities arising from financing activities, including both changes arising from cash flows and non-cash changes. The Company and its subsidiaries have not applied any new standard or interpretation that is not yet effective for current accounting period.

### (b) Consolidation

The consolidated financial statements include the financial statements of the Company and all of its subsidiaries.

Subsidiaries are investees over which the Company and its subsidiaries have the power to exercise control. The Company and its subsidiaries control an entity when it is exposed, or have rights to variable returns from their involvement with the entity and have the ability to affect those returns through their power over the entity. In assessing whether the Company and its subsidiaries have power, only substantive rights (held by the Company and its subsidiaries and other parties) are considered.

Subsidiaries are consolidated from the date when control is transferred to the Company and its subsidiaries. They are de-consolidated from the date when control ceases. Intra-group balances, transactions and cash flows, and any unrealised income and expenses arising from intra-group transactions, are eliminated in full in preparing the consolidated financial statements. Unrealised gains arising from transactions with equity accounted investees are eliminated against the investment to the extent of the Company and its subsidiaries' interest in the investee. Unrealised losses are eliminated in the same way as unrealised gains, but only to the extent that there is no evidence of impairment. The portion of the shareholders' equity of the subsidiaries, which is not attributable directly or indirectly to the parent company, is separately presented as non-controlling interests in the shareholders' equity in the consolidated financial statements.

When there is any inconsistency on the accounting policies or financial period adopted between subsidiaries and the Company, the financial statements of subsidiaries are adjusted according to the accounting policies or financial period adopted by the Company.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (b) Consolidation (Cont'd)

#### (i) Business combinations

The acquisition method is used to account for the business combinations of the Company and its subsidiaries (including business combinations under common controls). The consideration transferred for the acquisition of a subsidiary is the fair values of the assets transferred, the liabilities incurred to the former owners of the acquiree and the equity interests issued by the Company and its subsidiaries. Any contingent consideration is measured at fair value at the date of acquisition. If an obligation to pay contingent consideration that meets the definition of a financial instrument is classified as equity, then it is not remeasured and settlement is accounted for within equity. Otherwise, other contingent consideration is remeasured at fair value at each reporting date and subsequent changes in the fair value of the contingent consideration are recognized in profit or loss. Acquisition-related costs are expensed as incurred. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date. On an acquisition-by-acquisition basis, the Company and its subsidiaries recognize any non-controlling interests in the acquiree either at fair value or at the non-controlling interest's proportionate share of the recognized amounts of acquiree's identifiable net assets. The excess of the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the fair value of the identifiable net assets acquired is recorded as goodwill (Note 2(j)). If this consideration is lower than the fair value of the net assets of the subsidiary acquired, the difference is recognized in profit or loss.

#### (ii) Changes in ownership interests in subsidiaries

Transactions with non-controlling interests that do not result in loss of control are accounted for as equity transactions – that is, as transactions with the equity owners in their capacity as owners. The difference between fair value of any consideration paid and the relevant share acquired of the carrying value of net assets of the subsidiary is recorded in equity. Gains or losses on disposals to non-controlling interests are also recorded in equity.

When the Company and its subsidiaries lose control of a subsidiary, it is accounted for as a disposal of the entire interest in that subsidiary, with a resulting gain or loss being recognized in profit or loss. Any interest retained in that former subsidiary at the date when control is lost is recognized at fair value and this amount is regarded as the fair value on initial recognition of a financial asset (Note 2(l)) or, when appropriate, the cost on initial recognition of an investment in an associate or joint venture (Note 2(b)(iii)).

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (b) Consolidation (Cont'd)

#### (iii) Associates and joint ventures

Associates are investees over which the Company and its subsidiaries have significant influence on the financial and operating decisions. A joint venture is an arrangement whereby the Company and its subsidiaries and other parties contractually agree to share control of the arrangement, and have rights to the net assets of the arrangement.

Investments in associates and joint ventures are initially recognized at cost and are subsequently measured using the equity method of accounting, unless it is classified as held for sale (or included in a disposal group that is classified as held for sale). The excess of the initial investment cost over the proportionate share of the fair value of identifiable net assets of investee acquired is included in the initial investment cost (Note 2(j)). Any shortfall of the initial investment cost to the proportionate share of the fair value of identifiable net assets of investee acquired is recognized in current period profit or loss and long-term investment cost is adjusted accordingly.

When applying equity method, the Company and its subsidiaries adjust net profit or loss of the investees, including the fair value adjustments on the net identifiable assets of the associates and joint ventures and the adjustments to align with the accounting policies of the Company and the Company's financial reporting periods. Current period investment income is then recognized based on the proportionate share of the Company and its subsidiaries in the investees' net profit or loss. Net losses of investees are recognized to the extent of the carrying value of long-term equity investments and any other constituting long-term equity investments in investees that in substance form part of the investments in the investees. The Company and its subsidiaries continue to recognize investment losses and provision if they bear additional obligations which meet the recognition criteria.

The Company and its subsidiaries adjust the carrying amount of the investment and directly recognize into related other comprehensive income based on their proportionate share on the movements of the investees' other comprehensive income except net profit or loss.

When the investees appropriate profit or declare dividends, the carrying value of long-term equity investments are reduced correspondingly by the proportionate share of the distribution.

The Company and its subsidiaries determine at each reporting date whether there is any objective evidence that the investment in the associate or the joint venture is impaired. If this is the case, the Company and its subsidiaries calculate the amount of impairment as the difference between the recoverable amount of the associate or the joint venture and its carrying value and recognize the amount in the consolidated statement of comprehensive income.

Profits or losses resulting from transactions between the Company and its subsidiaries and the associates and joint ventures are recognized in the Company and its subsidiaries' financial statements only to the extent of the unrelated third party investor's interests in the associates and joint ventures. Loss from transactions between the Company and its subsidiaries and the associates and joint ventures is fully recognized and not eliminated when there is evidence for asset impairment.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (b) Consolidation (Cont'd)

#### (iii) Associates and joint ventures (Cont'd)

If an investment in an associate becomes an investment in a joint venture or vice versa, retained interest is not remeasured. Instead, the investment continues to be accounted for under the equity method.

Gains and losses arising from dilution of investments in associates and joint ventures are recognized in the consolidated statement of comprehensive income.

In the Company's statement of financial position, investments in associates and joint ventures are stated at cost less provision for impairment losses (Note 2(k)) unless classified as held for sale (or included in a disposal group that is classified as held for sale). Investment income from investments in associates and joint ventures is accounted for by the Company based on dividends received and receivable.

In all other cases, when the Company and its subsidiaries cease to have significant influence over an associate or joint control over a joint venture, it is accounted for as a disposal of the entire interest in that investee, with a resulting gain or loss being recognized in profit or loss. Any interest retained in that former investee at the date when significant influence or joint control is lost is recognized at fair value and this amount is regarded as the fair value on initial recognition of a financial asset (Note 2(l)).

### (c) Separate financial statements of the Company

Investments in subsidiaries are accounted for at cost less impairment unless classified as held for sale (or included in a disposal group that is classified as held for sale). Cost also includes direct attributable costs of investment. Investment income is recognized when the subsidiaries declare dividend.

### (d) Segment reporting

The Company and its subsidiaries determine the operating segment based on the internal organization structure, management requirement and internal reporting system for purposes of presenting reportable segment information.

An operating segment represents a component of the Company and its subsidiaries that meets all the conditions below:

(i) the component earns revenue and incurs expenses in its daily operating activities; (ii) chief operating decision maker of the Company and its subsidiaries regularly reviews the operating results of the component in order to make decisions on allocating resources and assessing performance; (iii) the financial position, operating results, cash flows and other related financial information of the component are available. When the two or more operating segments exhibit similar economic characteristics and meet certain conditions, the Company and its subsidiaries combine them as one reportable segment.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (e) Foreign currency translation

#### (i) Functional and presentation currency

Items included in the financial statements of each of the Company and its subsidiaries are measured using the currency of the primary economic environment in which the entity operates (the “functional currency”). The consolidated financial statements are presented in Renminbi (“RMB”), which is the Company’s functional and presentation currency.

#### (ii) Transactions and balances

Foreign currency transactions are translated into the functional currency using the spot exchange rate on the transaction dates. As at the end of reporting period, foreign currency monetary items are translated into functional currency at the spot exchange rate as at the end of reporting period. Exchange differences are directly expensed in current period profit or loss unless they arise from foreign currency loans borrowed for purchasing or construction of qualifying assets which is eligible for capitalization or they arise from monetary items that qualify as hedging instruments in cash flow hedges which are recorded in other comprehensive income to the extent that the hedge is effective.

#### (iii) Foreign subsidiaries

The operating results and financial position of the foreign subsidiaries are translated into presentation currency as follows:

Asset and liability items in each statement of financial position of foreign operations are translated at the closing rates at the end of reporting period; equity items excluding retained earnings are translated at the spot exchange rates at the date of the transactions. Income and expense items in the statement of comprehensive income of the foreign operations are translated at average exchange rates approximating the rate on transaction dates. All resulting translation differences are recognized in other comprehensive income.

The cash flows denominated in foreign currencies and cash flows of overseas subsidiaries are translated at average exchange rates approximating the rates at the dates when cash flows incurred. The effect of the foreign currency translation on the cash and cash equivalents is presented in the statement of cash flows separately.

On the disposal of a foreign operation (that is, a disposal of the Company and its subsidiaries’ entire interest in a foreign operation, or a disposal involving loss of control over a subsidiary that includes a foreign operation, a disposal involving loss of joint control over a joint ventures that includes a foreign operation, or a disposal involving loss of significant influence over an associate that includes a foreign operation), all of the exchange differences accumulated in equity in respect of that operation attributable to the equity holders of the Company are reclassified to profit or loss.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

## (e) Foreign currency translation (Cont'd)

## (iii) Foreign subsidiaries (Cont'd)

In the case of a partial disposal that does not result in the Company and its subsidiaries losing control over a subsidiary that includes a foreign operation, the proportionate share of accumulated exchange differences are re-attributed to non-controlling interests and are not recognized in profit or loss. For all other partial disposals (that is, reductions in the Company and its subsidiaries' ownership interest in associates or joint venture that includes a foreign operation that do not result in the Company and its subsidiaries losing significant influence or joint control), the proportionate share of the accumulated exchange difference is reclassified to profit or loss.

## (f) Property, plant and equipment

Property, plant and equipment consists of dam, port facilities, buildings, electric utility plant in service, transportation facilities, others and construction-in-progress ("CIP"). Property, plant and equipment acquired or constructed are initially recognized at cost and carried at the net value of cost less accumulated depreciation and accumulated impairment loss, unless classified as held for sale (or included in a disposal group that is classified as held for sale).

Cost of CIP comprises construction expenditures, other expenditures necessary for the purpose of preparing the CIP for its intended use, those borrowing costs incurred before the assets are ready for intended use that are eligible for capitalization. CIP is not depreciated until such time as the relevant asset is completed and ready for its intended use.

Subsequent costs about property, plant and equipment are included in the asset's carrying amount only when it is probable that future economic benefits associated with the item will flow to the Company and its subsidiaries and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. Other subsequent expenditures not qualified for capitalization are charged in the current period profit or loss when they are incurred.

Depreciation of property, plant and equipment is provided based on book value of the asset less estimated residual value over the estimated useful life using straight-line method. For those impaired property, plant and equipment, depreciation is provided based on book value after deducting impairment provision over the estimated useful life of the asset. The estimated useful lives are as follows:

	Estimated useful lives
Dam	8 – 50 years
Port facilities	20 – 40 years
Buildings	8 – 30 years
Electric utility plant in service	5 – 30 years
Transportation facilities	8 – 27 years
Others	5 – 14 years

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (f) Property, plant and equipment (Cont'd)

Where parts of an item of property, plant and equipment have different useful lives, the cost of the item is allocated on a reasonable basis between the parts and each part is depreciated separately. At the end of each year, the Company and its subsidiaries review the estimated useful lives, residual values and the depreciation method of the property, plant and equipment and make adjustment when necessary.

Property, plant and equipment is derecognized when it is disposed of, or is not expected to bring economic benefit through use or disposal. The amount of disposal proceeds arising from sale, transfer, disposal or write-off of the property, plant and equipment less book value and related tax expenses is recorded in 'operating expenses – others' in the statement of comprehensive income.

The carrying amount of property, plant and equipment is written down immediately to its recoverable amount when its carrying amount is greater than its recoverable amount (Note 2(k)).

### (g) Investment property

Investment properties are land and/or buildings which are owned or held under a leasehold interest (Note 2(z)) to earn rental income and/or for capital appreciation. These include land held for a currently undetermined future use and property that is being constructed or developed for future use as investment property.

Investment properties are stated at fair value, unless they are still in the course of construction or development at the end of the reporting period and their fair value cannot be reliably measured at that time. Any gain or loss arising from a change in fair value or from the retirement or disposal of an investment property is recognized in profit or loss. Rental income from investment properties is accounted for as described in Note 2(y)(vi).

### (h) Power generation license

The Company and its subsidiaries acquired the power generation license as part of the business combination with Tuas Power Ltd. ("Tuas Power"). The power generation license is initially recognized at fair value at the acquisition date. The license has an indefinite useful life and is not amortized. The assessment that the license has an indefinite useful life is based on the expected renewal of power generation license without significant restriction and cost, together with the consideration on related future cash flows generated and the expectation of continuous operations. It is tested annually for impairment and carried at cost less accumulated impairment loss. Useful life of the power generation license is reviewed by the Company and its subsidiaries each financial period to determine whether events and circumstances continue to support the indefinite useful life assessment.



## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (i) Mining rights

Mining rights are stated at cost less accumulated amortization and impairment losses (Note 2(k)) and are amortized based on the units of production method utilizing only recoverable coal reserves as the depletion base, unless the mining rights are classified as held for sale (or included in a disposal group that is classified as held for sale).

### (j) Goodwill

Goodwill arising from the acquisitions of subsidiaries, associates and joint ventures represents the excess of the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the Company and its subsidiaries' share of the net fair value of the net identifiable assets, liabilities and contingent liabilities of the acquiree at the date of acquisition.

Goodwill is stated at cost less accumulated impairment losses. Goodwill arising on a business combination is allocated to each cash-generating unit, or groups of cash generating units, that is expected to benefit from the synergies of the combination and is tested annually for impairment (Note 2(k)).

On disposal of a cash generating unit during the year, any attributable amount of purchased goodwill is included in the calculation of the profit or loss on disposal.

### (k) Impairment of non-financial assets

The carrying amounts of property, plant and equipment, mining rights, intangible assets with definite useful lives, land use rights and long-term equity investments not accounted for as financial assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. Goodwill and indefinite-lived intangible assets are tested for impairment annually regardless of whether there are indications of impairment or more frequently if events or changes in circumstances indicate a potential impairment. An impairment loss is recognized if the carrying amount of an asset or cash-generating unit ("CGU") exceeds its recoverable amount.

The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less cost to sell. For impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or CGUs.

Subject to an operating segment ceiling test, CGUs to which goodwill has been allocated are aggregated so that the level at which impairment testing is performed reflects the lowest level at which goodwill is monitored for internal reporting purposes.

Goodwill acquired in a business combination is allocated to groups of CGUs that are expected to benefit from the synergies of the combination.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (k) Impairment of non-financial assets (Cont'd)

Impairment losses are recognized in profit or loss. Impairment losses recognized in respect of CGUs are allocated first to reduce the carrying amount of any goodwill allocated to the CGU (group of CGUs), and then to reduce the carrying amounts of the other assets in the CGU (group of CGUs) on a pro rata basis, except that the carrying value of an asset will not be reduced below its individual fair value less costs of disposal (if measurable) or value in use (if determinable).

An impairment loss in respect of goodwill is not reversed. Except for goodwill, all impaired non-financial assets are subject to review for possible reversal of impairment at each reporting date. A reversal of an impairment loss is limited to the asset's carrying amount that would have been determined had no impairment loss been recognized in prior year. Reversals of impairment losses are credited to profit or loss in the year in which the reversals are recognized.

### (l) Financial instruments

Financial assets are classified in the following categories at initial recognition: at fair value through profit or loss, loans and receivables and available-for-sale. The classification depends on the intention and ability of the Company and its subsidiaries to hold the financial assets.

#### (i) Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss include financial assets held for trading and designated upon initial recognition as at fair value through profit or loss, and contingent consideration of the acquirer in a business combination. A financial asset is classified in this category if acquired principally for the purpose of selling in the short term. Derivatives are classified as held for trading unless they are designated as hedges. Assets in this category are classified as current assets if expected to be settled within 12 months; otherwise, they are classified as non-current.

#### (ii) Loans and receivables

Loans and receivables refer to the non-derivative financial assets for which there is no quotation in the active market with fixed or determinable amount. They are included in current assets, except for maturities greater than 12 months after the end of reporting period which are classified as non-current assets. Loans and receivables are primarily included in as 'accounts receivable', 'other receivables and assets', 'loans to subsidiaries' and 'other non-current assets' in the statement of financial position.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (1) Financial instruments (Cont'd)

#### (iii) Available-for-sale financial assets

Available-for-sale financial assets are non-derivative financial assets that are either designated in this category or not classified in any of the other categories. They are included in current assets when management intends to dispose of the available-for-sale financial assets within 12 months of the end of reporting period, otherwise, they are classified as non-current assets.

#### (iv) Recognition and measurement

Regular purchases and sales of financial assets are recognized at fair value initially on trade-date – the date on which the Company and its subsidiaries commit to purchase or sell the asset. Transaction costs relating to financial assets at fair value through profit or loss are directly expensed in the profit or loss as incurred. Transaction costs for other financial assets are included in the carrying amount of the asset at initial recognition. Financial assets are derecognized when the rights to receive cash flows from the financial assets have expired or have been transferred and all risks and rewards related to the ownership of the financial assets have been transferred to the transferee.

Financial assets at fair value through profit or loss and available-for-sale are subsequently measured at fair value. When an active market exists for a financial instrument, fair value is determined based on quoted prices in the active market. When no active market exists, fair value is determined by using valuation techniques. When applying valuation techniques, the Company and its subsidiaries maximize the use of relevant observable inputs and minimize the use of unobservable inputs.

Changes in the fair value of financial assets at fair value through profit or loss are recorded in 'gain/(loss) on fair value changes of financial assets/liabilities'.

Investments in equity instruments that do not have a quoted market price in an active market and whose fair value cannot be reliably measured are measured at cost. Loans and receivables are carried at amortized cost using the effective interest method.

Except for impairment loss and translation differences on monetary financial assets, changes in the fair value of available-for-sale financial assets are recognized in other comprehensive income. When these financial assets are derecognized, the accumulated fair value adjustments recognized in equity are included in the statement of comprehensive income as 'other investment income'. Dividends on available-for-sale financial assets are recorded in 'other investment income' when the right of the Company and its subsidiaries to receive payments is established.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (l) Financial instruments (Cont'd)

#### (v) Impairment of financial assets

Except for financial assets at fair value through profit or loss, the Company and its subsidiaries perform assessment on the book value of financial assets at the end of reporting period. Provision for impairment is made when there is objective evidence showing that a financial asset is impaired.

For investments in subsidiaries, associates and joint ventures, the impairment loss is measured by comparing the recoverable amount of the investment with its carrying amount. The impairment loss is reversed if there has been a favourable change in the estimates used to determine the recoverable amount.

In the case of equity investments classified as available for sale, a significant or prolonged decline in the fair value of the investment below its cost is evidence that the assets are impaired. If any such evidence exists for available-for-sale financial assets, the cumulative loss, measured as the difference between the acquisition cost and the current fair value, less any impairment loss on that financial asset previously recognized in profit or loss, is removed from equity and recognized in profit or loss. Impairment losses recognized in the profit or loss on equity instruments are not reversed through the profit or loss.

When financial assets carried at amortized cost are impaired, the carrying amount of the financial assets is reduced to the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. The impaired amount is recognized as assets impairment loss in the current period. If there is objective evidence that the value of the financial assets has recovered as a result of objective changes in circumstances occurring after the impairment loss was originally recognized, the originally recognized impairment loss is reversed through profit or loss. For the impairment test of receivables, please refer to Note 2(m).

#### (vi) Derivative financial instruments and hedging activities

Derivatives are initially recognized at fair value on the date a derivative contract is entered into and are subsequently remeasured at their fair value. Gain or loss arising from subsequent change in the fair value of derivative financial instruments is recognized in profit or loss except for the effective portions of gain or loss on the derivative financial instruments designated as cash flow hedges which are recognized directly in other comprehensive income. Cash flow hedge represents a hedge against the exposure to variability in cash flows, which such cash flow is originated from a particular risk associated with highly probable forecast transactions and variable rate borrowings and which could affect the statement of comprehensive income.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (1) Financial instruments (Cont'd)

#### (vi) Derivative financial instruments and hedging activities (Cont'd)

The hedged items of cash flow hedge are the designated items with respect to the risks associated with future cash flow change resulting from variability in cash flows of a recognized asset or liability or a highly probable forecast transaction or the foreign currency risk of a committed future transaction. Hedging instruments are designated derivative for cash flow hedge whose cash flows are expected to offset changes in the cash flows of a hedged item.

The full fair value of a hedging derivative is classified as a non-current asset or liability when the remaining maturity of the hedge item is more than 12 months.

The Company and its subsidiaries document their assessments, both at hedge inception and on an ongoing basis, of whether the derivatives that are used in hedging transactions are highly effective in offsetting changes in cash flows of hedged items. The Company and its subsidiaries apply ratio analysis method to evaluate the ongoing effectiveness of the cash flow hedge.

The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges are recognized in other comprehensive income. The gain or loss relating to the ineffective portion is recognized immediately in the statement of comprehensive income within 'gain/(loss) on fair value changes of financial assets/liabilities'.

Amounts accumulated in equity are reclassified to the profit or loss in the periods when the hedged item affects profit or loss. The gain or loss relating to the effective portion of interest rate swaps hedging variable rate borrowings is recognized in the statement of comprehensive income within 'interest expense'. The gain or loss relating to the effective portion of exchange forward hedging foreign currency denominated payables is recognized in the statement of comprehensive income within 'exchange gain/(loss) and bank charges, net'. However, when the forecast transaction that is hedged results in the recognition of a non-financial asset, the gains and losses previously deferred in equity are transferred from equity and included in the initial measurement of the cost of the asset. In the case where the Company and its subsidiaries expect all or a portion of net loss previously recognized directly in other comprehensive income will not be recovered in future financial periods, the irrecoverable portion will be reclassified into profit or loss.

When a hedging instrument expires or is sold, terminated or exercised or when a hedge no longer meets the criteria for hedge accounting, the Company and its subsidiaries will discontinue hedge accounting. Any cumulative gain or loss existing in equity at that time remains in equity and is subsequently recognized when the forecast transaction is ultimately recognized in the profit or loss. When a forecast transaction is no longer expected to occur, the cumulative gain or loss that was reported in equity is immediately transferred to the statement of comprehensive income within 'gain/(loss) on fair value changes of financial assets/liabilities'.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (m) Loans and receivables

Loans and receivables, which primarily include accounts receivable, other receivables, loan to subsidiaries and other non-current assets, are recognized initially at fair value. Loans and receivables are subsequently measured at amortized cost less provision for doubtful debts using the effective interest method.

The Company and its subsidiaries establish an allowance for impairment that represents its estimate of incurred losses in respect of receivables. The main components of this allowance are a specific loss component that relates to individually significant exposures, and a collective loss component established for groups of similar assets in respect of losses that have been incurred but not yet identified. The collective loss allowance is determined based on historical data of payment statistics for similar financial assets.

When there is objective evidence that the Company and its subsidiaries will not be able to collect all amounts due according to the original terms of the receivables, impairment test is performed and related provision for doubtful accounts is made based on the shortfall between carrying amounts and respective present value of estimated future cash flows. The carrying amounts of the receivables are reduced through the use of allowance accounts, and the amount of the provision is recognized in the statement of comprehensive income within 'operating expenses – others'. When a receivable is uncollectible, it is written off against the allowance account for the receivable. Subsequent recoveries of amounts previously written off are credited against 'operating expenses – others' in the statement of comprehensive income.

### (n) Inventories

Inventories include fuel for power generation, materials for repairs and maintenance and spare parts, and are stated at lower of cost and net realizable values.

Inventories are initially recorded at cost and are charged to fuel costs or repairs and maintenance, respectively when used, or capitalized to property, plant and equipment when installed, as appropriate, using weighted average cost basis. Cost of inventories includes costs of purchase and transportation costs.

When the forecast transaction that is hedged results in the recognition of the inventory, the gains and losses previously deferred in equity are transferred from equity and included in the initial measurement of the cost of the inventory.

Provision for inventory obsolescence is determined by the excess of cost over net realizable value. Net realizable values are determined based on the estimated selling price less estimated conversion costs during power generation, selling expenses and related taxes in the ordinary course of business.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (o) Related parties

Parties are considered to be related if one party has the ability, directly or indirectly, to control the other party or exercise significant influence over the other party in making financial and operating decisions. Parties are also considered to be related if they are subject to common control or jointly control of the same third party; one party is controlled or jointly controlled by a third party and the other party is an associate or a joint venture of the same third party.

### (p) Cash and cash equivalents

Cash and cash equivalents listed in the statement of cash flows represents cash in hand, call deposits held with banks and other financial institutions, and other short-term (3 months or less), highly-liquid investments that are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value. Bank overdrafts that are repayable on demand and form an integral part of the cash management are also included as a component of cash and cash equivalents for the purpose of the consolidated statement of cash flow.

### (q) Borrowings

Borrowings are recognized initially at fair value less transaction costs and subsequently measured at amortized cost using the effective interest method. Borrowings are classified as current liabilities unless the Company and its subsidiaries have an unconditional right to defer settlement of the liability for at least 12 months after the end of reporting period.

### (r) Borrowing costs

General and specific borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets. The capitalization of borrowing costs as part of the cost of a qualifying asset commences when expenditure for the asset is being incurred, borrowing costs are being incurred and activities that are necessary to prepare the asset for its intended use or sale are in progress. Capitalization of borrowing costs is suspended or ceases when substantially all the activities necessary to prepare the qualifying asset for its intended use or sale are interrupted or complete.

The amount of specific borrowing costs capitalized is net of the investment income on any temporary investment of the funds pending expenditure on the asset.

All other borrowing costs are recognized in profit or loss in the period in which they are incurred.

### (s) Share Capital

Ordinary shares are classified as equity. Incremental costs directly attributable to the issue of new shares are shown in equity as a deduction, net of tax, from the proceeds.

2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(t) Perpetual corporate bond

Perpetual corporate bond is classified as equity if it is non-redeemable, or redeemable only at the Company's option, and any interests are discretionary. Interests on perpetual corporate bonds classified as equity are recognized as distributions within equity.

(u) Payables

Payables primarily include accounts payable and other liabilities, and are recognized initially at fair value and subsequently measured at amortized cost using the effective interest method.

(v) Taxation

(i) Value-added tax ("VAT")

The domestic power, heat and goods sales of the Company and its subsidiaries are subject to VAT. VAT payable is determined by applying 17% (13% or 11% on heat) on the taxable revenue after offsetting deductible input VAT of the period.

The applicable tax rate of VAT in respect of the lease of tangible movable properties, transportation industry and other modern services industry are 17%, 11% and 6%, respectively.

According to the relevant regulations of Ministry of Finance of PRC and State Administration of Taxation, the transformation from Business Tax to VAT launched nation-wide from 1 May 2016 and all business tax taxpayers in the construction industry, real estate industry, financial industry, living services were included. The applicable tax rate of VAT in respect of sectors including construction services, lease of immovables, sale of immovables and transfer of land use rights is 11%, and in respect of financial and living services is 6%.

(ii) Goods and service tax ("GST")

The power sales of the subsidiaries in Singapore are subject to goods and service tax of the country where they operate. GST payable is determined by applying 7% on the taxable revenue after offsetting deductible GST of the period.



2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(v) Taxation (Cont'd)

(iii) Current and deferred income tax

The income tax expense for the period comprises current and deferred income tax. Income tax expense is recognized in profit or loss, except to the extent that it relates to items recognized in other comprehensive income or directly in equity. In this case, the tax is also recognized in other comprehensive income or directly in equity, respectively.

Deferred income tax assets and liabilities are recognized based on the differences between tax bases of assets and liabilities and respective book values (temporary differences). For deductible tax losses or tax credit that can be brought forward in accordance with tax law requirements for deduction of taxable income in subsequent years, it is considered as temporary differences and related deferred income tax assets are recognized. No deferred income tax liability is recognized for temporary difference arising from initial recognition of goodwill. For those temporary differences arising from initial recognition of an asset or liability in a non-business combination transaction that affects neither accounting profit nor taxable profit (or deductible loss) at the time of the transaction, no deferred income tax asset and liability is recognized. The temporary differences relating to investments in subsidiaries to the extent that, in the case of taxable differences, the Company and its subsidiaries control the timing of the reversal and it is probable that the differences will not reverse in the foreseeable future, or in the case of deductible differences, unless it is probable that they will reverse in the future.

The Company and its subsidiaries recognize deferred income tax assets to the extent that it is probable that taxable profit will be available to offset the deductible temporary difference, deductible tax loss and tax credit.

At the end of reporting period, deferred income tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or liability is settled.

The carrying amount of a deferred tax asset is reviewed at the end of each reporting period and is reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow the related tax benefit to be utilised. Any such reduction is reversed to the extent that it becomes probable that sufficient taxable profits will be available.

Deferred income tax assets and deferred income tax liabilities are offset when meeting all the conditions below:

- (1) The Company and its subsidiaries have the legal enforceable right to offset current income tax assets and current income tax liabilities;
- (2) Deferred income tax assets and deferred income tax liabilities are related to the income tax levied by the same tax authority of the Company and its subsidiaries.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (w) Employee benefits

Employee benefits include all expenditures relating to the employees for their services. The Company and its subsidiaries recognize employee benefits as liabilities during the accounting period when employees render services and allocate to related cost of assets and expenses based on different beneficiaries.

In connection with pension obligations, the Company and its subsidiaries operate various defined contribution plans in accordance with the local conditions and practices in the countries and provinces in which they operate. A defined contribution plan is a pension plan under which the Company and its subsidiaries pay fixed contributions into a separate publicly administered pension insurance plan on mandatory and voluntary bases. The Company and its subsidiaries have no legal or constructive obligations to pay further contributions if the fund does not hold sufficient assets to pay all employees the benefits relating to employee service in the current and prior periods. The contributions are recognized as employee benefit when incurred. Prepaid contributions are recognized as assets to the extent that a cash refund or a reduction in the future payment is available.

### (x) Government grants

Government grants are recognized when the Company and its subsidiaries fulfill the conditions attached to them and they are probable to be received. When government grants are received in the form of monetary assets, they are measured at the amount received or receivable. When the grant is in the form of non-monetary assets, it is measured at fair value. When fair value cannot be measured reliably, nominal amount is assigned.

Asset-related government grant is recognized as deferred income and is amortized evenly in profit or loss over the useful lives of related assets.

Income-related government grant that is used to compensate subsequent related expenses or losses of the Company and its subsidiaries are recognized as deferred income and recorded in the profit or loss when related expenses or losses incurred. When the grant is used to compensate expenses or losses that were already incurred, they are directly recognized in current period profit or loss.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (y) Revenue and income recognition

Revenue and income are recognized based the following methods:

Revenue and income are recognized when it is probable that the economic benefits associated with the transaction will flow to the Company and its subsidiaries and the amount of the revenue and income can be measured reliably.

#### (i) Electricity and heat sales revenue

Electricity and heat sales revenue represents the fair value of the consideration received or receivable for electricity and heat sold in the ordinary course of the activities of the Company and its subsidiaries (net of VAT or GST). Revenue is earned and recognized upon transmission of electricity and heat to the customers or the power grid controlled and owned by the respective regional or provincial grid companies.

#### (ii) Goods sales revenue

Goods sales revenue represents the fair value of the consideration received or receivable for the sale of the goods in the ordinary course of the activities of the Company and its subsidiaries. Goods sales revenue is recognized when the goods is delivered to the customers and there is no unfulfilled obligation that could affect the customer's acceptance of the goods.

#### (iii) Service revenue

Service revenue refers to amounts received from service of port loading, conveying and transportation. The Company and its subsidiaries recognize revenue when the relevant service is provided.

#### (iv) Dividend income

Dividend income from unlisted investments is recognized when the shareholder's right to receive payment is established. Dividend income from listed investments is recognized when the share price of the investment goes ex-dividend.

#### (v) Interest income

Interest income from deposits is recognized on a time proportion basis using effective interest method. Interest income from the finance lease is recognized on a basis that reflects a constant periodic rate of return on the net investment in the finance lease.

#### (vi) Rental income from operating leases

Rental income receivable under operating leases is recognized in profit or loss in equal instalments over the periods covered by the lease term, except where an alternative basis is more representative of the pattern of benefits to be derived from the use of the leased asset. Lease incentives granted are recognized in profit or loss as an integral part of the aggregate net lease payments receivable. Contingent rentals are recognized as income in the accounting period in which they are earned.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

### (z) Leases

Leases where all the risks and rewards incidental to ownership of the assets are in substance transferred to the lessees are classified as finance leases. All other leases are operating leases.

#### (i) Operating leases

Operating lease expenses are capitalized or expensed on a straight-line basis over the lease term.

The cost of acquiring land held under an operating lease is amortized on a straight-line basis over the period of the lease term.

#### (ii) Finance lease

The Company and its subsidiaries recognize the aggregate of the minimum lease receipts and the initial direct costs on the lease inception date as the receivable. The difference between the aggregate of the minimum lease receipts and the initial direct costs and sum of their respective present values is recognized as unrealized finance income. The Company and its subsidiaries adopt the effective interest method to allocate such unrealized finance income over the lease term. At the end of reporting period, the Company and its subsidiaries present the net amount of finance lease receivable after deducting any unrealized finance income in non-current assets and current assets, respectively.

Please refer to Note 2(l)(v) for impairment test on finance lease receivables.

Where the Company and its subsidiaries acquire the use of assets under finance leases, the amounts representing the fair value of the leased asset, or, if lower, the present value of the minimum lease payments, of such assets are included in fixed assets and the corresponding liabilities, net of finance charges, are recorded as obligations under finance leases. Depreciation is provided at rates which write off the cost or valuation of the assets over the term of the relevant lease or, where it is likely the Company and its subsidiaries will obtain ownership of the asset, the life of the asset, as set out in Note 2(f). Impairment losses are accounted for in accordance with the accounting policy as set out in Note 2(k). Finance charges implicit in the lease payments are charged to profit or loss over the period of the leases so as to produce an approximately constant periodic rate of charge on the remaining balance of the obligations for each accounting period. Contingent rentals are charged to profit or loss in the accounting period in which they are incurred.

#### (aa) Purchase of electricity

The overseas subsidiary of the Company recognizes electricity purchase cost when it purchases the electricity and transmits to its customers.

2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(ab) Financial guarantee contracts

The Company issues financial guarantee contracts that transfer significant insurance risk. Financial guarantee contracts are those contracts that require the issuer to make specified payments to reimburse the holders for losses they incur because specified debtors fail to make payments when due in accordance with the original or modified terms of debt instruments. Where the Company issues a financial guarantee, the fair value of the guarantee is initially recognized as deferred income within accounts payable and other liabilities. The fair value of financial guarantees issued at the time of issuance is determined by reference to fees charged in an arm's length transaction for similar services, when such information is obtainable, or is otherwise estimated by reference to interest rate differentials, by comparing the actual rates charged by lenders when the guarantee is made available with the estimated rates that lenders would have charged, had the guarantees not been available, where reliable estimates of such information can be made. Where consideration is received or receivable for the issuance of the guarantee, the consideration is recognized in accordance with the Company's policies applicable to that category of asset. Where no such consideration is received or receivable, an immediate expense is recognized in profit or loss on initial recognition of any deferred income. The amount of the guarantee initially recognized as deferred income is amortized in profit or loss over the term of the guarantee as income from financial guarantees issued.

(ac) Dividend distribution

Dividend distribution to the shareholders of the Company and its subsidiaries is recognized as a liability in the period when the dividend is approved in the shareholders' meeting.

(ad) Contingencies

Contingent liabilities are not recognized in the financial statements. They are disclosed unless the possibility of an outflow of resources embodying economic benefits is remote. Contingent assets are not recognized in the financial statements but disclosed when an inflow of economic benefit is probable.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(ae) Standards and amendments to published standards that are not yet effective but relevant to the Company and its subsidiaries

The following are standards or amendments to existing standards that have been published and are mandatory for the accounting periods beginning on or after 1 January 2018, but the Company and its subsidiaries have not early adopted:

• IFRIC 22, “Foreign currency transactions and advance consideration”, which will be effective for accounting periods beginning on or after 1 January 2018.

• IFRS 15, “Revenue from contracts with customers”, which will be effective for accounting periods beginning on or after 1 January 2018.

• IFRS 9, “Financial instrument (2014)”, which will be effective for accounting periods beginning on or after 1 January 2018.

• IFRS 16, “Leases”, which will be effective for accounting periods beginning on or after 1 January 2019.

• Amendments to IAS 40, “Investment property: Transfers of investment property”, which will be effective for accounting periods beginning on or after 1 January 2018.

• IFRIC 23, “Uncertainty over income tax treatments”, which will be effective for accounting periods beginning on or after 1 January 2019.

• Included in “Annual improvements to IFRSs 2014-2016 Cycle”, IAS 28, “Investments in Associates and Joint Ventures”, which will be effective for accounting periods beginning on or after 1 January 2018.

The Company and its subsidiaries are in the process of making an assessment of what the impact of these amendments and new standards is expected to be in the period of initial application. While the assessment has been substantially completed for IFRS 9 and IFRS 15, the actual impacts upon the initial adoption of the standards may differ as the assessment completed to date is based on the information currently available to the Company and its subsidiaries, and further impacts may be identified before the standards are initially applied in the Company and its subsidiaries’ interim financial report for the six months ending 30 June 2018. The Company and its subsidiaries may also change its accounting policy elections, including the transition options, until the standards are initially applied in that financial report.

2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(ae) Standards and amendments to published standards that are not yet effective but relevant to the Company and its subsidiaries (Cont'd)

(i) IFRS 9, Financial instruments (2014)

IFRS 9 will replace the current standard on accounting for financial instruments, IAS 39, Financial instruments: Recognition and measurement. IFRS 9 introduces new requirements for classification and measurement of financial assets, including the measurement of impairment for financial assets and hedge accounting. On the other hand, IFRS 9 incorporates without substantive changes the requirements of IAS 39 for recognition and derecognition of financial instruments and the classification and measurement of financial liabilities.

IFRS 9 is effective for annual periods beginning on or after 1 January 2018 on a retrospective basis. The Company and its subsidiaries plan to use the exemption from restating comparative information and will recognise any transition adjustments against the opening balance of equity at 1 January 2018.

Expected impacts of the new requirements on the Company and its subsidiaries' financial statements are as follows:

The Company and its subsidiaries have assessed that their financial assets currently measured at amortised cost and FVTPL will continue with their respective classification and measurements upon the adoption of IFRS 9;

With respect to the Company and its subsidiaries' financial assets currently classified as "available-for-sale", these are equity investments which the Company and its subsidiaries have the option to irrevocably designate as FVTOCI (without recycling) on transition to IFRS 9. The Company and its subsidiaries plan to elect this designation option for any of the investments held on 1 January 2018 and will recognise any fair value changes in respect of these investments in other comprehensive income as they arise. The Company and its subsidiaries are in the process of assessing the fair value of the available-for-sale financial assets currently measured at cost less impairment and will disclose the impact to the opening balance of the Company and its subsidiaries' equity as 1 January 2018 in interim financial report for the six months ending 30 June 2018.

The classification and measurement requirements for financial liabilities under IFRS 9 are largely unchanged from IAS 39, except that IFRS 9 requires the fair value change of a financial liability designated at FVTPL that is attributable to changes of that financial liability's credit risk to be recognised in other comprehensive income (without reclassification to profit or loss). The Company and its subsidiaries currently do not have any above mentioned financial liabilities designated at FVTPL and therefore this new requirement will not have any impact on the Company and its subsidiaries on adoption of IFRS 9.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(ae) Standards and amendments to published standards that are not yet effective but relevant to the Company and its subsidiaries (Cont'd)

### (i) IFRS 9, Financial instruments (2014) (Cont'd)

The new impairment model in IFRS 9 replaces the “incurred loss” model in IAS 39 with an “expected credit loss” model. Under the expected credit loss model, it will no longer be necessary for a loss event to occur before an impairment loss is recognised. Instead, an entity is required to recognise and measure either a 12-month expected credit loss or a lifetime expected credit loss, depending on the asset and the facts and circumstances. The Company and its subsidiaries expect that the application of the expected credit loss model will result in earlier recognition of credit losses. Based on a preliminary assessment, the Company and its subsidiaries do not expect material change to the loss allowance for the Company and its subsidiaries’ trade debtors and other debt investment held at amortised cost and net investment in finance lease.

IFRS 9 does not fundamentally change the requirements relating to measuring and recognising ineffectiveness under IAS 39. However, greater flexibility has been introduced to the types of transactions eligible for hedge accounting. ¶ The Company and its subsidiaries have assessed that its current hedge relationships will qualify as continuing hedges upon the adoption of IFRS 9 and therefore it expects that the accounting for its hedging relationships will not be significantly impacted.

### (ii) IFRS 15, Revenue from contracts with customers

IFRS 15 establishes a comprehensive framework for recognising revenue from contracts with customers. IFRS 15 will replace the existing revenue standards, IAS 18, Revenue, which covers revenue arising from sale of goods and rendering of services, and IAS 11, Construction contracts, which specifies the accounting for revenue from construction contracts. IFRS 15, deals with revenue recognition and establishes principles for reporting useful information to users of financial statements about the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity’s contracts with customers. IFRS 15 provides that an entity should recognise revenue to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled to in exchange for the goods or services provided and establishes a five step model to be applied by an entity in evaluating its contracts with customers. Revenue is recognised when a customer obtains control of a good or service and thus has the ability to direct the use and obtain the benefits from the good or service. An entity should apply IFRS 15 using either modified retrospective approach or cumulative effect method.



## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(ae) Standards and amendments to published standards that are not yet effective but relevant to the Company and its subsidiaries (Cont'd)

(ii) IFRS 15, Revenue from contracts with customers (Cont'd)

During 2017 the Company substantially completed its assessment of the potential impact of the new standard, including performing a review of revenue streams and customer contracts in order to evaluate the effects that this standard may have on the consolidated statement of comprehensive income and consolidated statement of financial position. The Company and its subsidiaries' revenues are substantially generated from the sales of power heat and other goods. Effective 1 January 2018, the Company and its subsidiaries adopted IFRS 15 utilising the cumulative effect method, which results in the Company and its subsidiaries' retaining prior period figures as reported under the previous standards and recognising the cumulative effect of applying IFRS 15 as an adjustment to the opening balance of retained earnings as at the date of initial adoption, and will provide additional disclosures comparing results to previous IFRS in its 2018 consolidated financial statements. The Company and its subsidiaries plan to apply the new revenue standard only to contracts not completed as of the date of initial application, referred to as open contracts. Since the number of open contracts at 31 December is limited, and more than 95% of the Company and its subsidiaries' revenue comprised of contracts with customers from rate-regulated sales of power and heat, where revenue will continue to be recognised upon transmission to the customers. Pursuant to the new standard, the Company and its subsidiaries expects that the adoption of IFRS 15 will not have material impact on the consolidated financial statements.

(iii) IFRS 16, Lease

As disclosed in Note 2(z), currently the Company and its subsidiaries classify leases into finance leases and operating leases and account for the lease arrangements differently, depending on the classification of the lease. The Company and its subsidiaries enter into some leases as the lessor and others as the lessee.

IFRS 16 is not expected to impact significantly on the way that lessors account for their rights and obligations under a lease. However, once IFRS 16 is adopted, lessees will no longer distinguish between finance leases and operating leases. Instead, subject to practical expedients, lessees will account for all leases in a similar way to current finance lease accounting, i.e. at the commencement date of the lease the lessee will recognise and measure a lease liability at the present value of the minimum future lease payments and will recognise a corresponding "right-of-use" asset. After initial recognition of this asset and liability, the lessee will recognise interest expense accrued on the outstanding balance of the lease liability, and the depreciation of the right-of-use asset, instead of the current policy of recognising rental expenses incurred under operating leases on a systematic basis over the lease term. As a practical expedient, the lessee can elect not to apply this accounting model to short-term leases (i.e. where the lease term is 12 months or less) and to leases of low-value assets, in which case the rental expenses would continue to be recognised on a systematic basis over the lease term.

## 2 PRINCIPAL ACCOUNTING POLICIES (Cont'd)

(ae) Standards and amendments to published standards that are not yet effective but relevant to the Company and its subsidiaries (Cont'd)

(iii) IFRS 16, Lease (Cont'd)

IFRS 16 will primarily affect the Company and its subsidiaries' accounting as a lessee of leases for properties, plant and equipment which are currently classified as operating leases. The application of the new accounting model is expected to lead to an increase in both assets and liabilities and to impact on the timing of the expense recognition in the statement of profit or loss over the period of the lease. As disclosed in Note 40(b), at 31 December 2017 the Company and its subsidiaries' future minimum lease payments under non-cancellable operating leases amount to RMB1,487 million for property, plant and equipment and land use rights, the majority of which is payable either between 1 and 5 years after the reporting date or in more than 5 years. Some of these amounts may therefore need to be recognised as lease liabilities, with corresponding right-of-use assets, once IFRS 16 is adopted. The Company and its subsidiaries will need to perform a more detailed analysis to determine the amounts of new assets and liabilities arising from operating lease commitments on adoption of IFRS 16, after taking into account the applicability of the practical expedient and adjusting for any leases entered into or terminated between now and the adoption of IFRS 16 and the effects of discounting.

There are no other amendments and new standards that are not yet effective that would be expected to have a material impact on the Company and its subsidiaries' consolidated financial statements.

## 3 FINANCIAL AND CAPITAL RISKS MANAGEMENT

(a) Financial risk management

Risk management, including the management on the financial risks, is carried out under the instructions of the Strategic Committee of Board of Directors and the Risk Management Team. The Company works out general principles for overall management as well as management policies covering specific areas. In considering the importance of risks, the Company identifies and evaluates risks at head office and individual power plant level, and requires analysis and proper communication of the information collected periodically.

SinoSing Power and its subsidiaries are subject to financial risks that are different from the entities operating within the PRC. They have a series of controls in place to maintain the cost of risks occurring and the cost of managing the risks at an acceptable level. Management continually monitors the risk management process to ensure that an appropriate balance between risk and control is achieved. SinoSing Power and its subsidiaries have their written policies and financial authorization limits in place which are reviewed periodically. These financial authorization limits seek to mitigate and eliminate operational risks by setting approval thresholds required for entering into contractual obligations and investments.

### 3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

#### (a) Financial risk management (Cont'd)

##### (i) Market risk

##### (1) Foreign exchange risk

Foreign exchange risk of the entities operating within the PRC primarily arises from loans denominated in foreign currencies of the Company and its subsidiaries. SinoSing Power and its subsidiaries are exposed to foreign exchange risk on bank balances, accounts receivable, other receivables and assets, accounts payable and other liabilities that are denominated primarily in US\$, a currency other than Singapore dollar (“S\$”), their functional currency. Please refer to Note 18, 19, 25, 28 and 36 for details. The Company and its subsidiaries manage exchange risk through closely monitoring interest and exchange market.

As at 31 December 2017, if RMB had weakened/strengthened by 5% (2016: 5%) against US\$ and 3% (2016: 3%) against EUR (“€”) with all other variables constant, the Company and its subsidiaries would further recognize exchange loss/gain amounted RMB112 million (2016: RMB142 million) and RMB7million (2016: RMB9 million), respectively. The ranges of such sensitivity disclosed above were based on the observation on the historical trend of related exchange rates during the previous year under analysis.

As at 31 December 2017, if S\$ had weakened/strengthened by 10% (2016: 10%) against US\$ with all other variables constant, the Company and its subsidiaries would further recognize exchange gain/loss amounted RMB30 million (2016: exchange loss/gain RMB10 million). The ranges of such sensitivity disclosed above were based on the management’s experience and forecast.

SinoSing Power and its subsidiaries also are exposed to foreign exchange risk on fuel purchases that are denominated primarily in US\$. They substantially hedge their estimated foreign currency exposure in respect of forecast fuel purchases over the following three months using primarily foreign currency contracts.

##### (2) Price risk

The available-for-sale financial assets of the Company and its subsidiaries are exposed to equity security price risk.

Detailed information relating to the available-for-sale financial assets is disclosed in Note 10. The Company closely monitors the pricing trends in the open market in determining its long-term strategic stakeholding decisions.

The Company and its subsidiaries are exposed to fuel price risk on fuel purchases. In particular, SinoSing Power and its subsidiaries use fuel oil swap to hedge against such a risk and designate them as cash flow hedges. Please refer to Note 14 for details.

3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

(a) Financial risk management (Cont'd)

(i) Market risk (Cont'd)

(3) Cash flow interest rate risk

The interest rate risk of the Company and its subsidiaries primarily arises from long-term loans. Loans borrowed at variable rates expose the Company and its subsidiaries to cash flow interest rate risk. The exposures of these risks are disclosed in Note 25 to the financial statements. The Company and its subsidiaries have entered into interest rate swap agreements with banks to hedge against a portion of cash flow interest rate risk.

As at 31 December 2017, if interest rates on RMB-denominated borrowings had been 50 basis points higher/lower with all other variables held constant, interest expense for the year would have been RMB789 million (2016: RMB520 million) higher/lower. If interest rates on US\$-denominated borrowings had been 50 basis points higher/lower with all other variables held constant, interest expense for the year would have been RMB6 million (2016: RMB7 million) higher/lower. If interest rates on S\$-denominated borrowings had been 100 basis points higher/lower with all other variables held constant, interest expense for the year would have been RMB72 million (2016: RMB59 million) higher/lower. The ranges of such sensitivity disclosed above were based on the observation on the historical trend of related interest rates during the previous year under analysis.

The Company has entered into a floating-to-fixed interest rate swap agreement to hedge against cash flow interest rate risk of a loan. According to the interest rate swap agreement, the Company agrees with the counterparty to settle the difference between fixed contract rates and floating-rate interest amounts calculated by reference to the agreed notional amounts quarterly until 2019. Tuas Power Generation Pte. Ltd. ("TPG") also entered into a number of floating-to-fixed interest rate swap agreements to hedge against cash flow interest rate risk of a loan. According to the interest rate swap agreements, TPG agrees with the counterparty to settle the difference between fixed contract rates and floating-rate interest amounts calculated by reference to the agreed notional amount semi-annually until 2020. Please refer to Note 14 for details.

### 3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

#### (a) Financial risk management (Cont'd)

##### (ii) Credit risk

Credit risk arises from bank deposits, accounts receivable, other receivables and assets and other non-current assets. The maximum exposures of other non-current assets, other receivables and assets, accounts receivable and bank deposits are disclosed in Note 16, 18, 19 and 36 to the financial statements, respectively.

Bank deposits are placed with reputable banks and financial institutions. In addition, a significant portion is deposited with a non-bank financial institution which is a related party of the Company. The Company has a director on the Board of this non-bank financial institution and exercises influence. Corresponding maximum exposures of these bank deposits are disclosed in Note 37 (a)(i) to the financial statements.

Most of the power plants of the Company and its subsidiaries operating within the PRC sell electricity generated to their sole customers, the power grid companies of their respective provinces or regions where the power plants operate. These power plants communicate with their individual grid companies periodically and believe that adequate provision for doubtful accounts have been made in the financial statements.

Singapore subsidiaries derive revenue mainly from sale of electricity to the National Electricity Market of Singapore operated by Energy Market Company Pte. Ltd., which does not have high credit risk. Singapore subsidiaries also derive revenue mainly from retailing electricity to consumers with monthly consumption of more than 2,000kWh. These customers engage in a wide spectrum of manufacturing and commercial activities in a variety of industries. Singapore subsidiaries hold cash deposits of RMB161.37 million (2016: RMB175.86 million) and guarantees from creditworthy financial institutions as a security from these customers.

##### (iii) Liquidity risk

Liquidity risk management is to primarily ensure the ability of the Company and its subsidiaries to meet its liabilities as and when they are fall due. The liquidity reserve comprises the undrawn borrowing facility and cash and cash equivalents available as at each month end in meeting its liabilities.

The Company and its subsidiaries maintain flexibility in funding by cash generated by their operating activities and availability of committed credit facilities.

Financial liabilities due within 12 months are presented as current liabilities in the statement of financial position. The cash flows of derivative financial liabilities and repayment schedules of the long-term loans and long-term bonds are disclosed in Note 14, 25 and 26, respectively.

## 3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

## (b) Fair value estimation

## (i) Fair value measurements

The table below analyses financial instruments carried at fair value, by valuation method. The different levels have been defined as follows:

Level 1- Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2- Inputs other than quoted prices included within level 1 that are observable for the asset or liability, either directly (that is, as prices) or indirectly (that is, derived from prices).

Level 3- Inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs).

The following table presents the assets and liabilities that are measured at fair value at 31 December 2017.

	Level			
	1	Level 2	Level 3	Total
Assets				
Financial assets at fair value through profit or loss				
– Trading derivatives (Note 14)	–	2,726	–	2,726
– Contingent consideration (Note 41)	–	–	859,547	859,547
Derivatives used for hedging (Note 14)	–	330,966	–	330,966
Available-for-sale financial assets				
– Equity securities (Note 10)	9,223	–	–	9,223
Total assets	9,223	333,692	859,547	1,202,462
Liabilities				
Financial liabilities at fair value through profit or loss				
– Trading derivatives (Note 14)	–	125	–	125
Derivatives used for hedging (Note 14)	–	210,539	–	210,539
Total liabilities	–	210,664	–	210,664

## 3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

## (b) Fair value estimation (Cont'd)

## (i) Fair value measurements (Cont'd)

The following table presents the assets and liabilities that are measured at fair value at 31 December 2016.

	Level 1	Level 2	Level 3	Total
<b>Assets</b>				
Financial assets at fair value through profit or loss				
– Trading derivatives (Note 14)	–	5,881	–	5,881
Derivatives used for hedging (Note 14)	–	372,442	–	372,442
Available-for-sale financial assets				
– Equity securities (Note 10)	1,820,713	–	–	1,820,713
Total assets	1,820,713	378,323	–	2,199,036
<b>Liabilities</b>				
Financial liabilities at fair value through profit or loss				
– Trading derivatives (Note 14)	–	619	–	619
Derivatives used for hedging (Note 14)	–	334,119	–	334,119
Total liabilities	–	334,738	–	334,738

The fair value of financial instruments traded in active markets is based on quoted market prices at the end of reporting period. A market is regarded as active if quoted prices are readily and regularly available from an exchange, dealer, broker, industry group, pricing service, or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's length basis. The quoted market price used for financial assets held by the Company and its subsidiaries is the current bid price. These instruments are included in level 1. As at 31 December 2017, instruments included in level 1 are equity instruments in listed securities classified as available for sale.

The fair value of financial instruments that are not traded in an active market is determined by using valuation techniques. These valuation techniques maximize the use of relevant observable inputs and minimize the use of unobservable inputs. If all significant inputs required to fair value an instrument are observable, the instrument is included in level 2.

3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

(b) Fair value estimation (Cont'd)

(i) Fair value measurements (Cont'd)

If one or more of the significant inputs is not based on observable market data, the instrument is included in level 3.

Specific valuation techniques used to value financial instruments include:

The forward exchange contracts and fuel oil swaps are both valued using quoted market prices or dealer quotes for similar instruments.

The fair value of interest rate swaps is calculated as the present value of the estimated future cash flows based on observable yield curves.

The contingent consideration is valued using discounted cash flow. The valuation model considers the present value of the expected future receivables discounted using a risk-adjusted discounted rate. The expected future contingent considerations are determined by considering the expected performance of acquired entities through 31 December 2019, representing the measurement period for contingent consideration.

Instruments included in level 2 comprise forward exchange contracts, fuel oil swaps and interest rate swaps.

During the year ended 31 December 2017, there are no transfers of financial instruments between level 1 and level 2, or transfers into or out of level 3.

The movements during the period in the balance of the Level 3 fair value measurements are as follows:

	2017
Contingent consideration	
Beginning of the year	–
Movement:	
Gains on fair value changes	859,547
End of the year	859,547
Total gains for the period included in profit or loss for assets held at the end of the reporting period	859,547



### 3 FINANCIAL AND CAPITAL RISKS MANAGEMENT (Cont'd)

#### (b) Fair value estimation (Cont'd)

##### (ii) Fair value disclosures

The carrying value less provision for doubtful accounts of accounts receivable, other receivables and assets, accounts payable and other liabilities, short-term bonds and short-term loans approximated their fair values. The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to the Company and its subsidiaries for similar financial instruments.

The estimated fair value of long-term loans and long-term bonds (both including current maturities) was approximately RMB125.00 billion and RMB19.81 billion as at 31 December 2017 (2016: RMB74.48 billion and RMB15.71 billion), respectively. The aggregate book value of these liabilities was approximately RMB125.13 billion and RMB19.99 billion as at 31 December 2017 (2016: RMB74.55 billion and RMB15.48 billion), respectively.

#### (c) Capital risk management

The objectives of the Company and its subsidiaries when managing capital are to safeguard the ability of the Company and its subsidiaries in continuing as a going concern in order to provide returns for shareholders and benefits for other stakeholders and to maintain an optimal capital structure to reduce the cost of capital.

The Company and its subsidiaries monitor capital by using debt ratio analysis. This ratio is calculated as total liabilities (sum of current liabilities and non-current liabilities) divided by total assets as shown in the consolidated statement of financial position. During 2017, the strategy of the Company and its subsidiaries remained unchanged from 2016. The debt ratio of the Company and its subsidiaries as at 31 December 2017 was 72.86% (2016: 67.54%).

### 4 CRITICAL ACCOUNTING ESTIMATES AND JUDGMENTS

Estimates and judgments are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

The Company and its subsidiaries make estimates and assumptions concerning the future. The resulting accounting estimates will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below.

#### 4 CRITICAL ACCOUNTING ESTIMATES AND JUDGMENTS (Cont'd)

##### (a) Accounting estimates on impairment of goodwill and power generation license

The Company and its subsidiaries perform test annually whether goodwill and power generation license have suffered any impairment in accordance with the accounting policies stated in Note 2(j) and 2(h), respectively. The recoverable amounts of CGU or CGUs to which goodwill and the power generation license have been allocated are determined based on value-in-use calculations. These calculations require the use of estimates (Note 12 and 15). It is reasonably possible, based on existing knowledge, that outcomes within the next financial period that are different from assumptions could require a material adjustment to the carrying amounts of goodwill and power generation license.

For goodwill allocated to CGUs in the PRC, changes of assumptions in tariff and fuel price could have affected the results of goodwill impairment assessment. As at 31 December 2017, if tariff had decreased by 1% or 5% from management's estimates with other variables constant with the expectations, the Company and its subsidiaries would have to recognize impairment against goodwill by approximately RMB681 million and RMB3,879 million, respectively. If fuel price had increased by 1% or 5% from the management's estimates with other variables constant with the expectations, the Company and its subsidiaries would have to recognize impairment against goodwill by RMB320 million and RMB2,535 million, respectively.

For the sensitivity analysis of power generation license and goodwill of Tuas Power, please refer to Note 12 and 15.

##### (b) Useful life of power generation license

As at year end, management of the Company and its subsidiaries assess whether the estimated useful life for its power generation license is indefinite. This assessment is based on the expected renewal of power generation license without significant restriction and cost, together with the consideration on related future cash flows generated and the expectation of continuous operations. Based on existing knowledge, outcomes within the next financial period that are different from assumptions could require a change to the carrying amount of power generation license.

##### (c) Useful lives of property, plant and equipment

Management of the Company and its subsidiaries determines the estimated useful lives of property, plant and equipment and respective depreciation. The accounting estimate is based on the expected wears and tears incurred during power generation. Wears and tears can be significantly different following renovation each time. When the useful lives differ from the original estimated useful lives, management will adjust the estimated useful lives accordingly. It is possible that the estimates made based on existing experience are different to the actual outcomes within the next financial period and could cause a material adjustment to the depreciation and carrying amount of property, plant and equipment.

#### 4 CRITICAL ACCOUNTING ESTIMATES AND JUDGMENTS (Cont'd)

##### (d) Estimated impairment of other non-current assets

The Company and its subsidiaries test whether property, plant and equipment, land use rights and mining rights suffered from impairment whenever an impairment indication exists. In accordance with Note 2(k), an impairment loss is recognized for the amount by which the carrying amount of the asset exceeds its recoverable amount. It is reasonably possible, based on existing knowledge, that outcomes within the next financial period that are different from assumptions could require a material adjustment to the carrying amount of property, plant and equipment, land use rights and mining rights.

Changes of assumptions in tariff and fuel price will affect the result of property, plant and equipment, land use rights and mining rights impairment assessment. For power plants assets that are subject to impairment testing, as at 31 December 2017, if tariff had decreased by 1% or 5% from management's estimates with other variables constant with the expectations, the Company and its subsidiaries would have to further recognize impairment against property, plant and equipment and land use rights by approximately RMB165 million and RMB1,165 million, respectively. If fuel price had increased by 1% or 5% from the management's estimates with other variables constant with the expectations, the impairment against property, plant and equipment, land use rights and mining rights of the Company and its subsidiaries would increase totaling by approximately RMB45 million and RMB478 million, respectively.

##### (e) Approval of construction of new power plants

The receiving of the ultimate approvals from National Development and Reform Commission ("NDRC") on certain power plant construction projects of the Company and its subsidiaries is a critical estimate and judgment of the directors. Such estimates and judgments are based on initial approval documents received as well as their understanding of the projects. Based on historical experience, the directors believe that the Company and its subsidiaries will receive final approvals from NDRC on the related power plant projects. Deviation from the estimate and judgment could result in significant adjustment to the carrying amount of non-current assets.

##### (f) Deferred tax assets

The Company and its subsidiaries recognized the deferred tax assets to the extent that it is probable that future taxable profit will be available against which the asset can be utilized, using tax rates that are expected to be applied in the period when the asset is recovered. The management assesses the deferred tax assets based on the expected amount and timing of future taxable profit, the enacted tax laws and applicable tax rates. It is reasonably possible, based on existing knowledge, the outcomes within the next financial period that are different from assumptions could require a material adjustment to the carrying amount of deferred tax assets.

#### 4 CRITICAL ACCOUNTING ESTIMATES AND JUDGMENTS (Cont'd)

##### (g) Business combination

For the business combinations undertaken by the Company, the Company allocates the consideration of the acquisition to the assets acquired and the liabilities assumed based on their estimated fair value on the date of acquisition. This process is commonly referred to as the purchase price allocation. Any excess of purchase consideration over the estimated fair values of acquired identifiable net assets is recorded goodwill (Note 2(j)). The contingent consideration of the Company in the business combination is recognised as a financial asset at fair value through profit or loss (included in other non-current assets and other receivables and assets).

The Company makes judgements and estimates in relation to the fair value allocation of the purchase price and the contingent consideration from business combination. The fair value of acquired assets and assumed liabilities and the contingent consideration are determined using valuation techniques. Estimating the fair value assigned to each class of acquired assets and assumed liabilities and the contingent consideration are based on expectations and assumptions, in particular in relation to the future sales volumes and the related revenue growth rate, future on-grid tariffs, future capital expenditure, future fuel prices, future other operating costs and the discount rates applied.

A change in the amount allocated to identifiable net assets would have an offsetting effect on the amount of goodwill recognised from the acquisition and would change the amount of depreciation and amortisation expense recognised related to those identifiable net assets. And outcomes within the next financial period that are different from assumptions could require a material adjustment to the carrying amounts of contingent consideration.

## 5 REVENUE AND SEGMENT INFORMATION

Revenues recognized during the year are as follows:

	For the year ended 31	
	December	
	2017	2016
Sales of power and heat	148,925,442	112,794,536
Sales of coal	1,143,299	2,909
Port service	232,360	237,347
Transportation service	73,830	105,505
Others	2,084,513	673,939
Total	152,459,444	113,814,236

Directors and certain senior management of the Company perform the function as the chief operating decision maker (collectively referred to as the “senior management”). The senior management reviews the internal reporting of the Company and its subsidiaries in order to assess performance and allocate resources. The Company has determined the operating segments based on these reports. The reportable segments of the Company are the PRC power segment, Singapore segment and all other segments (mainly including port and transportation operations). No operating segments have been aggregated to form a reportable segment.

Senior management assesses the performance of the operating segments based on a measure of profit before income tax expense under China Accounting Standard for Business Enterprises (“PRC GAAP”) excluding dividend income received from available-for-sale financial assets, gains on disposal of available-for-sale financial assets and operating results of the centrally managed and resource allocation functions of headquarters (“Segment results”). Other information provided, except as noted below, to the senior management of the Company is measured under PRC GAAP.

Segment assets exclude prepaid income tax, deferred income tax assets, available-for-sale financial assets and assets related to the centrally managed and resource allocation functions of headquarters that are not attributable to any operating segment (“corporate assets”). Segment liabilities exclude current income tax liabilities, deferred income tax liabilities and liabilities related to the centrally managed and resource allocation functions of headquarters that are not attributable to any operating segment (“corporate liabilities”). These are part of the reconciliation to total assets and liabilities of consolidated statement of financial position.

## 5 REVENUE AND SEGMENT INFORMATION (Cont'd)

All sales among the operating segments have been eliminated as internal transactions when preparing consolidated financial statements.

(Under PRC GAAP)

	PRC power segment	Singapore segment	All other segments	Total
For the year ended 31 December 2017				
Total revenue	142,067,629	10,078,031	694,405	152,840,065
Inter-segment revenue	–	–	(380,621)	(380,621)
Revenue from external customers	142,067,629	10,078,031	313,784	152,459,444
Segment results	2,417,073	(577,458)	302,191	2,141,806
Interest income	126,927	70,756	1,223	198,906
Interest expense	(9,026,064)	(450,928)	(145,112)	(9,622,104)
Impairment loss	(1,167,751)	(994)	(19,742)	(1,188,487)
Depreciation and amortization	(18,081,299)	(856,979)	(189,764)	(19,128,042)
Net loss on disposal of non-current assets	(580,345)	(995)	(3)	(581,343)
Share of profits less losses of associates and joint ventures	(7,318)	–	307,923	300,605
Income tax expense	(1,667,234)	99,150	(5,386)	(1,573,470)
For the year ended 31 December 2016 (Restated*)				
Total revenue	129,101,375	8,758,822	634,965	138,495,162
Inter-segment revenue	–	–	(344,866)	(344,866)
Revenue from external customers	129,101,375	8,758,822	290,099	138,150,296
Segment results	17,633,734	(282,703)	(38,433)	17,312,598
Interest income	102,265	69,672	623	172,560
Interest expense	(7,952,640)	(481,263)	(137,825)	(8,571,728)
Impairment (loss)/reversal	(1,410,733)	899	(8,475)	(1,418,309)
Depreciation and amortization	(17,320,753)	(778,426)	(203,493)	(18,302,672)
Net loss on disposal of non-current assets	(693,091)	(172)	(14,303)	(707,566)
Share of profits less losses of associates and joint ventures	973,982	–	73,415	1,047,397
Income tax expense	(4,610,591)	44,135	57,489	(4,508,967)

5 REVENUE AND SEGMENT INFORMATION (Cont'd)  
(Under PRC GAAP)

	PRC power segment	Singapore segment	All other segments	Total
31 December 2017				
Segment assets	334,379,104	27,817,680	9,978,885	372,175,669
Including:				
Additions to non-current assets (excluding financial assets and deferred income tax assets)	24,447,658	260,240	328,061	25,035,959
Investments in associates	12,577,836	–	2,919,860	15,497,696
Investments in joint ventures	1,457,247	–	1,025,534	2,482,781
Segment liabilities	(264,115,887)	(14,000,442)	(3,026,229)	(281,142,558)
31 December 2016 (Restated*)				
Segment assets	331,939,958	28,141,718	11,789,504	371,871,180
Including:				
Additions to non-current assets (excluding financial assets and deferred income tax assets)	27,430,205	230,974	854,484	28,515,663
Investments in associates	12,527,711	–	2,880,368	15,408,079
Investments in joint ventures	2,202,002	–	790,610	2,992,612
Segment liabilities	(246,200,555)	(14,027,606)	(5,620,515)	(265,848,676)

A reconciliation of revenue from external customers to operating revenue is provided as follows:

	For the year ended 31 December	
	2017	2016 (Restated*)
Revenue from external customers (PRC GAAP)	152,459,444	138,150,296
Reconciling item:		
Impact of restatement under PRC GAAP in relation to business combination under common control* (Note 41)	–	(24,336,060)
Operating revenue per IFRS consolidated statement of comprehensive income	152,459,444	113,814,236

## 5 REVENUE AND SEGMENT INFORMATION (Cont'd)

A reconciliation of segment result to profit before income tax expense is provided as follows:

	For the year ended 31 December	
	2017	2016 (restated*)
Segment results (PRC GAAP)	2,141,806	17,312,598
Reconciling items:		
Loss related to the headquarter	(170,210 )	(699,054 )
Investment income from China Huaneng Finance Co., Ltd. ("Huaneng Finance")	143,794	132,018
Dividend income of available-for-sale financial assets	124,918	105,337
Gains on disposal of available-for-sale financial assets	1,479,732	932,738
Impact of restatement under PRC GAAP in relation to business combination under common control* (Note 41)	–	(3,417,300 )
Impact of other IFRS adjustments**	(918,307 )	(553,199 )
Profit before income tax expense per IFRS consolidated statement of comprehensive income	2,801,733	13,813,138

Reportable segments' assets are reconciled to total assets as follows:

	As at 31 December	
	2017	2016 (Restated*)
Total segment assets (PRC GAAP)	372,175,669	371,871,180
Reconciling items:		
Investment in Huaneng Finance	1,336,777	1,314,603
Deferred income tax assets	2,980,303	2,447,648
Prepaid income tax	150,838	204,182
Available-for-sale financial assets	1,654,993	3,560,928
Corporate assets	395,148	360,854
Impact of restatement under PRC GAAP in relation to business combination under common control * (Note 41)	–	(70,341,769 )
Impact of other IFRS adjustments**	17,895,783	5,422,113
Total assets per IFRS consolidated statement of financial position	396,589,511	314,839,739



## 5 REVENUE AND SEGMENT INFORMATION (Cont'd)

Reportable segments' liabilities are reconciled to total liabilities as follows:

	As at 31 December	
	2017	2016 (Restated*)
Total segment liabilities (PRC GAAP)	(281,142,558)	(265,848,676)
Reconciling items:		
Current income tax liabilities	(430,703 )	(572,515 )
Deferred income tax liabilities	(1,283,950 )	(1,429,859 )
Corporate liabilities	(3,632,847 )	(4,717,617 )
Impact of restatement under PRC GAAP in relation to business combination under common control * (Note 41)	–	59,917,072
Impact of other IFRS adjustments**	(2,484,849 )	(1,407 )
Total liabilities per IFRS consolidated statement of financial position	(288,974,907)	(212,653,002)

## 5 REVENUE AND SEGMENT INFORMATION (Cont'd)

Other material items:

	Reportable segment total	Headquarters	Investment income from Huaneng Finance	Impact of restatement under PRC GAAP in relation to business combination under common control* (Note 41)	Impact of other IFRS adjustments**	Total
For the year ended 31						
December 2017						
Total revenue	152,459,444	–	–	–	–	152,459,444
Interest expense	(9,622,104 )	(126,900 )	–	–	–	(9,749,004 )
Depreciation and amortization	(19,128,042 )	(38,819 )	–	–	(1,468,972 )	(20,635,833 )
Impairment loss	(1,188,487 )	–	–	–	1,275	(1,187,212 )
Share of profits less losses of associates and joint ventures	300,605	–	143,794	–	(19,184 )	425,215
Net (loss)/gain on disposal of non-current assets	(581,343 )	3,174	–	–	(38,287 )	(616,456 )
Income tax expense	(1,573,470 )	–	–	–	355,944	(1,217,526 )
For the year ended 31						
December 2016 (Restated*)						
Total revenue	138,150,296	–	–	(24,336,060)	–	113,814,236
Interest expense	(8,571,728 )	(131,244 )	–	1,885,446	–	(6,817,526 )
Depreciation and amortization	(18,302,672 )	(48,934 )	–	3,533,820	(344,929 )	(15,162,715 )
Impairment loss	(1,418,309 )	–	–	213,351	–	(1,204,958 )
Share of profits less losses of associates and joint ventures	1,047,397	–	132,018	133,694	(14,220 )	1,298,889
Net (loss)/gain on disposal of non-current assets	(707,566 )	(14 )	–	115,769	1,762	(590,049 )
Income tax expense	(4,508,967 )	–	–	928,854	114,962	(3,465,151 )

\*The Company completed the acquisition of equity interests of four companies from Huaneng Group, see Note 41 for details. As the acquisition is a business combination under common control, the transaction is accounted for under merger accounting method under PRC GAAP. The assets and liabilities acquired in business combinations are measured at the carrying amounts of the acquirees in the consolidated financial statements of the ultimate controlling party on the acquisition date. The operating results for all periods presented are retrospectively restated as if the current structure and operations resulting from the acquisition had been in existence from the date when the acquirees first became under the control of the same ultimate controlling party. Therefore the relevant comparative figures in the segment information were restated under PRC GAAP while the acquisition is accounted for using

acquisition method under IFRS.

Other GAAP adjustments above primarily represented the classification adjustments and other adjustments. Other \*\*than the classification adjustments, the differences will be gradually eliminated following subsequent depreciation and amortization of related assets or the extinguishment of liabilities.

169

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## 5 REVENUE AND SEGMENT INFORMATION (Cont'd)

Geographical information (Under IFRS):

(i) External revenue generated from the following countries:

	For the year ended 31 December	
	2017	2016
PRC	142,381,413	105,055,414
Singapore	10,078,031	8,758,822
Total	152,459,444	113,814,236

The geographical location of customers is based on the location at which the electricity was transferred, goods were delivered and services provided.

(ii) Non-current assets (excluding financial assets and deferred income tax assets) are located in the following countries:

	As at 31 December	
	2017	2016
PRC	319,534,533	249,155,921
Singapore	23,035,758	23,369,766
Total	342,570,291	272,525,687

The information on sales to major customers of the Company and its subsidiaries at amount equal to or more than 10% of external revenue is as follows:

	For the year ended 31 December			
	2017		2016	
	Amount	Proportion	Amount	Proportion
State Grid Shandong Electric Power Company	28,659,891	19 %	12,649,224	11 %

In 2017, the revenue from grid companies under common control of State Grid Corporation of China in total accounted for 76% of external revenue (2016: 74%).

## 6PROFIT BEFORE INCOME TAX EXPENSE

Profit before income tax expense was determined after charging/(crediting) the following:

	For the year ended 31 December	
	2017	2016
Total interest expense on borrowing	10,225,069	7,267,490
Less: amounts capitalized in property, plant and equipment	476,065	449,964
Interest expenses charged in consolidated statement of comprehensive income	9,749,004	6,817,526
Auditors' remuneration-audit services	64,160	43,610
Operating leases charge	364,756	331,496
Fuel	92,737,304	56,617,542
Depreciation of property, plant and equipment	20,180,830	14,815,620
Amortization of land use rights	341,125	225,707
Amortization of other non-current assets	113,878	121,388
Impairment loss of property, plant and equipment (Note 7)	1,046,195	1,063,735
Impairment loss of land use rights (Note 11)	108,590	51,981
Impairment loss of other non-current assets	5,008	–
Recognition of provision for doubtful accounts	27,682	89,498
Reversal of provision for inventory obsolescence	(263 )	(256 )
Net loss on disposals of non-current assets	616,456	590,049
Government grants	(421,912 )	(396,467 )
Gain on a bargain purchase	–	(129,921 )
Included in other investment income		
– Gains on disposal of available-for-sale financial asset (Note 10)	(1,479,732 )	(932,738 )
– Dividends on available-for-sale financial assets	(124,918 )	(103,037 )
– Gains on disposal of subsidiaries*	(52,330 )	–
Included in (gain)/loss on fair value changes of financial assets/liabilities		
– Contingent consideration of the business combination (Note 41)	(859,547 )	–
– Loss on fair value changes of trading derivatives	2,761	12,986

For the disposals of Taishan Power Limited Company and Huaneng (Fujian) Harbour Limited Company with no interest being retained. The Company received consideration of RMB781 million and RMB222 Million respectively. \* The investment income of 52 million was recognized and the related non-controlling interests of RMB681 million and RMB186 million with the subsidiaries were derecognized.

Other operating expenses consist of impairment loss of property, plant and equipment, land use rights and other non-current assets, environmental protection expenses, substituted power arrangement expenses, insurance, gain on a bargain purchase, government grants and other miscellaneous expenses.

## 7 PROPERTY, PLANT AND EQUIPMENT

	Dam	Port facilities	Buildings	Electric utility plant in service	Transportation facilities	Others	CIP	Total
As at 1 January 2016								
Cost	1,856,144	3,860,009	8,306,471	327,827,738	980,290	5,809,400	23,851,697	372,493,149
Accumulated depreciation	(153,325 )	(436,215 )	(2,508,772 )	(138,852,591 )	(371,226 )	(3,366,838 )	–	(145,684,767 )
Accumulated impairment loss	(268,981 )	–	(68,931 )	(5,968,962 )	–	(81,328 )	(741,510 )	(7,129,712 )
Net book value	1,433,838	3,423,794	5,728,768	183,006,185	609,064	2,361,234	23,110,187	219,673,607
Year ended 31 December 2016								
Beginning of the year	1,433,838	3,423,794	5,728,768	183,006,185	609,064	2,361,234	23,110,187	219,673,607
Reclassification Business combination	–	1,771	(492,558 )	495,841	759	(5,813 )	–	–
Additions	–	1,770	127	418,812	–	122,519	18,839,102	19,382,230
Transfer from CIP	20,170	246,712	1,319,019	12,576,736	20,033	296,648	(14,479,318 )	–
Disposals/write-off	–	–	(68,945 )	(495,251 )	(26,477 )	(27,055 )	(193,357 )	(811,085 )
Depreciation charge	(32,987 )	(113,810 )	(255,882 )	(14,004,881 )	(48,720 )	(387,884 )	–	(14,844,264 )
Impairment charge	(41,423 )	–	(2,303 )	(1,005,367 )	–	(6,399 )	(8,243 )	(1,063,432 )
Currency translation differences	–	–	–	404,948	–	782	158	405,888
End of the year	1,379,598	3,560,237	6,236,324	181,700,877	554,659	2,357,009	27,273,105	223,061,600
As at 31 December 2016								
Cost	1,876,314	4,116,914	9,056,858	341,195,395	875,630	6,041,783	28,022,858	391,185,752
Accumulated depreciation	(186,312 )	(556,677 )	(2,749,300 )	(152,408,524 )	(320,971 )	(3,596,546 )	–	(159,811,720 )
Accumulated impairment loss	(310,404 )	–	(71,234 )	(7,085,994 )	–	(88,228 )	(749,753 )	(8,305,613 )
Net book value	1,379,598	3,560,237	6,236,324	181,700,877	554,659	2,357,009	27,273,105	223,061,600
Year ended 31 December 2017								
Beginning of the year	1,379,598	3,560,237	6,236,324	181,700,877	554,659	2,357,009	27,273,105	223,061,600
Reclassification Business combination (Note 41)	279,169	–	1,944,531	58,379,270	17,243	443,052	2,717,544	63,780,779
Additions	–	–	184	840,991	–	88,160	21,225,980	22,155,135
Transfer from CIP	15,355	114,688	342,285	20,283,508	288,554	145,705	(21,190,095 )	–
Disposals/write-off	–	(14,731 )	(30,837 )	(1,252,829 )	(3,907 )	(28,562 )	–	(1,330,866 )
Disposal of subsidiaries	–	(632,709 )	(101,169 )	(114,542 )	–	(153,096 )	(1,242,210 )	(2,243,726 )

Depreciation charge	(40,200 )	(111,529 )	(339,630 )	(19,155,852 )	(59,022 )	(494,932 )	–	(20,201 )
Impairment charge	(45,619 )	–	(1,651 )	(754,753 )	–	(2,503 )	(241,669 )	(1,046 )
Currency translation differences	–	–	–	151,249	–	263	600	152,112
End of the year	1,637,689	2,915,552	8,102,084	239,920,160	793,170	2,416,183	28,543,255	284,320
As at 31 December 2017								
Cost	2,220,224	3,358,811	11,173,669	418,360,698	1,155,392	5,972,688	29,534,677	471,770
Accumulated depreciation	(226,512 )	(443,259 )	(3,019,198 )	(170,525,898 )	(362,222 )	(3,523,292 )	–	(178,100 )
Accumulated impairment loss	(356,023 )	–	(52,387 )	(7,914,640 )	–	(33,213 )	(991,422 )	(9,347 )
Net book value	1,637,689	2,915,552	8,102,084	239,920,160	793,170	2,416,183	28,543,255	284,320

## 7 PROPERTY, PLANT AND EQUIPMENT (*Cont'd*)

### Interest capitalization

Interest expense of approximately RMB476 million (2016: RMB450 million) arising on borrowings for the construction of property, plant and equipment was capitalized during the year and was included in 'Additions' in property, plant and equipment. The weighted average capitalization rate was approximately 4.54% (2016: 4.52%) per annum.

### Impairment

In 2017, impairment losses for certain property, plant and equipment and land use rights of approximately RMB1,046 million and RMB109 million have been recognized, respectively. Factors leading to the impairment include lower than expected utilization hours of a subsidiary due to long idle hours of its power generating units and the coal-fire projects in progress was aborted; lower than expected operating results of three subsidiaries in 2017 due to oversupply and fierce competition within the electricity market in the provinces, as well as low profitability of a hydropower plant, a coal-fire project in progress of a subsidiary was aborted as a result of relevant regulation. Discount rates of 9.50%, 9.98%, 9.89%, 14.74% and 9.14% were adopted in the value in use model in the determination of the recoverable amounts for the four coal-fired power plants and the hydropower plant respectively. In addition, as a result of the low demand of coal-fired power in local market, management estimated the possibility of further development of a coal-fired power project was remote, therefore the project under construction with a carrying value of RMB242 million was fully impaired in 2017.

In 2016, impairment losses for certain property, plant and equipment and land use rights of approximately RMB1,064 million and RMB52 million have been recognized, respectively. Factors leading to the impairment of operating projects primarily included lower utilization hours and tariff of two coal-fired power plants as a result of over supply of electricity in two provinces, as well as low utilization hours of a hydropower plant as a result of low level of water inflow. Discount rates of 8.06%, 8.97% and 8.12% were adopted in the value in use model in the determination of the recoverable amounts for the two coal-fired power plants and the hydropower plant respectively.

### Property, plant and equipment held under finance leases

As at 31 December 2017, certain property, plant and equipment with original cost of RMB3,312 million (2016: RMB2,075 million) were held under finance leases, which mainly included power generation assets, ships and pipeline assets.

### Security

As at 31 December 2017, certain property, plant and equipment were secured to a bank as collateral against a long-term loan (Note 25).

### Buildings without ownership certificate

At 31 December 2017, the Company and its subsidiaries were in the process of applying for the ownership certificate for certain buildings (buildings for power generation process were included in electric utility plant in service) with an aggregate net book value of RMB10,800 million (2016: RMB7,871 million). The management are of the opinion that the Company and its subsidiaries are entitled to lawfully and validly occupy and use of the above mentioned buildings.



## 8 INVESTMENTS IN ASSOCIATES AND JOINT VENTURES

	2017	2016
Beginning of the year	19,632,113	19,745,192
Capital injections in associates and joint ventures	301,916	276,118
Business combination (Note 41(a))	1,021,566	–
Transfer from available-for-sale	91,800	–
Transfer to subsidiaries	(736,725 )	–
Share of net profit less loss	425,215	1,298,889
Share of other comprehensive income/(loss)	121,208	(180,572 )
Currency translation differences	(142,226 )	–
Dividends	(835,279 )	(1,507,514 )
Elimination of unrealized profits on transactions with equity-method investees	(361,965 )	–
End of the year	19,517,623	19,632,113

As at 31 December 2017, investments in associates and joint ventures of the Company and its subsidiaries are unlisted except for Shenzhen Energy Corporation Limited (“SECL”) which is listed on the Shenzhen Stock Exchange. The following list contains only the particulars of material associates and joint ventures:

## 8 INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (Cont'd)

Name	Country of incorporation	Registered capital	Business nature and scope of operation	Percentage of equity interest held	
				Direct	Indirect <sup>1</sup>
Associates:					
SECL*	PRC	RMB2,642,994,398	Energy and investment in related industries	25.02%	—
Hebei Hanfeng Power Generation Limited Liability Company (“Hanfeng Power”)	PRC	RMB1,975,000,000	Power generation	40%	—
Huaneng Finance	PRC	RMB5,000,000,000	Provision for financial service including fund deposit services, lending, finance lease arrangements, notes discounting and entrusted loans and investment arrangement within Huaneng Group	20%	—
Huaneng Sichuan Hydropower Co., Ltd. (“Sichuan Hydropower”)	PRC	RMB1,469,800,000	Development, investment, construction, operation and management of hydropower	49%	—
China Huaneng Group Fuel Co., Ltd. (“Huaneng Group Fuel Company”) **	PRC	RMB3,000,000,000	Wholesale of coal, import and export of coal	50%	—
Hainan Nuclear Power Limited Liability Company (“Hainan Nuclear”)	PRC	RMB4,831,460,000	Construction and operation of nuclear power plants; production and sales of electricity and related products	30%	—
Joint ventures:					
Shanghai Time Shipping Co., Ltd. (“Shanghai Time Shipping”)	PRC	RMB1,200,000,000	International and domestic sea transportation	50%	—
Jiangsu Nantong Power Generation Co., Ltd. (“Jiangsu Nantong Power”)	PRC	RMB1,596,000,000	Operation and Management of power generation plants and transportation related projects	—	35%
Huaneng Shandong Ruyi (Hongkong) Energy Co., Ltd (“Ruyi	Hong Kong	10,000 Shares	Investment in electricity and other related energy projects	—	40%

(Hongkong)  
Energy”)\*\*

Shandong Luyi Power International Limited Company (“Luyi Power”)**	PRC	RMB35,000,000	Contracting overseas projects and international bidding projects, mechanical and electrical equipment installation engineering and electric power engineering	–	40%
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175

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8 INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (Cont'd)

<sup>1</sup> The indirect percentage of equity interest held represents the effective ownership interest of the Company and its subsidiaries.

\* As at 31 December 2017, the fair value of the Company's shares in SECL was RMB6,010 million (2016: RMB6,813 million).

\*\* In accordance with the articles of the association of the investee, the Company could only exercise significant influence on the investee and therefore accounts for the investment under the equity method.

\*\*\* Ruyi (Hongkong) Energy and Luyi Power were established for Pakistan Sahiwal Project, which are jointly controlled by Huaneng Shandong Power Generation Co., Ltd. and Shandong Ruyi Technology Group Co., Ltd..

All the above associates and joint ventures are accounted for under the equity method in the consolidated financial statements.

## 8 INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (Cont'd)

Summarized financial information of the material associates, adjusted for any differences in accounting policies and acquisition adjustments, and reconciliation to the carrying amounts in the consolidated financial statements, are disclosed below:

	Sichuan Hydropower		SECL		Huaneng Finance		Han
	2017	2016	2017	2016	2017	2016	
Gross amounts of the associates'							
Current assets	1,113,579	1,245,157	16,444,934	14,021,440	25,535,504	13,919,342	650
Non-current assets	14,590,921	14,676,021	56,079,321	46,584,060	20,786,497	18,055,386	2,2
Current liabilities	(2,477,362 )	(2,410,462 )	(20,447,190)	(16,564,310)	(39,588,213)	(25,344,346)	(79
Non-current liabilities	(8,661,852 )	(8,901,599 )	(28,491,540)	(19,395,060)	(49,904 )	(57,368 )	(27
Equity	4,565,286	4,609,117	23,585,525	24,646,130	6,683,884	6,573,014	2,0
-Equity attributable to shareholders	3,400,953	3,449,824	22,285,077	21,610,140	6,683,884	6,573,014	2,0
-Non-controlling interests	1,164,333	1,159,293	1,300,448	3,035,990	–	–	–
Revenue	2,247,781	2,053,327	13,908,949	11,427,830	1,393,211	1,093,637	2,0
Profit/(loss) from continuing operations attributable to shareholders	222,403	173,220	747,657	1,362,028	718,970	660,089	52,
Other comprehensive income/(loss) attributable to shareholders	–	–	521,965	(638,680 )	(28,099 )	(125,840 )	–
Total comprehensive income/(loss) attributable to shareholders	222,403	173,220	1,269,622	723,348	690,871	534,249	52,
Dividend received from the associates	132,923	145,392	148,761	198,348	116,000	122,000	127
Reconciled to the interests in the associates							
Gross amounts of net assets attributable to shareholders of the associate	3,400,953	3,449,824	22,285,077	21,610,140	6,683,884	6,573,014	2,0
The Company's effective interest	49	% 49	% 25.02	% 25.02	% 20	% 20	% 40
The Company's share of net assets attributable to shareholders of the associate	1,666,467	1,690,414	5,574,612	5,405,776	1,336,777	1,314,603	829
Impact of adjustments	207,586	207,586	1,161,810	1,161,810	–	–	293
Carrying amount in the consolidated financial	1,874,053	1,898,000	6,736,422	6,567,586	1,336,777	1,314,603	1,1

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177

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## 8 INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (Cont'd)

Summarized financial information of material joint ventures adjusted for any differences in accounting policies and acquisition adjustment, and reconciliation to the carrying amount in the consolidated financial statements, are disclosed below:

	Shanghai Time Shipping		Jiangsu Nantong Power		Pakistan Sahiwal Project Related Investment
	2017	2016	2017	2016	2017
Gross amounts of joint ventures'					
Current assets	665,410	883,120	656,720	815,359	3,069,065
Non-current assets	4,663,530	5,335,409	5,739,860	6,075,100	9,775,693
Current liabilities	(3,316,709)	(3,177,881)	(2,939,371)	(2,600,258)	(1,955,211)
Non-current liabilities	(617,437 )	(1,506,076)	(1,374,656)	(1,931,219)	(8,738,121)
Equity	1,394,794	1,534,572	2,082,553	2,358,982	2,151,426
Included in the above assets and liabilities:					
Cash and cash equivalents	96,528	203,018	362,214	96,501	618,105
Current financial liabilities (excluding trade and other payables and provisions)	(2,987,937)	(2,681,857)	(2,404,331)	(2,270,601)	(1,482,269)
Non-current financial liabilities (excluding trade and other payables and provisions)	(617,437 )	(1,506,076)	(1,352,000)	(1,931,219)	(8,738,121)
Revenue	3,532,065	3,561,091	3,451,983	3,354,545	2,321,510
(loss)/Profit from continuing operations	(139,780 )	1,212	271,364	608,660	(72,227 )
Other comprehensive loss	—	—	—	—	(284,452 )
Total comprehensive (loss)/income	(139,780 )	1,212	271,364	608,660	(356,679 )
Dividend received in cash from the joint ventures	—	275,000	724,453	—	—
Included in the above profit:					
Depreciation and amortization	317,133	340,826	396,500	393,221	63,122
Interest income	1,406	985	1,810	2,313	10
Interest expense	157,851	149,748	130,028	128,224	104,467
Income tax expense	(45,741 )	500	92,294	194,915	224,146
Reconciled to the interest in the joint venture:					
Gross amounts of net assets	1,394,794	1,534,572	2,082,553	2,358,982	2,151,426
The Company and its subsidiaries' effective interest	50	% 50	% 50	% 50	% 50
The Company and its subsidiaries' share of net assets	697,397	767,286	1,041,277	1,179,491	1,075,713
Impact of adjustments	18,324	18,324	—	—	(361,965 )
Carrying amount in the consolidated financial statements	715,721	785,610	1,041,277	1,179,491	713,748





## 8 INVESTMENTS IN ASSOCIATES AND JOINT VENTURES (Cont'd)

Aggregate information of associates and joint ventures that are not individually material:

	2017	2016
Aggregate carrying amount of individually immaterial associates and joint ventures in the consolidated financial statements	2,948,510	3,479,043
Aggregate amounts of the Company and its subsidiaries' share of those associates and joint ventures		
Profit from continuing operations	70,965	263,392
Total comprehensive income	70,965	263,392

As at 31 December 2017, the Company's share of losses of an associate and a joint venture exceeded its interest in the associate and the joint venture and the unrecognized further losses amounted to RMB185 million (2016: RMB163 million).

## 9 INVESTMENTS IN SUBSIDIARIES

As at 31 December 2017, the investments in subsidiaries of the Company and its subsidiaries, all of which are unlisted, are as follows:

## (i) Subsidiaries acquired through establishment or investment

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng International Power Fuel Limited Liability Company	PRC	held directly	RMB 200,000,000	Wholesale of coal	100%	100%
Huaneng Shanghai Shidongkou Power Generation Limited Liability Company ("Shidongkou Power")(i)	PRC	held directly	RMB 1,179,000,000	Power generation	50%	100%
Huaneng Nantong Power Generation Limited Liability Company	PRC	held directly	RMB 798,000,000	Power generation	70%	70%
Huaneng Yingkou Co-generation Limited Liability Company	PRC	held directly	RMB 844,030,000	Production and sales of electricity and heat sale of coal ash and lime	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Hunan Xiangqi Hydropower Co.Ltd.	PRC	held directly	RMB 328,000,000	Construction, operation and management of hydropower plants and related projects	100%	100%
Huaneng Zuoquan Coal-fired Power Generation Limited Liability Company	PRC	held directly	RMB 960,000,000	Construction, operation and management of electricity projects; Development and utilization of clean energy resources	80%	80%
Huaneng Kangbao Wind Power Utilization Limited Liability Company	PRC	held directly	RMB 407,200,000	Construction, operation and management of wind power plants and related projects; solar power generation	100%	100%
Huaneng Jiuquan Wind Power Generation Co., Ltd.	PRC	held directly	RMB 2,600,000,000	Construction, operation and management of wind power generation and related projects	100%	100%
Huaneng Jiuquan II Wind Power Generation Co., Ltd.	PRC	held directly	RMB 10,000,000	Construction, operation and management of wind power generation and related projects	100%	100%
Huaneng Wafangdian Wind Power Generation Co., Ltd.	PRC	held directly	RMB 50,000,000	Construction, operation and management of wind power generation and related projects	100%	100%
Huaneng Changtu Wind Power Generation Co., Ltd.	PRC	held directly	RMB 50,000,000	Construction, operation and management of wind power generation and related projects	100%	100%
Huaneng Rudong Wind Power Generation Co., Ltd.	PRC	held directly	RMB 90,380,000	Operation, management of wind power generation projects	90%	90%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Guangdong Haimen Port Limited Liability Company	PRC	held directly	RMB 331,400,000	Loading, warehousing and conveying services, providing facility services and water transportation services	100%	100%
Huaneng Taicang Port Limited Liability Company	PRC	held directly	RMB 600,000,000	Port provision, cargo loading and storage	85%	85%
Huaneng Taicang Power Generation Co., Ltd.	PRC	held directly	RMB 804,146,700	Power generation	75%	75%
Huaneng Huaiyin II Power Generation Limited Company	PRC	held directly	RMB 930,870,000	Power generation	63.64%	63.64%
Huaneng Xindian Power Generation Co., Ltd.	PRC	held directly	RMB 465,600,000	Power generation	95%	95%
Huaneng Shanghai Combined Cycle Power Limited Liability Company	PRC	held directly	RMB 699,700,000	Power generation	70%	70%
Huaneng Yumen Wind Power Generation Co., Ltd.	PRC	held directly	RMB 719,170,000	Construction, operation and management of wind power generation and related projects	100%	100%
Huaneng Qingdao Co-generation Limited Company	PRC	held directly	RMB 214,879,000	Construction, operation and management of co-generation power plants and related projects	100%	100%
Huaneng Tongxiang Combined Cycle Co-generation Co., Ltd.	PRC	held directly	RMB 300,000,000	Production and sales of electricity and heat; investment in combined cycle co-generation industries	95%	95%
Huaneng Eastern Yunnan Energy Mine Construction Co., Ltd.	PRC	held indirectly	RMB 10,000,000	Mine engineering, construction engineering, equipment installation engineering	100%	100%



Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Nanjing Combined Cycle Co-generation Co., Ltd.	PRC	held directly	RMB 582,000,000	Construction, operation and management of power plants and related projects	60%	60%
Huaneng Shantou Haimen Power Generation Limited Liability Company	PRC	held directly	RMB 1,508,000,000	Construction, operation and management of power plants and related projects	80%	80%
Huaneng Chongqing Liangjiang Power Generation Limited Liability Company (“Liangjiang Power”)	PRC	held directly	RMB 726,600,000	Construction, operation and management of natural gas power plants and related projects	90%	90%
Chongqing Huaqing Energy Co., Ltd. (“Huaqing Energy”) (ii)	PRC	held indirectly	RMB 44,420,000	Providing thermal energy and cold energy services; supplying electricity	54%	60%
Huaneng Yunnan Fuyuan Wind Power Generation Co., Ltd.	PRC	held directly	RMB 157,290,000	Wind power project investment, management and sales	100%	100%
Huaneng Guizhou Panxian Wind Power Generation Co., Ltd.	PRC	held directly	RMB 86,500,000	Construction and management of wind power plants and related projects	100%	100%
Huaneng Jiangxi Clean Energy Limited Liability Company	PRC	held directly	RMB 5,000,000	Power generation and supply, development, management and construction of clean energy projects	100%	100%
Huaneng Suzhou Combined Cycle Co-generation Co., Ltd. (“Suzhou Combined Cycle Co-generation”) (ix)	PRC	held indirectly	RMB 310,000,000	Construction and management of natural gas power plant and related projects	53.45%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Hunan Subaoding Wind Power Generation Co., Ltd.	PRC	held directly	RMB 266,000,000	Construction, operation and management of wind power plants and related projects	100%	100%
Huaneng Suixian Jieshan Wind Power Generation Co., Ltd.	PRC	held directly	RMB 96,500,000	Construction, operation and management of wind power plants and related projects	100%	100%
Huaneng Taiyuan Dongshan Combined Cycle Co-generation Co., Ltd.	PRC	held directly	RMB 600,000,000	Construction and operation of thermal heating network, development and utilization of clean energy resources	100%	100%
Huaneng Xuzhou Tongshan Wind Power Generation Co., Ltd.	PRC	held directly	RMB 2,644,560,000	Wind power generation, electricity engineering design services, maintenance of power supply and control facilities, solar energy power generation	70%	70%
Huaneng Nanjing Co-generation Co., Ltd.	PRC	held directly	RMB 300,000,000	Construction and operation of power plants, thermal heating services	70%	70%
Huaneng Hunan Guidong Wind Power Generation Co., Ltd.	PRC	held directly	RMB 140,000,000	Investment, construction, operation and management of electricity projects; development and utilization of clean energy resources	100%	100%
Huaneng Nanjing Luhe Wind Power Generation Co., Ltd.	PRC	held directly	RMB 63,800,000	Investment, construction, operation, management of electricity projects; development and utilization clean energy resources	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Luoyuan Power Generation Limited Liability Company	PRC	held directly	RMB 1,000,000,000	Construction, operation and management of power plants and related projects	100%	100%
Huaneng Lingang (Tianjin) Gas Co-generation Co., Ltd.	PRC	held directly	RMB 180,000,000	Providing generation and supply	100%	100%
Huaneng Lingang (Tianjin) Heat Co-generation Co., Ltd.	PRC	held indirectly	RMB 5,000,000	Providing thermal energy and cold energy services, supplying steam and hot water (except portable water), plumbing pipe installation and repair, energy engineering construction	66%	66%
Huaneng Anhui Huaining Wind Power Generation Co., Ltd.	PRC	held directly	RMB 122,000,000	Investment, construction and operation of electricity projects, development and utilization of clean energy resources	100%	100%
Huaneng Mianchi Co-generation Limited Liability Company	PRC	held directly	RMB 570,000,000	Construction, operation and management of coal-fired plants and related projects	60%	60%
Huaneng Yingkou Xianrendao Co-generation Co., Ltd.	PRC	held directly	RMB 277,690,000	Power generation and supply, development and utilization of clean energy resources	100%	100%
Huaneng Nanjing Xingang Comprehensive Energy Co., Ltd.	PRC	held directly	RMB 10,000,000	Thermal generation and supply, power distribution and sales	65%	65%
Huaneng Changxing Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 16,000,000	Construction and operation of distributed photovoltaic power generation plants and related projects	100%	100%

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Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Rudong Baxianjiao Offshore Wind Power Generation Co., Ltd.	PRC	held directly	RMB 610,000,000	Infrastructure construction of wind power plants	70%	70%
Huaneng Guilin Gas Distributed Energy Co., Ltd.	PRC	held directly	RMB 267,450,000	Construction, operation and management of power plants thermal management and related projects	80%	80%
Huaneng (Dalian) Co-generation Co., Ltd.	PRC	held directly	RMB 12,500,000	Construction, operation and management of co-generation power plants and related projects	100%	100%
Huaneng Zhongxiang Wind Power Generation Co., Ltd.	PRC	held directly	RMB 10,000,000	Construction, operation and management of wind power plants and related projects	100%	100%
Huaneng Guanyun Co-generation Co., Ltd.	PRC	held directly	RMB 15,000,000	Construction, operation and management of co-generation power plants, heating network and expansion engineering	100%	100%
Huaneng International Power Hongkong Limited Company	Hong Kong	held directly	100,000 Shares	Development, construction management and operation of power supply, coal	100%	100%



				projects; related investment and financing businesses		
Tuas Power Generation Pte. Ltd. ("TPG")	Singapore	held indirectly	S\$ 1,183,000,001	Power generation and related by-products, derivatives, developing power supply resources, operating electricity and power sales	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
TP Utilities Pte. Ltd.	Singapore	held indirectly	S\$ 255,500,001	Provision of energy, power supply, thermal supply, management of industrial water and waste	100%	100%
TP-STM Water Resources Pte. Ltd.	Singapore	held indirectly	S\$4,500,000	Providing desalinated water	60%	60%
Huaneng Shanxi Taihang Power Generation Limited Liability Company	PRC	held directly	RMB 1,086,440,000	Pre-services related to coal-fired generation	60%	60%
Huaneng Mianchi Clean Energy Limited Liability Company	PRC	held directly	RMB 10,000,000	Wind Power generation, new energy development and utilization	100%	100%
Huaneng Zhuolu Clean Energy Limited Liability Company	PRC	held directly	RMB 78,878,100	Construction, operation and management of power plants and related projects	100%	100%
Huaneng Tongwei Wind Power Generation Limited Liability Company	PRC	held directly	RMB 248,000,000	Construction, operation and management of wind power plants and related projects	100%	100%
Huaneng Yizheng Wind Power Generation Limited Liability Company	PRC	held directly	RMB 200,000,000	Wind power plants design, construction, management and maintenance	100%	100%
Huaneng Yancheng Dafeng New Energy Power Generation Limited Liability Company	PRC	held directly	RMB 5,000,000	Construction, operation and management of wind power, photovoltaic power plant	100%	100%
Huaneng Shanyin Power Generation Limited Liability Company	PRC	held directly	RMB 1,573,000,000	Construction, operation and management of power plants and related projects	51%	51%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Jiangsu Energy Sales Limited Liability Company	PRC	held directly	RMB 200,000,000	Purchase and sales of electricity and thermal energy, water supply services, construction and operation of electricity distribution network and heating pipe network	100%	100%
Huaneng Liaoning Energy Sales Limited Liability Company	PRC	held directly	RMB 200,000,000	Sales of electricity, thermal energy and circulating hot water	100%	100%
Huaneng Guangdong Energy Sales Limited Liability Company	PRC	held directly	RMB 200,000,000	Power and thermal energy supply, energy conservation technology service, transmission and substation projects contracting	100%	100%
Huaneng Suizhou Power Generation Limited Liability Company	PRC	held directly	RMB 50,000,000	Construction, operation and management of power plants, production and sales of electricity and heating	100%	100%
Huaneng Changle Photovoltaic Power Generation Limited Liability	PRC	held directly	RMB 10,000,000	Construction, operation and management of photovoltaic power plants and related projects	100%	100%
Huaneng Longyan Wind Power Generation Limited Liability Company	PRC	held directly	RMB 10,000,000	Construction, operation and management of wind power plants and related projects	100%	100%
Huaneng Yunnan Malong Wind Power Generation Limited Liability Company	PRC	held directly	RMB 10,000,000	Construction, operation and management of wind power plants and related projects	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Dandong Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 17,720,000	Investment, construction operation and management of electricity projects, development and utilization of clean energy resources	100%	100%
Huaneng Dongguan Combined Cycle Co-generation Limited Liability Company	PRC	held directly	RMB 50,000,000	Investment of electricity projects, thermal power generation and supply, investment in heating pipe network, development and utilization of clean energy resources	100%	100%
Huaneng Yangxi Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 62,500,000	Photovoltaic electric power production and sales	80%	80%
Huaneng Chongqing Fengjie Wind Power Generation Limited Liability Company	PRC	held directly	RMB 10,000,000	Electricity production and supply; development and utilization of clean energy resources	100%	100%
Huaneng Changxing Hongqiao Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 10,000,000	Electricity production and supply; development and utilization of clean energy resources	100%	100%
Huaneng Jingxing Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 100,000	Investment, construction and management of photovoltaic power plants	100%	100%
Huaneng Shanxi Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Electricity supply and sales, investment, construction, operation and repair of regional transmission and distribution network	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Chongqing Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Operation of natural gas, electric energy and thermal energy products sales	100%	100%
Huaneng Chongqing Luohuang Energy Sales Limited Liability Company	PRC	held indirectly	RMB 210,000,000	Sales and supply of electricity, sales of thermal products	90%	90%
Huaneng Chongqing Tongliang Energy Sales Limited Liability Company	PRC	held indirectly	RMB 210,000,000	Operation of natural gas, sales of electricity supply, sales of thermal products	51%	51%
Huaneng Hunan Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Electricity and thermal energy products sales	100%	100%
Huaneng Jiangxi Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Construction, operation and management of heating and power supply facilities	100%	100%
Huaneng Hebei Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Construction, installation, maintenance and repair of heating and power supply facilities	100%	100%
Huaneng Henan Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Sales of electricity, heating, gas and other energy products	100%	100%
Huaneng Handan Heating Limited Liability Company	PRC	held directly	RMB 100,000,000	Construction, operation and maintenance of heating sources and pipe network	100%	100%
Huaneng (Huzhou Development Zone) Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 10,000,000	Photovoltaic power generation; power supply, purchase and sales	100%	100%
Huaneng Fujian Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Sales of electricity, heating, gas and other energy products	100%	100%



Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Hubei Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Sales of electricity, heating, gas and other energy products	100%	100%
Huaneng (Sanming) Clean Energy Limited Liability Company	PRC	held directly	RMB 500,000	Construction, operation and management of wind power, photovoltaic power station and related projects	100%	100%
Huaneng Yueyang Xingang Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 16,000,000	Construction, operation and management of electricity projects, development and utilization of clean energy	60%	60%
Huaneng Shanghai Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Power supply (except construction and operation of electricity network), technology services in energy conservation and environmental protection	100%	100%
Huaneng Yushe Photovoltaic Power Generation Limited Liability Company	PRC	held directly	RMB 10,000,000	Production and supply of electric power	100%	100%
Huaneng Anhui Energy Sales Limited Liability Company	PRC	held directly	RMB 210,000,000	Sales of electricity, heating gas and other energy products	100%	100%
Huaneng (Shanghai) Power Maintenance Limited Liability Company	PRC	held directly	RMB 200,000,000	Contracting installation and repair of electricity facilities	100%	100%
Huaneng Guanyun Clean Energy Power Limited Liability Company *	PRC	held directly	RMB 26,000,000	Sales of electricity	100%	100%
Huaneng Jianchang Photovoltaic Power Generation Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity, development and utilization of clean energy resources	100%	100%





Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Chaoyang Photovoltaic Power Generation Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity, development and utilization of clean energy resources	100%	100%
Huaneng (Luoyuan) Port Limited Company (x) *	PRC	held directly	RMB 169,710,000	Port management, investment and development	100%	100%
Huaneng Shijiazhuang Energy Limited Liability Company *	PRC	held directly	RMB 60,000,000	Production and supply of heating, purchase and sales of electricity	66.60%	66.60%
Huaneng Jiangyin Combined Cycle Co-generation Limited Liability Company*	PRC	held directly	RMB 600,000,000	Production and supply of electricity, production and supply of heating	51%	51%
Huaneng Anyang Energy Limited Liability Company *	PRC	held directly	RMB 10,000,000	Production and supply of electricity, production and supply of heating	100%	100%
Huaneng Shanxi Comprehensive Energy Limited Liability Company*	PRC	held directly	RMB 120,000,000	Production and supply of electricity, production and supply of heating	100%	100%
Huaneng Zhanhua Photovoltaic Power Generation Limited Company (“Zhanhua Photovoltaic Company”) (vi)*	PRC	held indirectly	RMB 145,790,000	Photovoltaic power generation	46.40%	58%
Huaneng Weishan New Energy Limited Company (“Weishan New Energy”) (vi)*	PRC	held indirectly	RMB 167,000,000	Investment, production and sales of new energy power generation projects	40%	100%
Huaneng Ruyi (Helan) New Energy Limited Company (“Helan New Energy”) (vi)*	PRC	held indirectly	RMB 19,000,000	Photovoltaic power generation	40%	100%

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Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Dezhou New Energy Limited Company (vi)*	PRC	held indirectly	RMB 2,500,000	Photovoltaic power generation, wind power generation, biomass power generation	80%	100%
Zhaodong Huaneng Dechang Solar Power Generation Limited Company*	PRC	held indirectly	RMB 30,810,000	Solar energy generation and technology promotion, repair electricity facilities	100%	100%
Daqing Huaneng Shuangyu Solar Power Generation Limited Company*	PRC	held indirectly	RMB 20,000,000	Solar energy generation	100%	100%
Huaneng Taizhouwan Juji District Photovoltaic Power Generation Limited Liability Company*	PRC	held directly	RMB 100,000	Production and supply of electricity projects	100%	100%
Huaneng Mingguang Wind Power Generation Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity; investment, construction, operation and management of electricity projects	100%	100%
Huaneng Guangxi Energy Sales Limited Liability Company*	PRC	held directly	RMB 210,000,000	Power supply, contracting installation and repair of electricity facilities	100%	100%
Huaneng Ruzhou Clean Energy Limited Liability Company*	PRC	held directly	RMB 80,000,000	Production and supply of electricity projects, investment, construction and operation of electricity projects	95%	95%
Huaneng Hunan Lianping Wind Power Generation Limited Liability Company*	PRC	held directly	RMB 173,920,000	Production and supply of electricity	80%	80%
Huaneng Abagaqi Clean Energy Limited Liability Company*	PRC	held directly	RMB 100,000	Production, supply and sales of electricity and thermal energy	100%	100%



Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Jiashan Photovoltaic Power Generation Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity	100%	100%
Huaneng Zhejiang Energy Sales Limited Liability Company*	PRC	held directly	RMB 210,000,000	New energy technology development, technology consulting, transferring of results	100%	100%
Huaneng Guangdong Shantou Power Generation Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity and thermal energy	100%	100%
Huaneng Shantou Photovoltaic Power Generation Limited Liability Company*	PRC	held directly	RMB 100,000	Production and supply of electricity	100%	100%
Huaneng Guigang Clean Energy Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity, investment, construction and operation of electricity projects	100%	100%
Huaneng Changxing Jiapu Photovoltaic Power Generation Limited Liability Company*	PRC	held directly	RMB 10,000,000	Production and supply of electricity, investment in electricity projects	100%	100%
Huaneng Hainan Energy Sales Limited Liability Company*	PRC	held indirectly	RMB 210,000,000	Construction and operation of heat and power supply facilities, operation of heat resources, heat network and power supply facilities	91.80%	91.80%
Huaneng Yangpu Co-generation Limited Company*	PRC	held indirectly	RMB 802,222,000	Investment, construction, operation and management of electricity projects and heat pipe network	82.62%	82.62%

\*These companies were newly established in 2017.



## 9 INVESTMENTS IN SUBSIDIARIES (Cont'd)

## (ii) Subsidiaries acquired from business combinations under common control

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng (Suzhou Industrial Park) Power Generation Co., Ltd.	PRC	held directly	RMB 632,840,000	Power generation	75%	75%
Huaneng Qinbei Power Generation Co., Ltd. (“Qinbei Power”)	PRC	held directly	RMB 1,540,000,000	Power generation	60%	60%
Huaneng Yushe Power Generation Co., Ltd.	PRC	held directly	RMB 615,760,000	Power generation, power distribution, sales of power	60%	60%
Huaneng Hunan Yueyang Power Generation Limited Liability Company	PRC	held directly	RMB 1,935,000,000	Power generation	55%	55%
Huaneng Chongqing Luohuang Power Generation Limited Liability Company (“Luohuang Power”)	PRC	held directly	RMB 1,748,310,000	Power generation	60%	60%
Huaneng Pingliang Power Generation Co., Ltd.	PRC	held directly	RMB 924,050,000	Power generation	65%	65%
Huaneng Nanjing Jinling Power Generation Co., Ltd.	PRC	held directly	RMB 1,513,136,000	Power generation	60%	60%
Huaneng Qidong Wind Power Generation Co., Ltd.	PRC	held directly	RMB 391,738,500	Development of wind power projects, production and sales of electricity	65%	65%
Tianjin Huaneng Yangliuqing Co-generation Limited Liability Company (“Yangliuqing Co-generation”)	PRC	held directly	RMB 1,537,130,909	Power generation, heat supply, facilities installation, maintenance	55%	55%

Huaneng Beijing Co-generation Limited Liability Company (“Beijing Co-generation”) (iii)	PRC	held directly	RMB 3,702,090,000	and related services  Construction and operation of power plants and related construction projects	41%	66%
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Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Wuhan Power Generation Co., Ltd. (“Wuhan Power”)	PRC	held directly	RMB 1,478,461,500	Investment, construction, operation and management of electricity projects, development and utilization of clean energy resources	75%	75%
Huaneng Anyuan Power Generation Co., Ltd. (“Anyuan Power”)	PRC	held directly	RMB 1,175,117,300	Construction and operation of power plants and related construction projects, production of electricity	100%	100%
Huaneng Hualiangting Hydropower Co., Ltd. (“Hualiangting Hydropower”)	PRC	held directly	RMB 50,000,000	Generation and transfer of power supply, water supply (irrigation)	100%	100%
Huaneng Chaohu Power Generation Co., Ltd. (“Chaohu Power”) (iv)	PRC	held directly	RMB 840,000,000	Construction, operation, management of electricity projects, development and utilization of clean energy resources	60%	70%
Huaneng Jingmen Thermal Power Co., Ltd. (“Jingmen Thermal Power”)	PRC	held directly	RMB 780,000,000	Thermal power, power development and other service	100%	100%
Enshi Qingjiang Dalongtan Hydropower Development Co., Ltd. (“Dalongtan Hydropower”)	PRC	held directly	RMB 76,000,000	Hydropower development, production and management of electric power, urban water supply	97%	97%
Huaneng Suzhou Thermal Power Co., Ltd. (“Suzhou Thermal Power”) (v)	PRC	held directly	RMB 600,000,000	Construction, operation and management of electricity projects, development and utilization of clean energy	53.45%	100%



Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Hainan Power Generation Limited Company (“Hainan Power”)	PRC	held directly	RMB 1,326,419,587	Investment, construction operation of various power plants, regular energy and new energy development	91.80%	91.80%
Huaneng Ruijin Power Generation Co., Ltd. (“Ruijin Power Generation”)	PRC	held directly	RMB 536,923,299	Construction, operation, management of electricity projects, development and utilization of clean energy	100%	100%
Huaneng Yingcheng Thermal Power Co., Ltd. (“Yingcheng Thermal Power”)	PRC	held directly	RMB 650,000,000	Construction and operation of power plants and production, sales of power and heat	100%	100%
Huaneng Heilongjiang Power Generation Limited Company (“Heilongjiang Power”)	PRC	held directly	RMB 783,350,000	Development, investment, construction, production and management of power (thermal) projects	100%	100%
Huaneng Hegang Power Generation Limited Company (“Hegang Power”)	PRC	held indirectly	RMB 1,092,550,000	The electricity power construction, energy conservation and development projects, heat production and supply	64%	64%
Huaneng Xinhua Power Generation Limited Liability Company (“Xinhua Power”)	PRC	held indirectly	RMB 284,880,000	Power generation, power equipment repair	70%	70%
Huaneng Tongjiang Wind Power Generation Limited Company (“Tongjiang Wind Power”)	PRC	held indirectly	RMB 330,000,000	Wind power generation, wind power plants operation, planning and design	82.85%	82.85%
Huaneng Daqing Thermal Power Limited Company (“Daqing Thermal Power”)	PRC	held indirectly	RMB 630,000,000	Power generation, thermal production and supply	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Daqing Luyuan Wind Power Generation Limited Company (“Luyuan Wind Power”)	PRC	held indirectly	RMB 451,000,000	Wind power generation	100%	100%
Huaneng Yichun Thermal Power Limited Company (“Yichun Thermal Power”)	PRC	held indirectly	RMB 534,000,000	Power construction, production and sales, thermal production and sales	100%	100%
Huaneng Heilongjiang Energy Sales Limited Company (“Heilongjiang Energy Sales”)	PRC	held indirectly	RMB 210,000,000	Power supply, production of heat and hot water	100%	100%
Zhaodong Huaneng Thermal Power Limited Company (“Zhaodong Thermal Power”)	PRC	held indirectly	RMB 10,000,000	Heating production and supply	100%	100%
Huaneng Jilin Power Generation Limited Company (“Jilin Power”)	PRC	held directly	RMB 1,917,130,000	Power (thermal) projects, development of new energy projects investment, construction, production, operation and sales	100%	100%
Huaneng Linjiang Jubao Hydropower Limited Company (“Jubao Hydropower”)	PRC	held indirectly	RMB 20,000,000	Hydropower development and operation, construction and operation of photovoltaic power generation	100%	100%
Huaneng Jilin Energy Sales Limited Company (“Jilin Energy Sales”)	PRC	held indirectly	RMB 210,000,000	Thermal (cold) production and supply power supply	100%	100%
Huaneng Jilin Biological Power Generation Limited Company (“Jilin Biological Power”)	PRC	held indirectly	RMB 183,800,000	Biomass power generation	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Shandong Power Generation Limited Company (“Shandong Power”)	PRC	held directly	RMB 4,241,460,000	Power (thermal) project development, investment, construction and management	80%	80%
Huaneng Jining New Energy Limited Company (“Jining New Energy”) (vi)	PRC	held indirectly	RMB 38,000,000	Investment, construction and management of photovoltaic and wind power projects	80%	100%
Huaneng Zibo Boshan Photovoltaic Power Limited Company (“Zibo Photovoltaic”) (vi)	PRC	held indirectly	RMB 22,000,000	Solar power generation, sales	80%	100%
Huaneng Rizhao Thermal Power Limited Company (“Rizhao Thermal Power”) (vi)	PRC	held indirectly	RMB 52,000,000	Urban heat construction, maintenance and operation, design and construction of heat engineering	80%	100%
Huaneng Laiwu New Energy Limited Company (“Laiwu New Energy”) (vi)	PRC	held indirectly	RMB 68,000,000	Photovoltaic power and wind power generation	80%	100%
Huaneng Shandong Sishui New Energy Limited Company (“Sishui New Energy”) (vi)	PRC	held indirectly	RMB 36,000,000	Solar energy grid connected generation	80%	100%
Huaneng Shandong Electric And Thermal Power Marketing Limited Company (“Shandong Power Marketing”) (vi)	PRC	held indirectly	RMB 200,000,000	Sales and service of power and heating products, investment in power industry	80%	100%
Huaneng Shandong Information Technology Limited Company (“Shandong Power Information Company”) (vi)	PRC	held indirectly	RMB 80,000,000	Information technology and management consulting services	80%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Penglai Wind Power Generation Limited Company (“Penglai Wind Power”) (vi)	PRC	held indirectly	RMB 177,210,000	Development, investment, construction and management of wind power projects	80%	100%
Huaneng Zhanhua New Energy Limited Company (“Zhanhua New Energy”) (vi)	PRC	held indirectly	RMB 235,298,200	Wind power, photovoltaic power generation	80%	100%
Huaneng Yantai Bajiao Thermal Power Limited Company (“Bajiao Thermal Power”) (vi)	PRC	held indirectly	RMB 540,000,000	Power generation projects preparation	80%	100%
Huaneng Weihai Port Photovoltaic Power Generation Limited Company (“Port Photovoltaic”) (vi)	PRC	held indirectly	RMB 24,960,000	Photovoltaic power generation projects development and construction, electricity sales	80%	100%
Huaneng Zibo Baiyanghe Power Generation Limited Company (“Baiyanghe Power”) (vi)	PRC	held indirectly	RMB 1,098,567,344	Power production, on-grid sales, thermal production and supply	80%	100%
Huaneng Yantai Power Generation Limited Company (“Yantai Power”) (vi)	PRC	held indirectly	RMB 547,479,100	Production and sales of electricity power and heat	80%	100%
Huaneng Jinan Huangtai Power Generation Limited Company (“Huangtai Power”) (vi)	PRC	held indirectly	RMB 1,391,878,400	Electricity power production, heating management	72%	90%
Huaneng Dezhou Thermal Power Limited Company (“Dezhou Thermal Power”) (vi)	PRC	held indirectly	RMB 20,000,000	Urban heat construction, maintenance and operation, design and construction of heat engineering	68%	85%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Dongying New Energy Limited Company (“Dongying New Energy”) (vi)	PRC	held indirectly	RMB 87,906,822	Wind power projects development, wind power generation and sales of electricity	56%	70%
Huaneng Shandong Power Generation Maintenance Technology Limited Company (“Shandong Maintenance Company”) (vi)	PRC	held indirectly	RMB 50,000,000	Power engineering design, construction and construction	76.55%	100%
Huaneng Shandong Electric Power Fuel Limited Company (“Shandong Fuel Company”) (vi)	PRC	held indirectly	RMB 100,000,000	Wholesale operation of coal	76.55%	100%
Shandong Rizhao Power Generation Limited Company (“Rizhao Power”) (vi)	PRC	held indirectly	RMB 1,245,587,900	Heat, engaged in power business	88.80%	100%
Huaneng Laiwu Power Generation Limited Company (“Laiwu Power”) (vi)	PRC	held indirectly	RMB 1,800,000,000	Power production	64%	80%
Huaneng Shandong Ruyi Coal Power Limited Company (“Ruyi Coal Power”) (vi)	PRC	held indirectly	RMB 1,294,680,000	Development, investment, construction, operation and management of electricity power and coal	40%	100%
Huaneng Jiaxiang Power Generation Limited Company (“Jiaxiang Power”) (vi)	PRC	held indirectly	RMB 646,680,000	Power generation, electrical equipment maintenance	40%	100%
Huaneng Qufu Co-generation Limited Company (“Qufu Co-generation”) (vi)	PRC	held indirectly	RMB 300,932,990	Sales and production of electric power, thermal power	40%	100%
Huaneng Jining Hi-Tech Zone Co-generation Limited Company (“Jining Co-generation”) (vi)	PRC	held indirectly	RMB 118,699,760	Heat supply and power generation	40%	100%



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Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Shandong (Hongkong) Investment Limited Company (“Hong Kong Investment”) (vi)	Hong Kong	held indirectly	10,000 Shares	Investment	80%	100%
Shandong Silk Road International Power Limited Company (“Shandong Silk Road”) (vi)	PRC	held indirectly	RMB 35,000,000	Contracting overseas projects and domestic international bidding projects, construction and operation of power projects	80%	100%
Shandong Changdao Wind Power Generation Limited Liability Company (“Changdao Wind Power”) (vi)	PRC	held indirectly	RMB 33,500,000	Wind power, on-grid sales	48%	60%
Huaneng Rongcheng New Energy Co., Ltd. (“Rongcheng New Energy”) (vi)	PRC	held indirectly	RMB 36,540,000	Wind power generation	48%	100%
Huaneng Jining Yunhe Power Generation Co., Ltd. (“Yunhe Power”) (vi)	PRC	held indirectly	RMB 696,355,300	Electrical (thermal) production and on-grid sales, technology consulting and services	78.68%	98.35%
Huaneng Linyi Power Generation Limited Company (“Linyi Power”) (vi)	PRC	held indirectly	RMB 1,093,313,400	Power generation	60%	75%
Liaocheng Changrun National Electric Heating Limited Company (“Liaocheng Changrun”) (vi)	PRC	held indirectly	RMB 130,000,000	Heat operation, installation and repair of water, electricity, heating	60%	75%
Linyi Lantian Thermal Power Limited Company (“Lantian Thermal Power”) (vi)	PRC	held indirectly	RMB 36,000,000	Heat supply, maintenance of thermal power network, power sales, installation and maintenance of distribution facilities	54.40%	68%
	PRC		RMB		64%	80%

Yantai 500 Heating Limited Company (“Yantai 500”) (vi)	held indirectly	20,500,000	Central heat services, plumbing and pipe installation services
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201

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Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Liaocheng Co-generation Limited Company (“Liaocheng Co-generation”) (vi)	PRC	held indirectly	RMB 610,670,000	Power, heat production and sales	60%	100%
Huaneng Henan Zhongyuan Gas Power Generation Co., Ltd. (“Zhongyuan Gas”)	PRC	held directly	RMB 400,000,000	Investment, construction, operation and management of power projects, thermal supply, development and utilization of clean energy resources	90%	90%

The subsidiaries above and the Company are all controlled by Huaneng Group before and after the acquisitions.

(iii) Subsidiaries acquired from business combinations not under common control

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Weihai Power Generation Limited Liability Company (“Weihai Power”)	PRC	held directly	RMB 1,822,176,621	Power generation	60%	60%
Huaneng Huaiyin Power Generation Limited Company	PRC	held directly	RMB 265,000,000	Power generation	100%	100%
Huade County Daditaihong Wind Power Utilization Limited Liability Company	PRC	held directly	RMB 196,400,000	Wind power development and utilization	100%	100%
Huaneng Zhanhua Co-generation Limited Company	PRC	held directly	RMB 190,000,000	Production and sales of electricity and thermal energy	100%	100%
Shandong Hualu Sea Transportation Limited Company	PRC	held directly	RMB 100,000,000	Cargo transportation along domestic coastal areas, goods storage	53%	53%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Huaneng Qingdao Port Limited Company	PRC	held directly	RMB 219,845,000	Loading and conveying warehousing, conveying, water carriage materials supply	51%	51%
Huaneng Yunnan Diandong Energy Limited Liability Company (“Diandong Energy”)	PRC	held directly	RMB 3,769,140,000	Electricity projects investment, power generation and sales, coal exploitation and investment	100%	100%
Yunnan Diandong Yuwang Energy Limited Company (“Diandong Yuwang”)	PRC	held directly	RMB 1,700,740,000	Electricity projects investment, power generation and sales, coal exploitation and investment	100%	100%
Huaneng Suzihe Hydropower Development Limited Company	PRC	held directly	RMB 50,000,000	Hydropower, aquaculture, agriculture irrigation	100%	100%
Enshi City Mawei Valley Hydropower Development Co., Ltd.	PRC	held directly	RMB 101,080,000	Hydro-resource development hydropower, aquaculture	100%	100%
Huaneng Luoyang Co-generation Limited Liability Company	PRC	held directly	RMB 600,000,000	Production and sales of electricity and heating	80%	80%
Huaneng Jinling Combined Cycle Co-generation Co., Ltd. (“Jinling CCGT”) (vii)	PRC	held directly	RMB 356,350,000	Construction and management of power plants and related projects	51%	72%
Huaneng Zhumadian Wind Power Generation Co., Ltd.	PRC	held directly	RMB 30,000,000	Wind power generation, new energy development and utilization	90%	90%
SinoSing Power	Singapore	held directly	US\$ 1,476,420,585	Investment holding	100%	100%
Tuas Power	Singapore	held indirectly	S\$ 1,433,550,000	Investment holding	100%	100%

Name of subsidiary	Country of incorporation	Type of interest held	Registered capital	Business nature and scope of operations	Percentage of equity interest held	
					Interest	Voting
Tuas Power Supply Pte. Ltd.	Singapore	held indirectly	S\$500,000	Power sales	100%	100%
TP Asset Management Pte. Ltd.	Singapore	held indirectly	S\$2	Render of environment engineering services	100%	100%
TPGS Green Energy Pte. Ltd.	Singapore	held indirectly	S\$1,000,000	Provision of utility services	75%	75%
NewEarth Pte. Ltd.	Singapore	held indirectly	S\$10,111,841	Consultancy in waste recycling	100%	100%
NewEarth Singapore Pte. Ltd.	Singapore	held indirectly	S\$17,816,050	Industrial waste management and recycling	100%	100%
Xuzhou Tongshan District Xiehe Wind Power Generation Limited Liability Company (“Tongshan Xiehe Wind Power Generation”)	PRC	held indirectly	RMB 3,000,000	Wind power generation	100%	100%
Luoyang Yangguang Co-generation Limited Liability Company (“Yangguang Co-generation”)	PRC	held indirectly	RMB 250,000,000	Production and supply of electricity and heat power	100%	100%
Shanxi Xiaoyi Economic Development Zone Huaneng Energy Service Co., Ltd. (“Shanxi Xiaoyi Energy”) (viii) (Note 41)	PRC	held indirectly	RMB 100,000,000	Electricity sales, sales of raw coal and processed coal	51%	100%
Ruzhou Xuji Wind Power Generation Co., Ltd. (Note 41)	PRC	held indirectly	RMB 4,000,000	Wind power and photovoltaic power generation	95%	100%

## Note:

According to its article of association, the other shareholder who holds the remaining equity interests of (i) Shidongkou Power entrusts the Company to exercise all its voting rights in relation to the operation and financial policies of Shidongkou Power. Accordingly, the Company has control over Shidongkou Power.

(ii) The Company holds 90% interest in Liangjiang Power, and Liangjiang Power holds 60% interest in Huaqing Energy. Therefore, the company indirectly holds 54% equity interest in Huaqing Energy.



9 INVESTMENTS IN SUBSIDIARIES (Cont'd)

(iii) Subsidiaries acquired from business combinations not under common control (Cont'd)

Note: (Cont'd)

Pursuant to an agreement entered into between the Company and another shareholder, the Company is entrusted to vote the 25% voting rights held by the other shareholder as long as the Company remains as the largest (iii) shareholder of Beijing Co-generation. Thus, the Company has majority voting rights required by the article of association to control the operation and financial policies of Beijing Co-generation. Accordingly, the Company has control over Beijing Co-generation.

According to the voting in concert agreement entered into between the Company and one shareholder with 10% (iv) equity interests in Chaohu Power, the shareholder agreed to vote the same in respect of significant financial and operating decisions made by the Company. As a result, the Company has control over Chaohu Power.

According to the voting in concert agreement entered into between the Company and the other two shareholders in (v) Suzhou Thermal Power, the shareholders agreed to vote the same in respect of significant financial and operating decisions made by the Company. As a result, the Company has control over Suzhou Thermal Power.

(vi) These companies are subsidiaries of Shandong Power. The Company holds 80% interest in Shandong Power. Thus, the Company indirectly holds 80% interest in these companies through their parent company.

Zhanhua Photovoltaic Company is a newly established subsidiary of Shandong Power in 2017. Zhanhua New Energy, a wholly-owned subsidiary of Shandong Power, holds 58% equity interests in Zhanhua Photovoltaic Company. Thus, the Company indirectly holds 46.4% equity interests in Zhanhua Photovoltaic Company.

Weishan New Energy and Helan New Energy are wholly-owned subsidiaries of Ruyi Coal Power, a 50% owned subsidiary of Shandong Power. As a result, the Company indirectly holds 40% interest in Weishan New Energy and Helan New Energy.

Shandong Power directly holds 58% interest in Shandong Fuel Company and Shandong Maintenance Company; meanwhile, Shandong Power indirectly holds a total of 37.68% equity interests in Shandong Fuel Company and Shandong Maintenance Company respectively through its own subsidiaries: Baiyanghe Power, Huangtai Power, Yantai Power, Linyi Power, Liaocheng Co-generation and Yunhe Power. Thus, the Company indirectly holds 76.55% interest in Shandong Maintenance Company and Shandong Fuel Company respectively.

The Company directly holds 44% equity interests in Rizhao Power and Shandong Power directly holds 56% interest in Rizhao Power; Thus, the Company holds 88.8% interest in Rizhao Power;

9 INVESTMENTS IN SUBSIDIARIES (Cont'd)

(iii) Subsidiaries acquired from business combinations not under common control (Cont'd)

Note: (Cont'd)

(vi) (Cont'd)

Jiaxiang Power, Qufu Co-generation, Jining Co-generation are wholly-owned subsidiaries of Ruyi Coal Power. Thus, the Company indirectly holds 40% interest in Ruyi Coal Power, Jiaxiang Power, Qufu Co-generation and Jining Co-generation;

In according to the voting in concert agreement entered into among the Shandong Power and other equity holders of Laiwu Power, Ruyi Coal Power, Rongcheng New Energy, Liaocheng Co-generation, the other equity holders agreed to vote the same in respect of significant financial and operating decisions made by the Shandong Power. As a result, the Company has control over these companies.

(vii) According to the voting in concert agreement entered into between the Company and one shareholder with 21% equity interests in Jinling CCGT, the shareholder agreed to vote the same in respect of significant financial and operating decisions made by the Company under the circumstances that its legitimate entitlements are guaranteed. As a result, the Company has control over Jinling CCGT.

(viii) In 2016, the Company accounted for the investment in Shanxi Xiaoyi Energy as a joint venture. On 15 February 2017, the Company entered into an agreement with other shareholder with 49% equity interests in Shanxi Xiaoyi Energy who agreed to vote the same in respect of significant financial and operating decisions made by the Company. As a result, the Company has control over Shanxi Xiaoyi Energy since February 2017.

(ix) Suzhou Combined Cycle Co-generation Limited Company was acquired by Suzhou Thermal Power, another subsidiary of the Company, which was accounted for as an equity transaction, resulting in reclassification of RMB28 million from non-controlling interest to reserve.

(x) The Company acquired 49% non-controlling interests of Huaneng (Luoyuan) Port Limited Company from the other equity holder, which was accounted for as equity transaction, with the difference of RMB4 million between consideration paid and derecognised non-controlling interest recorded in reserve.

For the information of material non-controlling interest ("NCI"), please refer to Note 42.

## 10 AVAILABLE-FOR-SALE FINANCIAL ASSETS

Available-for-sale financial assets include the following:

	As at 31 December	
	2017	2016
Listed security (Fair value measurement)		
China Yangtze Power Co., Ltd.	–	1,820,255
Others	9,223	458
Subtotal	9,223	1,820,713
Unlisted securities (Cost measurement)		
10% of Shanxi Xishan Jinxing Energy Co., Ltd.	531,274	531,274
9.09% of Ganlong Double-track Railway Co., Ltd.	1,000,000	1,000,000
Others	64,496	54,045
Subtotal	1,595,770	1,585,319
Total	1,604,993	3,406,032

There were no impairment provisions provided on available-for-sale financial assets in 2017 and 2016.

In 2017, all of the 143.78 million shares of China Yangtze Power Co., Ltd. held by the Company were disposed with cash consideration of RMB2.191 billion received. After deducting initial investment costs and related taxes, investment income was recognized amounting to approximately RMB1,480 million, with other comprehensive income of RMB1,135 million reclassified to profit or loss.

## 11 LAND USE RIGHTS

The movements in the carrying amount of land use rights during the years are as follows:

	2017	2016
Beginning of the year		
Cost	10,525,537	10,059,872
Accumulated amortization	(1,792,367 )	(1,530,972 )
Accumulated impairment losses	(276,823 )	(215,134 )
Net book value	8,456,347	8,313,766
Movement:		
Business combination (Note 41)	3,182,914	61,027
Addition	331,683	364,280
Amortization charge for the year	(368,898 )	(242,400 )
Impairment charge for the year (Note 7)	(108,590 )	(51,981 )
Disposals	(86,631 )	(1,969 )
Disposal of subsidiaries	(146,922 )	–
Currency translation differences	4,882	13,624
End of the year	11,264,785	8,456,347
Cost	13,775,976	10,525,537
Accumulated amortization	(2,128,752 )	(1,792,367 )
Accumulated impairment losses	(382,439 )	(276,823 )
Net book value	11,264,785	8,456,347

All the lands located in the PRC and Singapore are leased from respective governments according to corresponding regulations applied across the countries. The Company and its subsidiaries will renew the leases according to the operation requirements of the Company and its subsidiaries and the related regulations of respective countries.

## Land use rights without ownership certificate

As at 31 December 2017, the Company and its subsidiaries were in the process of applying for the ownership certificate for certain land use right with an aggregate net book value of RMB1,246 million (2016: RMB792 million). The management are of the opinion that the Company and its subsidiaries are entitled to the lawful and valid occupation and use of the above mentioned land.



## 12 POWER GENERATION LICENSES

The movements in the carrying amount of power generation license during the years are as follows:

	2017	2016
Beginning of the year	3,849,199	3,679,175
Movement:		
Currency translation differences	67,047	170,024
End of the year	3,916,246	3,849,199

The Company and its subsidiaries acquired the power generation license in connection with the acquisition of Tuas Power. The power generation license was initially recognized at fair value at the acquisition date. Tuas Power operates power plants in Singapore pursuant to the license granted by the Energy Market Authority for a period of 30 years from 2003 until 2032. The license was extended to 2044 during 2011 with minimal costs and is subject to further renewal. The Company and its subsidiaries expect that the applicable rules and regulations surrounding the renewal can be complied with based on the current market framework. The Company and its subsidiaries assessed the useful life of the power generation license at 31 December 2017 as indefinite and therefore the license is not amortized.

## Impairment test of power generation license

Power generation license belongs to and has been assigned to Tuas Power, a CGU. The recoverable amount of the CGU is determined based on value-in-use calculation. Management prepared the impairment model based on budget approved by the Board and various factors, such as inflation, power demand and other factors as well as the terminal value.

## Key assumptions used for value-in-use calculation:

Management has assessed that one of the most sensitive key assumptions is the discount rate which was arrived at based on weighted average cost of capital. The discount rate applied in determining the recoverable amounts of the CGU was 7.30% (31 December 2016: 7.54%). An absolute increase in the discount rate of 0.5% (31 December 2016: 0.5%) would result in approximately RMB2,043 million (31 December 2016: RMB1,899 million) decrease in the recoverable amount of the CGU.

Other key assumptions include projection of its business performance based on estimation of gross margin from electricity sold, volume of electricity sold and other operating expenses, which are largely based on a combination of past performance of the CGU, its expectation of market developments and consistency with forecasts included in industry reports. On average, the growth rates of 3.0% was used in consideration of future expansion plans and new development projects as part of the long-term strategy. Cash flows beyond the terminal year was extrapolated using a growth rate of 2%.

Based on the assessments, no impairment was provided for the power generation license.

## 13 MINING RIGHTS

The movements in the carrying amount of mining rights during the years are as follow:

	2017	2016
Beginning of the year		
Cost	2,406,567	2,406,567
Accumulated impairment losses	(760,296 )	(760,296 )
Net book value	1,646,271	1,646,271
Movement:		
Addition	–	–
Impairment charge for the year	–	–
End of the year	1,646,271	1,646,271
Cost	2,406,567	2,406,567
Accumulated impairment losses	(760,296 )	(760,296 )
Net book value	1,646,271	1,646,271

## 14 DERIVATIVE FINANCIAL INSTRUMENTS

Details of derivative financial instruments are as follows:

	As at 31 December	
	2017	2016
Derivative financial assets		
– Hedging instruments for cash flow hedge (fuel swap contracts)	330,966	264,535
– Hedging instruments for cash flow hedge (exchange forward contracts)	–	107,907
– Financial instruments at fair value through profit or loss (fuel swap contracts)	2,726	5,881
Total	333,692	378,323
Less: non-current portion		
– Hedging instruments for cash flow hedge (fuel swap contracts)	75,328	71,341
– Hedging instruments for cash flow hedge (exchange forward contracts)	–	28,380
Total non-current portion	75,328	99,721
Current portion	258,364	278,602
Derivative financial liabilities		
– Hedging instruments for cash flow hedge (fuel swap contracts)	11,794	164,464
– Hedging instruments for cash flow hedge (exchange forward contracts)	68,102	454
– Hedging instruments for cash flow hedge (interest rate swap contracts)	130,643	169,201
– Financial instruments at fair value through profit or loss (fuel swap contracts)	125	619
Total	210,664	334,738
Less: non-current portion		
– Hedging instruments for cash flow hedge (fuel swap contracts)	2,026	31,673
– Hedging instruments for cash flow hedge (exchange forward contracts)	21,745	295
– Hedging instruments for cash flow hedge (interest rate swap contracts)	124,715	169,201
Total non-current portion	148,486	201,169
Current portion	62,178	133,569

For the years ended 31 December 2016 and 2017, no material ineffective portion was recognized in the profit or loss arising from cash flow hedges.

## 14 DERIVATIVE FINANCIAL INSTRUMENTS (Cont'd)

The Company uses an interest rate swap contract to hedge its interest rate risk against one of its variable rate loans. The notional principal amount of the outstanding interest rate swap contract at 31 December 2017 was US\$176 million (RMB equivalents of RMB1,150 million) (2016: US\$208 million (RMB equivalents of RMB1,443 million)). Through this arrangement, the Company pays an annual fixed interest of 4.40% while the original annual floating interest expense (6-month LIBOR+1%) attached in the loan is offset by the receivable leg of the interest rate swap. Such a swap is settled on a quarterly basis from September 2009 to September 2019.

TPG uses exchange forward contracts to hedge its foreign exchange risk arising from highly probable forecast purchase transactions. It also uses fuel oil swap contracts to hedge its fuel price risk arising from highly probable forecast purchases of fuel purchases.

TPG also uses various interest rate swap contracts to hedge floating semi-annual interest payments on borrowings with maturity dates up to 2020. The notional principal amount of these outstanding interest rate swap contracts at 31 December 2017 was S\$1,069 million (RMB equivalents of RMB5,220 million) (2016: S\$1,359 million (RMB equivalents of RMB6,522 million)). Through these arrangements, TPG swaps original floating interest (6-month SOR) to annual fixed interest determined by individual swap contracts. Such swap contracts are settled semi-annually from September 2011 to March 2020. As at 31 December 2017, these interest rate swap contracts are carried on the consolidated statements of financial position as financial liability of RMB108 million (2016: financial liability of RMB99 million).

The analysis of contractual cash inflows/(outflows) of major derivative financial instruments are as follows:

	Cash flows				
	Carrying amounts	Contractual cash flows	Within 1 year	Between 1 and 5 years	After 5 years
As at 31 December 2017					
Derivative financial assets					
Fuel derivatives used for hedging (net settlement)	330,966	330,966	255,638	75,328	–
Fuel derivatives that do not qualify as hedges (net settlement)	2,726	2,726	2,726	–	–
Derivative financial liabilities					
Fuel derivatives used for hedging (net settlement)	11,794	(11,794)	(9,768)	(2,026)	–
Forward exchange contracts used for hedging					
– inflows		2,509,363	2,041,812	467,551	–
– outflows		(2,568,034)	(2,083,441)	(484,593)	–
	68,102	(58,671)	(41,629)	(17,042)	–
Net-settled interest rate swaps used for hedging					
– net cash inflows/(outflows)	130,643	(154,367)	(82,533)	(71,834)	–
Fuel derivatives that do not qualify as hedges (net settlement)	125	(125)	(125)	–	–

## 14 DERIVATIVE FINANCIAL INSTRUMENTS (Cont'd)

	Cash flows				
	Carrying amounts	Contractual cash flows	Within 1 year	Between 1 and 5 years	After 5 years
As at 31 December 2016					
Derivative financial assets					
Fuel derivatives used for hedging (net settlement)	264,535	264,535	193,194	71,341	–
Forward exchange contracts used for hedging					
– inflows		2,118,946	1,488,071	630,875	–
– outflows		(2,009,205)	(1,407,606)	(601,599)	–
	107,907	109,741	80,465	29,276	–
Fuel derivatives that do not qualify as hedges (net settlement)	5,881	5,881	5,881	–	–
Derivative financial liabilities					
Fuel derivatives used for hedging (net settlement)	164,464	(164,464 )	(132,792 )	(31,672 )	–
Forward exchange contracts used for hedging					
– inflows		527,939	475,881	52,058	–
– outflows		(528,454 )	(476,104 )	(52,350 )	–
	454	(515 )	(223 )	(292 )	–
Net-settled interest rate swaps used for hedging					
– net cash inflows/(outflows)	169,201	(228,905 )	(113,563 )	(115,342)	–
Fuel derivatives that do not qualify as hedges (net settlement)	619	(619 )	(619 )	–	–

## 15 GOODWILL

The movements of goodwill during the years are as follows:

	2017	2016
Beginning of the year		
Cost	15,391,642	14,919,930
Accumulated impairment losses	(3,255,913 )	(3,242,748 )
Net book value	12,135,729	11,677,182
Movement:		
Business combination (Note 41)	3,167,566	–
Disposal of subsidiary-cost	(309,269 )	–
Disposal of subsidiary-impairment	309,269	–
Currency translation differences-cost	186,015	471,712
Currency translation differences-impairment	(5,190 )	(13,165 )
End of the year	15,484,120	12,135,729
Cost	18,435,954	15,391,642
Accumulated impairment losses	(2,951,834 )	(3,255,913 )
Net book value	15,484,120	12,135,729

## Impairment tests for goodwill

Goodwill is allocated to the CGUs of the Company and its subsidiaries.

The carrying amounts of major goodwill allocated to individual CGUs are as follows:

	2017	2016
PRC Power segment:		
Shandong Power	2,739,818	–
Wuhan Power	518,484	518,484
Hainan Power	506,336	506,336
Heilongjiang Power	265,319	–
Yangliuqing Cogeneration	151,459	151,459
Qinbei Power	109,913	109,913
Jilin Power	109,826	–
Yueyang Power Company	100,907	100,907
Beijing Cogeneration	95,088	95,088
Singapore segment:		
Tuas Power	10,561,956	10,381,131

15 GOODWILL (Cont'd)

Impairment tests for goodwill (Cont'd)

The recoverable amount of a CGU is determined based on value-in-use calculations. For domestic CGUs, these calculations use cash flow projections based on management's financial budgets covering periods of no more than five years. The Company expects cash flows beyond such periods will be similar to that of the respective final forecast years on existing production capacity.

For the goodwill allocated to Tuas Power, management has based their assessment of recoverable amount on value-in-use calculations. Management prepared the impairment model based on budget approved and various factors, such as inflation, power demand and other factors as well as the terminal value. On average, the growth rates of 3.0% was used in consideration of future expansion plans and new development projects as part of the long-term strategy. Cash flows beyond the terminal year was extrapolated using a growth rate of 2.0%.

Discount rates used for value-in-use calculations:

PRC Power segment 8.51%~13.59%

Singapore segment 7.30%

Key assumptions used for value-in-use calculations:

Key assumptions applied in the impairment tests include the expected tariff rates, demands of electricity in specific regions where these power plants are located and fuel cost. Management determined these key assumptions based on past performance and its expectations on market development. The discount rates used reflect specific risks relating to individual CGUs. Management believes that any reasonably possible change in any of these key assumptions on which recoverable amounts of individual CGUs are based may cause carrying amounts of individual CGUs to exceed their recoverable amounts. Please refer to Note 4 and 12 for details of respective sensitivity analysis on domestic and oversea CGU impairment testing.

In 2017 and 2016, the increase of goodwill in respect of Tuas Power was due to currency translation differences.

## 16 OTHER NON-CURRENT ASSETS

Details of other non-current assets are as follows:

	As at 31 December	
	2017	2016
VAT recoverable	2,741,604	1,651,891
Prepayments for pre-construction cost	937,161	–
Intangible assets *	697,884	411,308
Finance lease receivables	617,187	563,099
Prepaid territorial water use right **	374,743	777,994
Prepayments for capacity quota	303,399	–
Profit compensation from Huaneng Group (Note 41)	244,533	–
Prepaid connection fees	120,486	108,365
Others	1,659,848	809,288
Total	7,696,845	4,321,945

\* The intangible assets primarily consist of software, patented technologies and etc. In 2017, there is no impairment provided for the intangible assets (2016: RMB nil).

\*\* The prepaid territorial water use right are amortized over the contractual period of 50 years.



## 17 INVENTORIES

Inventories comprised:

	As at 31 December	
	2017	2016
Fuel (coal and oil) for power generation	5,684,824	5,391,068
Material and supplies	1,869,462	1,655,357
	7,554,286	7,046,425
Less: provision for inventory obsolescence	168,875	167,282
Total	7,385,411	6,879,143

Movements of provision for inventory obsolescence during the years are analyzed as follows:

	2017	2016
Beginning of the year	(167,282)	(162,389)
Provision	(1,520 )	(1,134 )
Reversal	1,782	1,390
Disposal of subsidiaries	162	–
Currency translation differences	(2,017 )	(5,149 )
End of the year	(168,875)	(167,282)

## 18 OTHER RECEIVABLES AND ASSETS

Other receivables and assets comprised the following:

	As at 31 December	
	2017	2016
Prepayments for inventories	387,335	252,389
Prepaid income tax	150,838	141,423
Prepayments for pre-construction cost	–	885,051
Prepayments for capacity quota	–	303,399
Others	181,913	121,810
Total prepayments	720,086	1,704,072
Less: provision for doubtful accounts	4,638	–
Total prepayments, net	715,448	1,704,072
Dividends receivable	273,897	861,408
Receivables from sales of fuel	290,040	–
Others	1,528,855	908,296
Subtotal other receivables	2,092,792	1,769,704
Less: provision for doubtful accounts	29,241	28,961
Total other receivables, net	2,063,551	1,740,743
Profit compensation from Huaneng Group (Note 41)	615,013	–
VAT recoverable	2,607,505	2,008,955
Designated loan to a joint venture	80,000	80,000
Gross total	6,115,396	5,562,731
Net total	6,081,517	5,533,770

Please refer to Note 37 for details of other receivables and assets due from the related parties.

The gross amounts of other receivables are denominated in the following currencies:

	As at 31 December	
	2017	2016
RMB	1,966,971	1,635,051
S\$ (RMB equivalent)	76,529	95,816
US\$ (RMB equivalent)	49,292	38,837
Total	2,092,792	1,769,704

## 18 OTHER RECEIVABLES AND ASSETS (Cont'd)

Movements of provision for doubtful accounts during the years are analyzed as follows:

	2017	2016
Beginning of the year	(28,961)	(27,957)
Provision	(5,890 )	(1,011 )
Reversal/write-off	972	7
End of the year	(33,879)	(28,961)

As at 31 December 2017, there was no indication of impairment relating to other receivables which were not past due and no material provision was made (2016: nil).

As at 31 December 2017, other receivables of RMB140 million (2016: RMB113 million) were past due but not impaired. These amounts mainly represent funds deposited in a government agency and are fully recoverable. The ageing analysis of these other receivables was as follows:

	As at 31 December	
	2017	2016
Within 1 year	61,189	42,103
Between 1 to 2 years	1,360	2,683
Between 2 to 3 years	1,130	847
Over 3 years	76,376	67,476
Total	140,055	113,109

As at 31 December 2017, other receivables of RMB41 million which were past due (2016: RMB36 million) were impaired and a provision of RMB29 million (2016: RMB29 million) has been provided against the receivables. The individually impaired receivables have been long outstanding without any repayment agreements in place or possibility of renegotiation. It was assessed that a substantial portion of the receivables is not expected to be recovered. The ageing of these other receivables was as follows:

	As at 31 December	
	2017	2016
Within 1 year	7,535	752
Between 1 to 2 years	10	912
Between 2 to 3 years	463	285
Over 3 years	33,402	34,263
Total	41,410	36,212

## 19 ACCOUNTS RECEIVABLE

Accounts receivable comprised the following:

	As at 31 December	
	2017	2016
Accounts receivable	21,948,753	14,050,096
Notes receivable	3,610,928	2,432,264
	25,559,681	16,482,360
Less: provision for doubtful accounts	112,086	88,889
Total	25,447,595	16,393,471

The gross amounts of account receivables are denominated in the following currencies:

	As at 31 December	
	2017	2016
RMB	24,633,465	15,586,989
S\$ (RMB equivalent)	922,993	876,956
US\$ (RMB equivalent)	3,223	18,415
Total	25,559,681	16,482,360

The Company and its subsidiaries usually grant about one month's credit period to local power grid customers from the end of the month in which the sales are made, except for SinoSing Power which provides credit period that ranges from 5 to 60 days from the dates of billings. Certain accounts receivables of Singapore subsidiaries are backed by bankers' guarantees and/or deposits from customers. It is not practicable to determine the fair value of the collaterals that correspond to these accounts receivable.

As at 31 December 2017, no accounts receivable was secured to banks as collateral against loans (2016: nil).

For the collateral of notes receivable, please refer to Note 28 for details.

Movements of provision for doubtful accounts during the years are analyzed as follows:

	2017	2016
Beginning of the year	(88,889 )	(2,054 )
Provision	(23,363 )	(88,818)
Reversal	–	397
Write-off	167	1,682
Currency translation differences	(1 )	(96 )
End of the year	(112,086)	(88,889)

## 19 ACCOUNTS RECEIVABLE (Cont'd)

As at 31 December 2017, the Company and its subsidiaries recognised provisions for accounts receivable assessed on an individual basis, which mainly consists of receivables due from local customers for sales of electricity or heat. The provisions were provided based on operating results of the local customers and collectability of the receivables.

(a) Ageing analysis of accounts receivable was as follows:

	As at 31 December	
	2017	2016
Within 1 year	24,787,284	16,152,038
Between 1 to 2 years	576,564	279,694
Between 2 to 3 years	155,360	29,123
Over 3 years	40,473	21,505
Total	25,559,681	16,482,360

As at 31 December 2017, the maturity period of the notes receivable ranged from 1 to 12 months (2016: from 1 to 12 months).

(b) Ageing analysis of accounts receivable and notes receivable that are neither individually nor collectively considered to be impaired are as follows:

	As at 31 December	
	2017	2016
Neither past due nor impaired	24,936,171	16,063,215
Less than 1 year past due	267,845	248,597
Between 1 to 2 years past due	206,188	63,094
Between 2 to 3 years past due	27,130	17,944
Over 3 years past due	10,261	621
Total	25,447,595	16,393,471

Receivables that were past due but not impaired relate to a number of independent customers that have a good track record with the Company and its subsidiaries. Based on past experience, management believes that no impairment allowance is necessary in respect of these balances as there has not been a significant change in credit quality and the balances are still considered fully recoverable.

## 20 COMPANY'S STATEMENT OF CHANGES IN EQUITY

	Capital surplus			Available- for-sale financial asset	Other capital reserve	Subtotal	Surplus reserves	Retained earnings	Total equity
	Share capital	Share premium	Hedging reserve	revaluation reserve					
at 1	15,200,383	22,239,399	(60,340)	1,776,496	1,093,892	25,049,447	8,140,030	27,249,300	75,639,160
16 the year									
er	–	–	–	–	–	–	–	12,243,552	12,243,552
ive ss):									
or-sale sets –	–	–	–	(197,953 )	–	(197,953 )	–	–	(197,953 )
posal									
or-sale sets to ss –	–	–	–	(988,865 )	–	(988,865 )	–	–	(988,865 )
and posal									
or-sale sets –	–	–	–	296,705	–	296,705	–	–	296,705
fair ective cash s	–	–	(28,123)	–	–	(28,123 )	–	–	(28,123 )
fair ective cash s – tax	–	–	7,031	–	–	7,031	–	–	7,031
edges	–	–	38,676	–	–	38,676	–	–	38,676

'  
classified

gross  
edges

's'  
classified

tax	-	-	(9,669 )	-	-	(9,669 )	-	-	(9,669 )
sive the 31									
2016	-	-	7,915	(890,113 )	-	(882,198 )	-	12,243,552	11,361,354
2015 at 31	-	-	-	-	-	-	-	(7,144,180 )	(7,144,180 )
2016	15,200,383	22,239,399	(52,425)	886,383	1,093,892	24,167,249	8,140,030	32,348,672	79,856,334

222

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## 20COMPANY'S STATEMENT OF CHANGES IN EQUITY (Cont'd)

		Capital surplus		Available- for-sale financial asset	Other capital reserve	Subtotal	Surplus reserves	Retained earnings	Total equity
	Perpetual corporate bonds	Share premium	Hedging reserve	revaluation reserve					
00,383	–	22,239,399	(52,425)	886,383	1,093,892	24,167,249	8,140,030	32,348,672	79,856,334
	68,600	–	–	–	–	–	–	7,094,180	7,162,780
	–	–	–	375,172	–	375,172	–	–	375,172
	–	–	–	(1,581,994)	–	(1,581,994)	–	–	(1,581,994)
	–	–	–	352,845	–	352,845	–	–	352,845
	–	–	21,168	–	–	21,168	–	–	21,168
	–	–	(5,292)	–	–	(5,292)	–	–	(5,292)
	–	–	26,453	–	–	26,453	–	–	26,453



-	-	(6,613 )	-	-	(6,613 )	-	-	(6,613 )
68,600	-	35,716	(853,977 )	-	(818,261 )	-	7,094,180	6,344,519
4,999,950	-	-	-	-	-	-	-	4,999,950
-	-	-	-	-	-	-	(4,408,111 )	(4,408,111 )
00,383	5,068,550	22,239,399	(16,709)	32,406	1,093,892	23,348,988	8,140,030	35,034,741
								86,792,692

223

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## 21 SHARE CAPITAL

	2017 Number shares	Share capital RMB'000	2016 Number of of shares	Share capital RMB'000
As at 1 January and 31 December				
A shares	10,500,000,000	10,500,000	10,500,000,000	10,500,000
Overseas listed foreign shares	4,700,383,440	4,700,383	4,700,383,440	4,700,383
Total	15,200,383,440	15,200,383	15,200,383,440	15,200,383

## 22 PERPETUAL CORPORATE BONDS

(a) Perpetual corporate bonds as at 31 December 2017

Type of Bonds	Issuance Date	Category	Initial Distribution Rate	Issue Price RMB'000	Number	Par Value RMB'000	Initial Period	Conversion Condition	Conversion Result
Bond A	September 2017	Equity Instrument	5.05%	0.1	25,000,000	2,500,000	3 Years	None	None
Bond B	September 2017	Equity Instrument	5.17%	0.1	25,000,000	2,500,000	5 years	None	None
Total						5,000,000			

## (b) Major Provisions

In 2017, the Company issued perpetual corporate bonds with the aggregate net proceeds of approximate RMB5,000 million. The perpetual corporate bonds are issued at par value with initial distribution rate of 5.05% and 5.17%. The interests of the perpetual corporate bonds are recorded as distributions, which are paid annually in arrears in September in each year and may be deferred at the discretion of the Company unless compulsory distribution payment events (distributions to ordinary shareholders of the Company or reduction of the registered capital of the Company) occurred.

The perpetual corporate bonds have no fixed maturity date and are callable at the Company's discretion in whole in August 2020 and 2022 respectively, the payment of the principal may be deferred for each renewal period as 3 and 5 years. The applicable distribution rate will be reset on first call date and each renewal period after first call date, to the sum of the applicable benchmark interest rate, the initial spread and 300 basis points per annum.

The perpetual corporate bonds were recorded as equity in the consolidated financial statements. During the year ended 31 December 2017, the profit attributable to holders of perpetual corporate bonds, based on the applicable distribution rate, was RMB69 million.

## 22 PERPETUAL CORPORATE BONDS (Cont'd)

(c) Changes of perpetual corporate bonds during 2017

Type of Bonds	As at 1 January 2017		Issuance		Cumulative Interests RMB'000	As at 31 December 2017	
	Number	Amount RMB'000	Number	Amount RMB'000		Number	Amount RMB'000
Bond A	–	–	25,000,000	2,499,975	33,897	25,000,000	2,533,872
Bond B	–	–	25,000,000	2,499,975	34,703	25,000,000	2,534,678
Total	–	–	50,000,000	4,999,950	68,600	50,000,000	5,068,550

## 23 SURPLUS RESERVES

As at  
1 January 2017  
and  
31 December  
2017  
Surplus reserves 8,140,030

According to the Company Law of the PRC, the Company's articles of association and board resolutions, the Company appropriates 10% of each year's net profit under PRC GAAP to the statutory surplus reserve. The Company has the option to cease provision for such reserve when it reaches 50% of the registered share capital. Upon the approval from relevant authorities, this reserve can be used to make up any losses incurred or to increase share capital. Except for offsetting against losses, this reserve cannot fall below 25% of the registered share after being used to increase share capital.

As the statutory surplus reserve reaches 50% of the registered share capital in 2017, the Company made no provision this year.

Appropriation of discretionary surplus reserve is proposed by the Board of Directors, and approved by the general meeting of shareholders. This reserve can be used to make up any losses incurred in prior years or to increase the share capital after obtaining relevant approvals. For the years ended 31 December 2017 and 2016, no provision was made to the discretionary surplus reserve.

According to the articles of association, in distributing the Company's profits after tax for the relevant accounting year, the lower of amounts determined in accordance with PRC GAAP and IFRS shall be adopted. As at 31 December 2017, in accordance with PRC GAAP and IFRS, the balance of retained earnings for the Company and its subsidiaries amounted to approximately RMB31.965 billion and RMB35.793 billion, respectively; and the balance of retained earnings for the Company amounted RMB37.020 billion and RMB35.035 billion, respectively.

**24 DIVIDENDS**

On 13 March 2018 the Board of Directors proposed a cash dividend of RMB0.1 per share, totaling approximately RMB1,520 million. This proposal is subject to the approval of the shareholders at the annual general meeting.

On 13 June 2017, upon the approval from the annual general meeting of the shareholders, the Company declared 2016 final dividend RMB0.29 (2015: RMB0.47) per ordinary share, totaling approximately RMB4,408 million (2015: RMB7,144 million).

**25 LONG-TERM LOANS**

Long-term loans comprised the following:

	As at 31 December	
	2017	2016
Loans from Huaneng Group and its subsidiaries (a)	7,427,183	3,818,807
Bank loans and other loans (b)	117,702,233	70,732,439
	125,129,416	74,551,246
Less: Current portion of long-term loans	18,098,458	9,560,885
Total	107,030,958	64,990,361

## 25 LONG-TERM LOANS (Cont'd)

## (a) Loans from Huaneng Group and its subsidiaries

Details of loans from Huaneng Group and its subsidiaries are as follows:

	As at 31 December 2017					Annual interest rate
	Original currency '000	RMB equivalent	Less: Current portion	Non-current portion		
Loans from Huaneng Group						
Unsecured						
RMB						
– Variable rate	665,225	665,225	–	665,225	4.75	%
Loans from Huaneng Finance						
Unsecured						
RMB						
– Variable rate	2,794,780	2,794,780	244,500	2,550,280	4.28%-4.66	%
Loans from Huaneng Tiancheng Financial Leasing Co., Ltd. (“Tiancheng Financial Leasing”)						
Secured						
RMB						
– Variable rate	3,967,178	3,967,178	1,878,994	2,088,184	4.06%-4.51	%
Total		7,427,183	2,123,494	5,303,689		

	As at 31 December 2016					Annual interest rate
	Original currency '000	RMB equivalent	Less: Current portion	Non-current portion		
Loans from Huaneng Group						
Unsecured						
RMB						
– Variable rate	665,015	665,015	640,485	24,530	4.75	%
Loans from HIPDC						
Unsecured						
RMB						
– Variable rate	210	210	–	210	4.75	%
Loans from Huaneng Finance						
Unsecured						
RMB						
– Variable rate	286,000	286,000	60,000	226,000	4.41%-4.75	%
Loans from Tiancheng Financial Leasing						
Secured						
RMB						
– Variable rate	2,867,582	2,867,582	154,737	2,712,845	4.42	%
Total		3,818,807	855,222	2,963,585		



## 25 LONG-TERM LOANS (Cont'd)

## (b) Bank loans and other loans

Details of bank loans and other loans are as follows:

	As at 31 December 2017				
	Original currency '000	RMB equivalent	Less: Current portion	Non-current portion	Annual interest rate
Secured					
RMB					
– Fixed rate	7,080,379	7,080,379	1,213,150	5,867,229	4.41%-4.90%
– Variable rate	4,117,055	4,117,055	657,231	3,459,824	4.66%-4.90%
Unsecured					
RMB					
– Fixed rate	14,981,859	14,981,859	3,179,426	11,802,433	2.00%-5.00%
– Variable rate	76,467,082	76,467,082	10,013,829	66,453,253	1.80%-6.03%
US\$					
– Variable rate	347,676	2,271,785	418,163	1,853,622	1.74%/2.26%
S\$					
– Variable rate	2,538,619	12,396,329	419,570	11,976,759	2.73%/4.25%
€					
– Fixed rate	30,463	237,680	67,207	170,473	1.30%-2.15%
JPY					
– Fixed rate	2,592,661	150,064	6,388	143,676	0.75%
Total		117,702,233	15,974,964	101,727,269	

## 25 LONG-TERM LOANS (Cont'd)

## (b) Bank loans and other loans (Cont'd)

As at 31 December 2016					
	Original currency '000	RMB equivalent	Less: Current portion	Non-current portion	Annual interest rate
Secured					
RMB					
– Fixed rate	8,305,310	8,305,310	1,202,430	7,102,880	4.41%-4.90%
– Variable rate	760,500	760,500	56,800	703,700	4.66%-4.90%
Unsecured					
RMB					
– Fixed rate	15,896,017	15,896,017	2,515,343	13,380,674	2.65%-5.00%
– Variable rate	30,095,494	30,095,494	4,270,910	25,824,584	4.17%-5.65%
US\$					
– Variable rate	409,760	2,842,505	388,925	2,453,580	1.92%
S\$					
– Variable rate	2,580,522	12,385,213	196,410	12,188,803	2.76%/4.25%
€					
– Fixed rate	39,187	286,329	68,271	218,058	2.00%/2.15%
JPY					
– Fixed rate	2,702,533	161,071	6,574	154,497	0.75%
Total		70,732,439	8,705,663	62,026,776	

As at 31 December 2017, long-term loans of RMB4,605 million (31 December 2016: RMB2,902 million) were secured by certain property, plant and equipment with net book value amounting to approximately RMB5,167 million (31 December 2016: RMB3,105 million).

Thereinto, certain subsidiaries of the Company had the sales and leaseback agreements with Tiancheng Financial Leasing and other financial leasing companies in previous years. According to the agreements, these subsidiaries have an option to buy back the equipment at a nominal price (RMB1) when the lease term expires. The substance of the transaction was to obtain financing secured by relevant assets within the leasing period. As at 31 December 2017, the equipment mentioned above has a total carrying amount of RMB4,064 million and RMB1,103 million (31 December 2016: RMB2,999 million and RMB0 million) while the long-term borrowings is RMB3,967 million and RMB638 million (31 December 2016: RMB2,868 million and RMB0 million) from Tiancheng Financial Leasing and other financial leasing companies, respectively.

As at 31 December 2017, long-term loans of approximately RMB10,559 million were secured by future electricity and heat revenue (31 December 2016: RMB9,032 million).



## 25 LONG-TERM LOANS (Cont'd)

The maturity of long-term loans is as follows:

	Loans from Huaneng Group and its subsidiaries		Bank loans and other loans	
	As at 31 December		As at 31 December	
	2017	2016	2017	2016
1 year or less	2,123,494	855,222	15,974,964	8,705,663
More than 1 year but no more than 2 years	1,689,582	715,400	19,039,483	11,420,746
More than 2 years but no more than 3 years	1,281,082	953,082	18,624,576	11,081,242
More than 3 years but no more than 4 years	294,020	928,082	16,388,976	7,769,955
More than 4 years but no more than 5 years	728,225	232,021	11,927,930	7,618,953
More than 5 years	1,310,780	135,000	35,746,304	24,135,880
	7,427,183	3,818,807	117,702,233	70,732,439
Less: amount due within 1 year included under current liabilities	2,123,494	855,222	15,974,964	8,705,663
Total	5,303,689	2,963,585	101,727,269	62,026,776

The interest payment schedule of long-term loans in the future years are summarized as follows:

	As at 31 December	
	2017	2016
1 year or less	5,071,743	2,987,045
More than 1 year but not more than 2 years	4,225,736	2,577,363
More than 2 years but not more than 5 years	7,903,397	4,912,222
More than 5 years	4,864,084	3,133,578
Total	22,064,960	13,610,208

## 26 LONG-TERM BONDS

The Company issued bonds with maturity of 5 years, 7 years and 10 years in December 2007 with face values of RMB1 billion, RMB1.7 billion and RMB3.3 billion bearing annual interest rates of 5.67%, 5.75% and 5.90%, respectively. The total actual proceeds received by the Company were approximately RMB5.885 billion. These bonds are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the bonds fall due. The annual effective interest rates of those bonds are 6.13%, 6.10% and 6.17%, respectively. Interest paid per annum during the tenure of the bonds is RMB57 million, RMB98 million and RMB195 million, respectively. The bond with original maturity of 5 years had matured in December 2012 and the Company repaid the principal of RMB1 billion. The bond with original maturity of 7 years had matured in December 2014 and the Company repaid the principal of RMB1.7 billion. The bond with original maturity of 10 years had matured in December 2017 and the Company repaid the principal of RMB3.3 billion.

The Company also issued bonds with maturity of 10 years in May 2008 with a face value of RMB4 billion bearing an annual interest rate of 5.20%. The actual proceeds received by the Company were approximately RMB3.933 billion. These bonds are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the bonds fall due. The annual effective interest rate of bond is 5.42%. Interest paid per annum during the tenure of the bonds is RMB208 million. As at 31 December 2017, interest payable for these bonds amounted to approximately RMB135.06 million (31 December 2016: RMB135.06 million).

The Company issued medium-term notes with maturity of 5 years in July 2014 with a face value of RMB4 billion bearing an annual interest rate of 5.30%. The actual proceeds received by the Company were approximately RMB3.988 billion. These notes are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the notes fall due. The annual effective interest rate of these notes is 5.37%. Interest paid per annum during the tenure of the notes is RMB212 million. As at 31 December 2017, interest payable for the bonds amounted to approximately RMB99.32 million (31 December 2016: RMB99.32 million).

The Company issued corporate bonds with maturity of 5 years and 10 years in June 2016 with face values of RMB3 billion and RMB1.2 billion bearing annual interest rates of 3.48% and 3.98%, respectively. The total actual proceeds received by the Company were approximately RMB4.2 billion. These bonds are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the bonds fall due. The annual effective interest rates of those bonds are 3.48% and 3.98%, respectively. Interest paid per annum during the tenure of the bonds is RMB104.40 million and RMB47.76 million, respectively. As at 31 December 2017, interest payable for the bonds amounted to approximately RMB57.78 million (31 December 2016: RMB57.78 million) and RMB26.43 million (31 December 2016: RMB26.43 million), respectively.

The Company issued medium-term notes with maturity of 5 years in July 2017 with a face value of RMB5 billion bearing an annual interest rate of 4.69%. The actual proceeds received by the Company were approximately RMB5 billion. These notes are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the notes fall due. The annual effective interest rate of those notes is 4.69%. Interest paid per annum during the tenure of the notes is RMB234.50 million. As at 31 December 2017, interest payable for the notes amounted to approximately RMB111.15 million.

## 26 LONG-TERM BONDS (Cont'd)

The Company issued debt financing instrument with maturity of 3 years in July 2017 with a face value of RMB500 million bearing an annual interest rate of 4.75%. The actual proceeds received by the Company were approximately RMB499 million. These bonds are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the bonds fall due. The annual effective interest rate of those bonds is 4.82%. Interest paid per annum during the tenure of the bonds is RMB23.75 million. As at 31 December 2017, interest payable for the bonds amounted to approximately RMB11.02 million.

The Company issued corporate bonds with maturity of 3 years in November 2017 with a face values of RMB2.3 billion bearing an annual interest rates of 4.99%. The actual proceeds received by the Company were approximately RMB2.299 billion. These bonds are denominated in RMB and issued at par. Interest is payable annually while principal will be paid when the bonds fall due. The annual effective interest rate of those bonds is 4.99%. Interest paid per annum during the tenure of the bonds is RMB14.77 million, respectively. As at 31 December 2017, interest payable for the bonds amounted to approximately RMB17.61 million.

Please refer to Note 37(c) for details of long-term bonds of the Company guaranteed by HIPDC and government-related banks.

## 27 OTHER NON-CURRENT LIABILITIES

	As at 31 December	
	2017	2016
Finance lease payables (a)	1,600,106	1,088,846
Government grants		
– Environmental subsidies (b)	1,245,810	1,122,406
– Other government grants	179,226	174,216
Other deferred income	1,825,614	379,615
Others	969,052	870,597
Subtotal	5,819,808	3,635,680
Current portion of finance lease payables	(470,985 )	(568,645 )
Current portion of other non-current liabilities	(64,361 )	(247,537 )
Subtotal	(535,346 )	(816,182 )
Total	5,284,462	2,819,498

## 27 OTHER NON-CURRENT LIABILITIES (Cont'd)

(a) The Company and its subsidiaries had obligation under finance leases as follows:

	As at 31 December	
	2017	2016
Within 1 year	500,790	605,806
After 1 year but within 2 years	312,125	266,792
After 2 years but within 3 years	281,990	82,470
After 3 years	674,256	181,345
	1,769,161	1,136,413
Less: total future interest expense	169,055	47,567
Total	1,600,106	1,088,846

(b) This primarily represented subsidies for the construction of desulphurization equipment and other environmental protection projects.

(c) In 2017, the asset-related government grants which were credited to the statement of comprehensive income amounted to RMB140.13 million (2016: RMB102.21 million).

## 28 ACCOUNTS PAYABLE AND OTHER LIABILITIES

Accounts payable and other liabilities comprised:

	As at 31 December	
	2017	2016
Accounts and notes payable	15,496,475	12,059,004
Payables to contractors for construction	14,491,632	10,832,444
Retention payables to contractors	2,008,106	1,445,383
Amounts received in advance	1,504,926	365,887
Accrued interests	947,302	676,462
Others	4,451,691	3,367,437
Total	38,900,132	28,746,617

Please refer to Note 37(a)(iv) for details of accounts payable and other liabilities due to the related parties.

As at 31 December 2017 and 2016, there was no notes payable secured by notes receivable.

## 28 ACCOUNTS PAYABLE AND OTHER LIABILITIES (Cont'd)

The carrying amounts of financial liabilities (excluding amounts received in advance) included in accounts payable and other liabilities are denominated in the following currencies:

	As at 31 December	
	2017	2016
RMB	36,399,243	27,222,632
S\$ (RMB equivalent)	556,881	669,797
US\$ (RMB equivalent)	436,358	479,179
JPY (RMB equivalent)	2,469	6,917
EUR (RMB equivalent)	255	2,205
Total	37,395,206	28,380,730

The ageing analysis of accounts and notes payable was as follows:

	As at 31 December	
	2017	2016
Within 1 year	15,201,380	11,902,522
Between 1 to 2 years	196,082	100,092
Over 2 years	99,013	56,390
Total	15,496,475	12,059,004

## 29 TAXES PAYABLE

Taxes payable comprises:

	As at 31 December	
	2017	2016
VAT payable	619,329	439,304
Income tax payable	430,703	440,791
Others	252,178	209,010
Total	1,302,210	1,089,105

### 30 SHORT-TERM BONDS

The Company issued unsecured super short-term bonds with face values of RMB3 billion and RMB3 billion bearing annual interest rates of 2.50% and 2.60% in August 2016 and October 2016. Such bonds are denominated in RMB, issued at par and mature in 365 days. The annual effective interest rates of these bonds are 2.91% and 3.01%. The bonds had matured and were fully repaid in August 2017 and October 2017 respectively.

The Company issued unsecured super short-term bonds with face values of RMB4 billion, RMB3 billion, RMB3 billion, RMB4 billion, RMB2 billion, RMB3 billion and RMB2 billion bearing annual interest rates of 2.42%, 2.62%, 2.73%, 2.50%, 2.79%, 2.98% and 3.45% in April 2016, April 2016, May 2016, July 2016, November 2016, November 2016 and December 2016, respectively. Such bonds are denominated in RMB, issued at face value and mature in 270 days, 270 days, 270 days, 270 days, 270 days, 180 days and 270 days from the issuance dates. The annual effective interest rates of these bonds are 2.73%, 2.93%, 3.04%, 2.81%, 3.10%, 3.19%, and 3.78%, respectively. These bonds were fully repaid in January 2017, January 2017, February 2017, April 2017, August 2017, May 2017, and September 2017, respectively.

The Company issued unsecured super short-term bonds with face values of RMB4 billion RMB3 billion, RMB3 billion RMB4 billion, RMB2 billion, RMB4 billion, RMB4 billion, RMB2 billion, RMB1 billion and RMB4 billion bearing annual interest rates of 3.40%, 3.67%, 3.60%, 3.60%, 4.19%, 3.96% 4.10%, 4.19%, 4.17% and 4.17% in January 2017, February 2017, March 2017, April 2017, June 2017, August 2017, October 2017, November 2017, November 2017 and December 2017, respectively. Such bonds are denominated in RMB, issued at face value and mature in 270 days, 270 days, 180 days, 90 days, 150 days, 60 days, 180 days, 180 days, 180 days and 90 days from the issuance dates. The annual effective interest rates of these bonds are 3.85%, 3.76%, 3.76%, 3.68%, 4.24%, 4.00%, 4.22%, 4.35%, 4.19%, and 4.35%, respectively. The six bonds issued in January 2017, February 2017, March 2017, April 2017, June 2017 and August 2017 were fully repaid in October 2017, November 2017, September 2017, July 2017, November 2017 and October 2017, respectively. As at 31 December 2017, interest payables for the outstanding bonds amounted to approximately RMB33.70 million, RMB10.80 million, RMB4.57 million and RMB14.17 million, respectively.

## 31 SHORT-TERM LOANS

Short-term loans are as follows:

	As at 31 December 2017			As at 31 December 2016		
	Original currency '000	RMB equivalent	Annual interest rate	Original currency '000	RMB equivalent	Annual interest rate
Secured						
RMB						
– Fixed rate	24,000	24,000	4.71%-5.50%	13,500	13,500	3.00%
– Variable rate	–	–	–	112,034	112,034	2.77%-3.80%
Unsecured						
RMB						
– Fixed rate	10,450,248	10,450,248	3.92%-4.35%	3,319,947	3,319,947	3.70%-4.35%
– Variable rate	69,777,100	69,777,100	3.74%-4.35%	54,223,393	54,223,393	3.57%-4.35%
Total		80,251,348			57,668,874	

As at 31 December 2017, short-term loans of RMB24million (31 December 2016: RMB126 million) represented the notes receivable that were discounted with recourse. As these notes receivable had not yet matured, the proceeds received were recorded as short-term loans.

As at 31 December 2017, a short-term loan borrowed from Xi'an Thermal Power Research Institute Co., Ltd ("Xi'an Thermal") amounted to RMB100 million (31 December 2016: 100 million) with annual interest rate of 4.13%(31 December 2016: 3.92%).

As at 31 December 2017, short-term loans borrowed from Huaneng Finance amounted to RMB6,505 million (31 December 2016: RMB3,355 million) with annual interest rate ranged from 3.92% to 4.35%(31 December 2016: from 3.92% to 4.13%).

As at 31 December 2017, short-term loans borrowed from a subsidiary of Huaneng Energy & Communications Holdings Co., Ltd. amounted to RMB753 million (31 December 2016: RMB0 million) with annual interest rate ranged from 3.92% to 4.13%(31 December 2016: nil).

## 32 DEFERRED INCOME TAX ASSETS AND LIABILITIES

The deferred income tax assets and liabilities are as follows:

	As at 31 December	
	2017	2016
Deferred income tax assets before offsetting	3,604,577	2,432,552
Offset amount	(1,304,486)	(1,168,595)
Deferred income tax assets after offsetting	2,300,091	1,263,957
Deferred income tax liabilities before offsetting	(5,871,166)	(3,431,347)
Offset amount	1,304,486	1,168,595
Deferred income tax liabilities after offsetting	(4,566,680)	(2,262,752)
	(2,266,589)	(998,795 )

The gross movement on the deferred income tax accounts is as follows:

	2017	2016
Beginning of the year	(998,795 )	(1,429,752)
Business combination (Note 41)	(2,322,513)	(58,929 )
Disposal of subsidiaries (Note 6)	17,407	–
Credited to profit or loss (Note 34)	724,712	440,817
Charged to other comprehensive income	330,834	87,775
Currency translation differences	(18,234 )	(38,706 )
End of the year	(2,266,589)	(998,795 )



## 32 DEFERRED INCOME TAX ASSETS AND LIABILITIES (Cont'd)

The movements in deferred income tax assets and liabilities during the year, without taking into consideration the offsetting of balances within the same tax jurisdictions, are as follows:

Deferred income tax assets:

	Hedging reserve	Amortization of land rights use	Provision for impairment loss	Depreciation	Accrued expenses	VAT refunds on purchases of domestically manufactured equipment	Unused tax losses	Others	Total
As at 1 January 2016	199,876	14,417	399,418	572,379	40,938	230,442	235,984	696,403	2,389,857
Business combination (Charged)/credited to profit or loss	—	—	66,560	6,840	—	—	—	—	73,400
Charged to other comprehensive income	—	(502 )	140,969	(41,015 )	1,185	(25,433 )	(5,128 )	71,610	141,686
Currency translation differences	(182,400)	—	—	—	—	—	—	—	(182,400 )
As at 31 December 2016	17,476	13,915	607,154	538,204	42,123	205,009	230,988	777,683	2,432,552
Business combination(Note 41)	—	—	—	574,600	5,052	—	139,387	414,891	1,133,930
Disposal of subsidiaries(Note 6) (Charged)/credited to profit or loss	—	—	(10,686 )	(9,962 )	—	—	(5,566 )	(52,270 )	(78,484 )
Charged to other comprehensive income	—	(493 )	(2,593 )	(70,209 )	7,076	(25,433 )	196,613	20,026	124,987
Currency translation differences	(11,905 )	—	—	—	—	—	—	—	(11,905 )
As at 31 December 2017	5,571	13,422	593,957	1,032,633	54,251	179,576	561,422	1,163,745	3,604,577

## 32 DEFERRED INCOME TAX ASSETS AND LIABILITIES (Cont'd)

Deferred income tax liabilities:

	Hedging reserve	Fair value gains	Amortization of land use rights	Depreciation	Power generation license	Mining rights	Territorial water use right	Others	Total
As at 1 January 2016	–	(645,242)	(904,173 )	(1,291,706)	(625,460)	(157,215)	(74,201)	(121,612)	(3,819,600)
Business combination Credited to profit or loss	–	–	(10,423 )	–	–	–	–	(121,906)	(132,329)
(Charged)/credited to other comprehensive loss	–	–	24,948	169,088	–	27,832	1,769	75,494	299,131
Currency translation differences	(26,530)	296,705	–	–	–	–	–	–	270,175
As at 31 December 2016	8,131	–	(1,507 )	(26,436 )	(28,903 )	–	–	–	(48,715)
Business combination (Note 41)	(18,399)	(348,537)	(891,155 )	(1,149,054)	(654,363)	(129,383)	(72,432)	(168,024)	(3,431,344)
Disposal of subsidiaries (Note 6)	–	(1,736 )	(148,129 )	(3,209,672)	–	–	–	(96,906 )	(3,456,444)
Credited to profit or loss	–	–	1,761	22,162	–	–	68,696	3,272	95,891
(Charged)/credited to other comprehensive loss	–	–	27,457	525,780	–	–	1,327	45,161	599,725
Currency translation differences	(5,558 )	348,297	–	–	–	–	–	–	342,739
As at 31 December 2017	(304 )	–	(540 )	(9,490 )	(11,397 )	–	–	–	(21,731)
	(24,261)	(1,976 )	(1,010,606)	(3,820,274)	(665,760)	(129,383)	(2,409 )	(216,497)	(5,871,160)

As at 31 December 2017 and 2016, taxable temporary differences relating to interest in equity method investees amounted to RMB2.95 billion and RMB3.39 billion, respectively. No deferred tax liabilities were recognized as at 31 December 2017 and 2016 as dividends from investments in associates and joint ventures are exempted from the PRC income tax and the Company has no plan to dispose any of these investees in the foreseeable future.

As at 31 December 2017 and 2016, taxable temporary differences relating to the undistributed profit of a wholly-owned foreign subsidiary amounted to RMB3.06 billion and RMB3.54 billion, respectively. No deferred tax liabilities were recognized in respect of the tax that would be payable on the distribution of these retained profit as at 31 December 2017 and 2016 as the Company controls the dividend policy of the subsidiary, and it has been

determined that it is probable that the profits will not be distributed in the foreseeable future.

239

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## 32 DEFERRED INCOME TAX ASSETS AND LIABILITIES (Cont'd)

In accordance with the accounting policy set out in Note 2(v), the Company and its subsidiaries did not recognize deferred income tax assets in respect of certain deductible temporary differences and accumulated tax losses that can be carried forward against future taxable income as follow:

	As at 31 December	
	2017	2016
Deductible temporary differences	4,672,788	2,957,316
Unused tax losses	8,665,079	6,669,820
Total	13,337,867	9,627,136

The expiry dates of the tax losses of the Company and its subsidiaries for which no deferred income tax assets were recognized are summarized as follows:

Year of expiry	As at 31 December	
	2017	2016
2017	–	1,841,365
2018	1,557,045	1,122,070
2019	1,579,066	1,195,811
2020	1,524,531	1,061,468
2021	1,558,573	1,449,106
2022	2,445,864	–
Total	8,665,079	6,669,820

## 33 ADDITIONAL FINANCIAL INFORMATION TO THE CONSOLIDATED STATEMENT OF FINANCIAL POSITION

As at 31 December 2017, the net current liabilities of the Company and its subsidiaries amounted to approximately RMB107,413 million (2016: RMB93,230 million). On the same date, total assets less current liabilities were approximately RMB240,639 million (2016: RMB184,643 million).

## 34 INCOME TAX EXPENSE

	For the year ended 31 December	
	2017	2016
Current income tax expense	1,942,238	3,905,968
Deferred income tax (Note 32)	(724,712 )	(440,817 )
Total	1,217,526	3,465,151

No Hong Kong profits tax has been provided as there were no estimated assessable profits in Hong Kong for the year (2016: nil).

The reconciliation of the effective income tax rate from the notional income tax rate is as follows:

	For the year ended 31 December	
	2017	2016
Notional tax on profit before income tax expense, calculated at the applicable income tax rates in the countries concerned	26.13 %	25.16 %
Effect of tax losses not recognized	18.45 %	1.58 %
Effect of deductible temporary differences not recognized	6.04 %	(0.20 %)
Effect of non-taxable income	(12.37 %)	(2.89 %)
Effect of non-deductible expenses	7.05 %	1.09 %
Others	(1.84 %)	0.35 %
Effective tax rate	43.46 %	25.09 %

The Company and its PRC branches and subsidiaries are subject to income tax at 25%, except for certain PRC branches and subsidiaries that are tax exempted or taxed at preferential tax rates, as determined in accordance with the relevant PRC income tax rules and regulations for the years ended 31 December 2017 and 2016.

Pursuant to Guo Shui Han [2009] No. 33, starting from 1 January 2008, the Company and its PRC branches calculate and pay income tax on a consolidated basis according to relevant tax laws and regulations. The original regulation specifying locations for power plants and branches of the Company to make enterprise income tax payments was abolished. The income tax of subsidiaries remains to be calculated individually based on their individual operating results.

The income tax rate applicable to Singapore subsidiaries is 17% (2016: 17%).

## 35 EARNINGS PER SHARE

The basic earnings per share is calculated by dividing the consolidated net profit attributable to the equity holders of the Company by the weighted average number of the Company's outstanding ordinary shares during the year:

	For the year ended 31 December	
	2017	2016
Consolidated net profit attributable to equity holders of the Company	1,579,836	8,520,427
Less: cumulative distribution of perpetual corporate bonds	68,600	–
Consolidated net profit attributable to ordinary Shareholders of the Company	1,511,236	8,520,427
Weighted average number of the Company's outstanding ordinary shares ('000)*	15,200,383	15,200,383
Basic and diluted earnings per share (RMB)	0.10	0.56

\*Weighted average number of ordinary shares:

	2017 '000	2016 '000
Issued ordinary shares at 1 January and 31 December	15,200,383	15,200,383
Weighted average number of ordinary shares at 31 December	15,200,383	15,200,383

There was no dilutive effect on earnings per share since the Company had no dilutive potential ordinary shares for the years ended 31 December 2017 and 2016.

## 36NOTES TO CONSOLIDATED STATEMENT OF CASH FLOWS

Bank balances and cash comprised the following:

	As at 31 December	
	2017	2016
Total bank balances and cash	9,364,823	7,881,630
Less: Restricted cash	82,433	71,129
Cash and cash equivalents as at year end	9,282,390	7,810,501

The bank balances and cash of the Company and its subsidiaries are denominated in the following currencies:

	As at 31 December	
	2017	2016
RMB	8,213,100	6,691,911
S\$ (RMB equivalent)	835,995	869,591
US\$ (RMB equivalent)	315,535	319,944
JPY (RMB equivalent)	193	184
HK\$ (RMB equivalent)	–	–
Total	9,364,823	7,881,630

There is no material non-cash investing and financing transactions for the years ended 31 December 2017 and 2016.

## 36NOTES TO CONSOLIDATED STATEMENT OF CASH FLOWS (Cont'd)

The table below details changes in the Company and its subsidiaries' liabilities from financing activities, including both cash and non-cash changes. Liabilities arising from financing activities are liabilities for which cash flows were, or future cash flows will be, classified in the Company and its subsidiaries' consolidated cash flow statement as cash flows from financing activities:

Items	Loans (Note 25, 31)	Bonds (Note 26, 30)	Accrued interests (Note 28)	Finance leases payables (Note 27)	Interest rate swaps contracts (liabilities) (Note 14)
As at 1 January 2017	132,220,120	42,788,810	676,462	1,088,846	169,201
(a) Business combination	47,562,251	–	85,380	521,083	–
(b) Changes from financing cash flows:					
Proceeds from new bank loans	140,270,455	–	–	–	–
Repayment of bank loans	(113,769,036)	–	–	–	–
Proceeds from new bonds	–	38,788,679	–	–	–
Repayment of bonds	–	(50,300,000)	–	–	–
Capital element of finance lease rentals paid	–	–	–	(636,145 )	–
Interest element of finance lease rentals paid	–	–	–	(58,874 )	–
Interest paid	–	(885,000 )	(9,195,102)	–	–
Others	(3,135 )	(80,643 )	–	–	–
(c) Exchange adjustments	82,298	–	2,095	235	–
(d) Changes in fair value	–	–	–	–	(38,558 )
(e) Other changes:					
New finance leases	–	–	–	659,895	–
Interest expenses	–	747,377	8,902,402	99,225	–
Capitalised borrowing costs	–	–	476,065	–	–
Disposal of subsidiaries	(1,166,899 )	–	–	–	–
Others	184,710	–	–	(74,159 )	–
As at 31 December 2017	205,380,764	31,059,223	947,302	1,600,106	130,643



37 RELATED PARTY BALANCES AND TRANSACTIONS

The related parties of the Company and its subsidiaries that had transactions with the Company and its subsidiaries are as follows:

Names of related parties	Nature of relationship
Huaneng Group	Ultimate parent company
HIPDC	Parent company
Huaneng Energy & Communications Holdings Co., Ltd. and its subsidiaries	Subsidiaries of Huaneng Group*
Huaneng Property Co., Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Xi'an Thermal and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Group Technology Innovation Center	A subsidiary of Huaneng Group
Huaneng Hulunbuir Energy Development Company Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Alltrust Insurance Co., Ltd.	A subsidiary of Huaneng Group
North United Power Co., Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Group Clean Energy Technology Research Institute Co., Ltd.	A subsidiary of Huaneng Group
Huaneng Renewables Corporation Limited and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Carbon Assets Management Company Limited	A subsidiary of Huaneng Group
Huaneng Group Hong Kong Limited Company	A subsidiary of Huaneng Group
Huaneng Lancangjiang Hydropower Co., Inc. and its subsidiaries	Subsidiaries of Huaneng Group
Changping Huaneng Training Center	A subsidiary of Huaneng Group
Huaneng Hainan Industry Co.,Ltd.	A subsidiary of Huaneng Group
Huaneng Baishan Coal Gangue Power Generation Co., Ltd.	A subsidiary of Huaneng Group
Great Wall Securities Co., Ltd. ("Great Wall Securities")	A subsidiary of Huaneng Group
Huaneng Nuclear Power Development Company Ltd.	A subsidiary of Huaneng Group
Huaneng Tibet Yarlung Zangbo River Hydropower Development & Investment Company Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Xining Power Co., Ltd.	A subsidiary of Huaneng Group
Huaneng Coal Business Sector Co., Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Integrated Industries Co., Ltd.	A subsidiary of Huaneng Group
Huaneng Ningxia Energy Company Ltd.	A subsidiary of Huaneng Group

Huaneng Shaanxi Power Generation Limited and its subsidiaries	A subsidiary of Huaneng Group
Huaneng Xinjiang Energy Development Company Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Gansu Energy Development Company Ltd. and its subsidiaries	Subsidiaries of Huaneng Group
Huaneng Capital Services Co., Ltd.	A subsidiary of Huaneng Group
Huaneng Shaanxi Qinling Power Generation Co., Ltd.	A subsidiary of Huaneng Group
Ningxia Daba Power Generation Co., Ltd.	A subsidiary of Huaneng Group
Huaneng Shandong Shidao Bay Nuclear Power Co., Ltd.	A subsidiary of Huaneng Group
Huangtai #8 Power Plant	An investee with significant influence

Names of related parties	Nature of relationship
Shanghai Time Shipping	A joint venture of the Company
Jiangsu Nantong Power	A joint venture of the Company
Huaneng Yingkou Port Limited Liability Company	A joint venture of the Company
Luyi Power	A joint venture of the Company
Ruyi (Hong Kong) Energy and its subsidiaries	Joint ventures of the Company
Suzhou Sugao Renewables Service Co. Ltd.	A joint venture of the Company
Liaocheng Luxi Fuel Co., Ltd. Company	An associate of the Company
Zhengzhou Airport Xinggang Power Co., Ltd.	An associate of the Company
Chongqing Huaneng Lime Company Limited	An associate of the Company
Hainan Nuclear	An associate of the Company
Sichuan Hydropower	An associate of the Company and also a subsidiary of Huaneng Group
Hanfeng Power	An associate of the Company and also a subsidiary of Huaneng Group
Tiancheng Financial Leasing	An associate of the Company and also a subsidiary of Huaneng Group
Huaneng Shidao Bay Nuclear Power Development Co., Ltd.	An associate of the Company and also a subsidiary of Huaneng Group
Xiapu Nuclear Power Co., Ltd.	An associate of the Company and also a subsidiary of Huaneng Group
Huaneng Finance	An associate of the Company and also a subsidiary of Huaneng Group
Huaneng (Tianjing) Coal Gasification Power Generation Co., Ltd.	An associate of the Company and also a subsidiary of Huaneng Group
Huaneng Group Fuel Company and its subsidiaries	Associates of the Company and also subsidiaries of Huaneng Group
Other government-related enterprises**	Related parties of the Company

\* Transactions with subsidiaries of Huaneng Group which also are associates of the Company and its subsidiaries are presented as transactions with subsidiaries of Huaneng Group for note 37 (a) and 37 (b).

Huaneng Group is a state-owned enterprise. In accordance with the revised IAS 24, “Related Party Disclosures”, government-related enterprises, other than entities under Huaneng Group, which the PRC government has control, joint control or significant influence over are also considered as related parties of the Company and its subsidiaries (“other government-related enterprises”).

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

The majority of the business activities of the Company and its subsidiaries are conducted with other government-related enterprises. For the purpose of the related party balances and transactions disclosure, the Company and its subsidiaries have established procedures to determine, to the extent possible, the identification of the ownership structure of its customers and suppliers as to whether they are government-related enterprises. However, many government-related enterprises have a multi-layered corporate structure and the ownership structures change over time as a result of transfers and privatization programs. Nevertheless, management believes that all material related party balances and transactions have been adequately disclosed.

In addition to the related party information shown elsewhere in these financial statements, the following is a summary of significant related party transactions entered into in the ordinary course of business between the Company and its subsidiaries and their related parties during the year and significant balances arising from related party transactions as at year end.

## (a) Related party balances

## (i) Cash deposits in related parties

	As at 31 December	
	2017	2016
Deposits in Huaneng Finance		
– Savings deposit	7,506,706	5,155,000
Deposits in Great Wall Securities		
– Savings deposit	–	2
Total	7,506,706	5,155,002

For the year ended 31 December 2017, the annual interest rates for these savings deposits placed with Huaneng Finance and Great Wall Securities ranged from 0.35% to 1.35% (2016: from 0.35% to 1.35%).

- (ii) As described in Note 25 and 31, certain loans of the Company and its subsidiaries were borrowed from Huaneng Group, HIPDC, Huaneng Finance, Xi'an Thermal, a subsidiary of Huaneng Energy & Communications Holdings Co., Ltd. and Tiancheng Financial Leasing.

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

## (a) Related party balances (Cont'd)

Except for those disclosed in Note 25 and 31, the majority of the balances with Huaneng Group, HIPDC, subsidiaries of Huaneng Group, associates, joint ventures and other related parties are unsecured and within one year. As at and for the years ended 31 December 2017 and 2016, no provision is made on receivable balances from these parties.

Accounts receivable, other receivables and assets comprised the following balances due from related parties:

	As at 31 December	
	2017	2016
Due from Huaneng Group	860,941	708
Due from HIPDC	99	–
Due from joint ventures	360,442	806,112
Due from associates	89,083	–
Due from subsidiaries of Huaneng Group	196,621	319,224
Due from Huangtai #8 Power Plant	903,671	–
Total	2,410,857	1,126,044

(iv) Accounts payable and other liabilities and other non-current liabilities comprised the following balances due to related parties:

	As at 31 December	
	2017	2016
Due to Huaneng Group	260,306	12,232
Due to HIPDC	16,138	14,183
Due to joint ventures	336,170	325,590
Due to associates	5,751	263,154
Due to subsidiaries of Huaneng Group	4,239,688	4,145,595
Total	4,858,053	4,760,754

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

## (a) Related party balances (Cont'd)

- (v) As at 31 December 2017, included in long-term loans (including current portion) and short-term loans are loans payable to other government-related enterprises amounting to RMB203.2 billion (2016: RMB130 billion).

The balances with government-related enterprises also included substantially all the accounts receivable due from domestic power plants of government-related power grid companies, the bank deposits placed with government-related financial institutions as well as accounts payables and other payables arising from the purchases of coal and property, plant and equipment construction and related labor service provided by other government-related enterprises. Except for bank deposits, these balances are unsecured and the majority of receivable/repayable is within one year.

- (vi) As at 31 December 2017, prepayment for construction materials to subsidiaries of Huaneng Group amounted to RMB21 million (2016: RMB67 million).

## (b) Related party transactions

## (i) Procurement of goods and receiving services

	For the year ended 31 December	
	2017	2016
Huaneng Group		
Other purchases	446	451
Subsidiaries of Huaneng Group		
Purchase of coal and transportation services	19,945,752	17,212,984
Technical services and engineering contracting services	1,024,369	1,055,251
Purchase of equipment	347,163	483,058
Purchase of power generation quota	–	195,528
Other purchases	716	6,472
Joint ventures of the Company		
Purchase of coal and transportation services	2,054,209	2,150,844
Entrusting other parties for power generation	28,953	–
An associate of the Company		
Other purchases	27,732	43,808

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

## (b) Related party transactions (Cont'd)

## (ii) Sales of goods and providing services

	For the year ended 31 December	
	2017	2016
Huaneng Group		
Service provided	907	—
HIPDC		
Service provided	520	—
Subsidiaries of Huaneng Group		
Sales of power generation quota	—	1,165
Sales of goods	1,114,347	—
Other sales	15,247	189,914
Service provided	25,229	31,135
Provision of entrusted power generation	58,639	—
Joint ventures of the Company		
Service provided	319,844	59,049
Other sales	407,697	9,490

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

## (b) Related party transactions (Cont'd)

## (iii) Other related party transactions

	For the year ended 31 December	
	2017	2016
(1) Rental charge on leasehold		
HIPDC	106,885	157,264
Subsidiaries of Huaneng Group	141,542	128,932
A joint venture of the Company	2,128	–
(2) Rental income from leasehold		
A joint venture of the Company	7,448	7,750
Subsidiaries of Huaneng Group	2,509	5,724
(3) Drawdown of loans		
Subsidiaries of Huaneng Group	15,374,480	4,035,000
HIPDC	–	210
Huaneng group	665,225	–
(4) Interest expense on loans		
Huaneng Group	33,481	30,514
HIPDC	10	13,136
Subsidiaries of Huaneng Group	589,012	217,098
(5) Interest income on loans		
A joint venture of the Company	3,329	3,488
An associate of the Company	917	–
A Subsidiary of Huaneng Group	4,344	–
(6) Capital injection from a subsidiary of Huaneng Group		
A subsidiary of Huaneng Group	274,752	–
(7) Capital injection		
A subsidiary of Huaneng Group	–	157,500
An associate of the Company	52,200	100,418
Joint ventures of the Company	249,716	18,200
(8) Pre-construction cost paid by		
A subsidiary of Huaneng Group	23,529	765
An joint venture of the Company	179	–
(9) Finance lease payments received from		
A subsidiary of Huaneng Group	–	2,960,000



	For the year ended 31 December	
	2017	2016
(10) Entrusted management fee Huaneng Group	13,453	24,950
(11) Trusteeship management income Huaneng Group	1,518	1,700
(12) Net proceeds received from investee with significant influence Huangtai #8 Power Plant	72,920	–
(13) Finance lease to investee with significant influence Huangtai #8 Power Plant	86,946	–
(14) Interest income from finance lease Huangtai #8 Power Plant	11,626	–

**(15) Acquisition consideration**

In 2017, the Company acquired subsidiaries from Huaneng Group, please refer to Note 41(a) for details of the acquisition consideration.

**(16) Disposal subsidiaries**

In 2017, the Company disposed Taishan Power Limited Company to a subsidiary of Huaneng Group, please refer to Note 6 for details.

**Transactions with government-related enterprises**

For the years ended 31 December 2017 and 2016, the Company and its domestic subsidiaries sold substantially all their products to local government-related power grid companies. Please refer to Note 5 for details of sales information to major power grid companies.

For the years ended 31 December 2017 and 2016, other collectively-significant transactions with government-related enterprises also include a large portion of fuel purchases, property, plant and equipment construction and related labor employed.

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

## (c) Guarantees

	As at 31 December	
	2017	2016
(i) Long-term loans guaranteed by		
– Huaneng Group	1,675,147	565,992
– HIPDC	2,099,600	2,142,000
(ii) Long-term bonds guaranteed by		
– HIPDC	4,000,000	4,000,000
– Government-related banks	–	3,300,000

## (d) Pre-tax benefits and social insurance of key management personnel

	For the year ended 31 December	
	2017	2016
Salaries	7,676	8,225
Pension	1,511	1,521
Total	9,187	9,746

## (e) Related party commitments

Related party commitments which were contracted but not recognized in the consolidated statement of financial position as at the end of reporting period are as follows:

## (i) Capital commitments

	As at 31 December	
	2017	2016
Subsidiaries of Huaneng Group	290,041	439,571

## (ii) Fuel purchase and transportation commitments

	As at 31 December	
	2017	2016
Subsidiaries of Huaneng Group	1,111,649	963,306
A joint venture of the Company	279,408	291,032
Total	1,391,057	1,254,338

## 37 RELATED PARTY BALANCES AND TRANSACTIONS (Cont'd)

(e) Related party commitments (Cont'd)

(iii) Operating lease commitments

	As at 31 December	
	2017	2016
Subsidiaries of Huaneng Group	171,804	286,340
HIPDC	76,202	65,554
Total	248,006	351,894

## 38 LABOR COST

Other than the salaries and staff welfare, the labor cost of the Company and its subsidiaries mainly comprises the following:

All PRC employees of the Company and its subsidiaries are entitled to a monthly pension upon their retirements. The PRC government is responsible for the pension liability to these employees on retirement. The Company and its subsidiaries are required to make contributions to the publicly administered retirement plan for their PRC employees at a specified rate, currently set at 14% to 22% (2016: 14% to 22%) of the basic salary of the PRC employees. The retirement plan contributions paid by the Company and its subsidiaries for the year ended 31 December 2017 were approximately RMB1156 million (2016: RMB873 million), including approximately RMB1110 million (2016: RMB832 million) charged to profit or loss.

In addition, the Company and its subsidiaries have also implemented a supplementary defined contribution retirement scheme for PRC employees. Under this scheme, the employees are required to make a specified contribution based on the number of years of service with the Company and its subsidiaries, and the Company and its subsidiaries are required to make a contribution equal to two to four times the employees' contributions. The employees will receive the total contributions upon their retirement. For the year ended 31 December 2017, the contributions to supplementary defined contribution retirement scheme paid by the Company and its subsidiaries amounted to approximately RMB312 million (2016: RMB244 million), including approximately RMB299 million (2016: RMB233 million) charged to profit or loss.

SinoSing Power and its subsidiaries in Singapore appropriate a specified rate, currently set at 6.5% to 16% (2016: 6.5% to 16%) of the basic salary to central provident funds in accordance with the local government regulations. The contributions made by SinoSing Power and its subsidiaries for the year ended 31 December 2017 amounted to approximately RMB19.92 million (2016: RMB18.47 million), all of which were charged to profit or loss.

The Company and its subsidiaries have no further obligation for post-retirement benefits beyond the annual contributions made above.

In addition, the Company and its subsidiaries also make contributions of housing funds and social insurance to the social security institutions at specified rates of the basic salary and no more than the upper limit. The housing funds and social insurance contributions paid by the Company and its subsidiaries amounted to approximately RMB784 million (2016: RMB604 million) and RMB901 million (2016: RMB699 million) for the year ended 31 December 2017 including approximately RMB748 million (2016: RMB572 million) and RMB857 million (2016: RMB664 million) were charged to profit or loss, respectively.



## 39 DIRECTORS', SUPERVISORS' AND SENIOR MANAGEMENT'S EMOLUMENTS

(a) Pre-tax benefits and social insurance of directors and supervisors

The remuneration of every director and supervisor of the Company for the year ended 31 December 2017 is set out below:

Name of director	Fees	Basic salaries	Performance salaries	Pension	Total
Mr. Cao Peixi	–	–	–	–	–
Mr. Guo Junming <sup>1</sup>	–	–	–	–	–
Mr. Liu Guoyue	–	–	–	–	–
Mr. Fan Xiaxia <sup>2</sup>	–	–	–	–	–
Mr. Li Shiqi <sup>3</sup>	–	–	–	–	–
Mr. Huang Jian	–	–	–	–	–
Mr. Wang Yongxiang <sup>4</sup>	–	–	–	–	–
Mr. Mi Dabin	24	–	–	–	24
Mr. Guo Hongbo	–	–	–	–	–
Mr. Zhu Yousheng <sup>3</sup>	24	–	–	–	24
Ms. Li Song <sup>3</sup>	24	–	–	–	24
Mr. Cheng Heng <sup>4</sup>	–	–	–	–	–
Mr. Lin Chong <sup>4</sup>	–	–	–	–	–
Mr. Li Zhensheng <sup>3</sup>	37	–	–	–	37
Mr. Yue Heng	74	–	–	–	74
Mr. Geng Jianxin <sup>3</sup>	37	–	–	–	37
Mr. Xia Qing <sup>3</sup>	37	–	–	–	37
Mr. Xu Mengzhou	74	–	–	–	74
Mr. Liu Jizhen <sup>4</sup>	37	–	–	–	37
Mr. Xu Haifeng <sup>4</sup>	37	–	–	–	37
Mr. Zhang Xianzhi <sup>4</sup>	37	–	–	–	37
Sub-total	442	–	–	–	442
Name of supervisor					
Mr. Ye Xiangdong	–	–	–	–	–
Mr. Mu Xuan	24	–	–	–	24
Ms. Zhang Mengjiao	–	–	–	–	–
Mr. Gu Jianguo	24	–	–	–	24
Ms. Zhang Xiaojun	–	137	466	124	727
Mr. Zhu Daqing	–	135	464	123	722
Sub-total	48	272	930	247	1,497
Total	490	272	930	247	1,939

## 39 DIRECTORS', SUPERVISORS' AND SENIOR MANAGEMENT'S EMOLUMENTS (Cont'd)

## (a) Pre-tax benefits and social insurance of directors and supervisors (Cont'd)

The remuneration of every director and supervisor of the Company for the year ended 31 December 2016 is set out below:

Name of director	Fees	Basic salaries	Performance salaries	Pension	Total
Mr. Cao Peixi	–	–	–	–	–
Mr. Guo Junming	–	–	–	–	–
Mr. Liu Guoyue	–	–	–	–	–
Mr. Li Shiqi	–	–	–	–	–
Mr. Huang Jian	–	–	–	–	–
Mr. Fan Xiaxia	–	327	396	122	845
Mr. Mi Dabin	48	–	–	–	48
Mr. Guo Hongbo	–	–	–	–	–
Mr. Zhu Yousheng	48	–	–	–	48
Ms. Li Song	48	–	–	–	48
Mr. Li Zhensheng	74	–	–	–	74
Mr. Zhang Shouwen	37	–	–	–	37
Mr. Yue Heng	74	–	–	–	74
Mr. Geng Jianxin	74	–	–	–	74
Mr. Xia Qing	74	–	–	–	74
Mr. Xu Mengzhou	37	–	–	–	37
Sub-total	514	327	396	122	1,359
Name of supervisor					
Mr. Ye Xiangdong	–	–	–	–	–
Mr. Mu Xuan	48	–	–	–	48
Ms. Zhang Mengjiao	–	–	–	–	–
Mr. Gu Jianguo	48	–	–	–	48
Mr. Wang Zhaobin	–	51	–	–	51
Ms. Zhang Ling	–	69	–	–	69
Ms. Zhang Xiaojun	–	92	314	89	495
Mr. Zhu Daqing	–	90	313	88	491
Sub-total	96	302	627	177	1,202
Total	610	629	1,023	299	2,561

<sup>1</sup> Resigned on 9 October 2017.

<sup>2</sup> Resigned on 28 February 2018.

<sup>3</sup> Resigned on 13 June 2017.

<sup>4</sup> Appointed on 13 June 2017.

39 DIRECTORS', SUPERVISORS' AND SENIOR MANAGEMENT'S EMOLUMENTS (Cont'd)

(a) Pre-tax benefits and social insurance of directors and supervisors (Cont'd)

During the year, no option was granted to the directors or the supervisors (2016: nil).

During the year, no emolument was paid to the directors or the supervisors (including the five highest paid employees) as an inducement to join or upon joining the Company or as compensation for loss of office (2016: nil).

No director or supervisor had waived or agreed to waive any emoluments during the years 2017 and 2016.

(b) Five highest paid individuals

The five individuals whose emoluments were the highest in the Company and its subsidiaries for the year include no director (2016: one director) whose emoluments are reflected in the analysis presented above. The emoluments payable to the all five (2016: remaining four) individuals during the year (within the range of nil to RMB0.79 million) are as follows:

	As at 31 December	
	2017	2016
Basic salaries	1,524	1,213
Performance salaries	1,800	1,440
Pension	648	502
	3,972	3,155

40 COMMITMENTS

(a) Capital commitments

Capital commitments mainly relate to the construction of new power projects, certain ancillary facilities and renovation projects for existing power plants. Details of such commitments are as follows:

	As at 31 December	
	2017	2016
Contracted but not provided	16,985,439	18,603,559

## 40 COMMITMENTS (Cont'd)

## (b) Operating lease commitments

The Company and its subsidiaries have various operating lease arrangements for land and buildings. Some of the leases contain renewal options and most of the leases contain escalation clauses. Lease terms do not contain restrictions on the Company and its subsidiaries' activities concerning dividends, additional debts or further leasing.

Total future minimum lease payments under non-cancelable operating leases are as follows:

	As at 31 December	
	2017	2016
Land and buildings		
– not later than 1 year	196,870	181,441
– later than 1 year and not later than 2 years	118,272	144,088
– later than 2 year and not later than 5 years	143,628	133,984
– later than 5 years	1,028,014	970,896
Total	1,486,784	1,430,409

In addition, in accordance with a 30-year operating lease agreement signed by Huaneng Dezhou Power Plant (“Dezhou Power Plant”) and Shandong Land Bureau for the land occupied by Dezhou Power Plant Phases I and II in June 1994, annual rental amounted to approximately RMB30 million effective from June 1994 and is subject to revision at the end of the fifth year from the contract date. Thereafter, the annual rental is subject to revision once every three years. The increment for each rental revision is restricted to no more than 30% of the previous annual rental amount. For the years ended 31 December 2017 and 2016, the annual rentals was approximately RMB34 million.



## 40 COMMITMENTS (Cont'd)

## (c) Fuel purchase commitments

The Company and its subsidiaries have entered into various long-term fuel supply agreements with various suppliers in securing fuel supply for various periods. All the agreements require minimum, maximum or forecasted volume purchases and subject to certain termination provisions. Related purchase commitments are as follows:

As at 31 December 2017				
	Periods	Purchase quantities	Estimated unit costs (RMB)	
A government-related enterprise	2018-2039	2.8 million m <sup>3</sup> /day*	2.21/m	3
A government-related enterprise	2018-2023	541 million m <sup>3</sup> /year*	2.06/m	3
	2018-2023	450 million m <sup>3</sup> /year*	2.06/m	3
	2018-2023	541 million m <sup>3</sup> /year*	2.10/m	3
	2018-2023	450 million m <sup>3</sup> /year*	2.27/m	3
A government-related enterprise	2018-2026	200 million m <sup>3</sup> /year*	2.38/m	3
Other suppliers	2018-2019	243 BBtu**/day	approximately 67,000/BBtu	
	2020-2021	242 BBtu**/day	approximately 67,000/BBtu	
	2022	248 BBtu**/day	approximately 67,000/BBtu	
	2023	247.5~256.6BBtu**/day	approximately 67,000/BBtu	
	2024-2028	49.9-81.5BBtu**/day	approximately 69,000/BBtu	

As at 31 December 2016				
	Periods	Purchase quantities	Estimated unit costs (RMB)	
A government-related enterprise	2017-2039	2.8 million m <sup>3</sup> /day*	2.31/m	3
A government-related enterprise	2017-2023	541 million m <sup>3</sup> /year*	2.16/m	3
	2017-2023	450 million m <sup>3</sup> /year*	2.16/m	3
Other suppliers	2017-2022	248BBtu**/day	approximately 63,000/BBtu	
	2023	247.5~256.6BBtu**/day	approximately 63,000/BBtu	
	2024-2028	49.9-59.0BBtu**/day	approximately 70,000/BBtu	

\*The quantities represent maximum volume, others represent minimum or forecasted volume if not specified.

\*\*BBtu: Billion British Thermal Unit.

## 41 BUSINESS COMBINATIONS

## (a) Acquisition from Huaneng Group

On 14 October 2016, the Company entered into equity transfer agreements with Huaneng Group to acquire:

80% equity interests of Shandong Power

100% equity interests of Jilin Power

100% equity interests of Heilongjiang Power

90% equity interests of Zhongyuan Gas

These entities are all mainly engaged in power generation and sales business. The acquisition was completed on 1 January 2017 (the acquisition date), when the Company obtained the control over above mentioned entities through the corresponding voting rights obtained and consolidated them in its financial statement. The acquisition is expected to increase its generation capacity in relevant areas. The acquired business contributed consolidated revenue of RMB31.207 billion and consolidated net loss of RMB1,051 million to the Company and its subsidiaries for the period from the date of acquisition to 31 December 2017.

The total consideration is RMB15.501 billion after certain adjustment of the profits generated from the date of valuation to the acquisition date in accordance with the equity transfer agreements, which has been settled in cash by 31 December 2017 after netting off with the receivables due from Huaneng Group.

	Acquisition Date
Total consideration	15,500,770
Non-controlling interests	6,292,577
Fair value of pre-existing interest in a subsidiary of Shandong Power	690,967
Less: Fair value of total identifiable net assets	19,316,748
Goodwill	3,167,566
Total consideration	15,500,770
Less: Net settlement of the receivables due from Huaneng Group	2,361,871
Bank balances and cash of acquirees	2,342,766
Less: Restricted cash	(20,974 )
Cash consideration paid for acquisition of subsidiaries, net of cash acquired	10,817,107

Goodwill arising from the acquisitions is attributable to the synergies expected to arise after the acquisitions of the equity interests in the subsidiaries stated above. None of the goodwill recognised is expected to be deductible for tax purposes.

## 41 BUSINESS COMBINATIONS (Cont'd)

## (a) Acquisition from Huaneng Group (Cont'd)

In addition, according to the profit compensation agreement associated with the Acquisition, Huaneng Group should compensate the Company in cash based on the shortfall of accumulated actual net profit compared with the accumulated forecast net profit of certain subsidiaries of Shandong Power during the compensation period from year 2017 to 2019.

As at 31 December 2017, the fair value of above mentioned contingent consideration from Huaneng Group amounted to RMB860 million was recognized (as at acquisition date: nil), which was recorded in other receivables and assets of RMB615 million, and other non-current assets of RMB245 million, respectively. The actual amount of compensation will be adjusted in line with the actual performance of those subsidiaries in 2018 and 2019.

The Company incurred acquisition related cost amounted RMB26 million for financial advisory, legal and audit fees.

The assets and liabilities arising from the acquisitions of above entities are as follows:

	Shandong Power (consolidated) Fair value		Heilongjiang Power (consolidated) Fair value		Zhongyuan Gas (consolidated) Fair value	
		Jilin Power (consolidated) Fair value				
Property, plant and equipment	41,366,757	8,496,028	12,525,071	1,381,060		
Investment in associates and joint ventures	1,021,566	–	–	–		
Available-for-sale financial assets	4,000	100,895	–	–		
Land use rights	2,272,181	228,173	655,485	27,075		
Deferred income tax assets	334,055	323,522	10,404	–		
Other non-current assets	1,285,838	213,589	210,965	48		
Bank balances and cash	1,621,276	103,045	385,295	222,939		
Inventories	952,510	89,333	123,889	1,136		
Trade receivables	2,509,641	293,455	127,219	124,636		
Other receivables and other current assets	2,992,094	2,393,835	889,392	119,974		
Long-term borrowings	(15,647,367 )	(8,330,929 )	(6,742,580 )	(1,200,000 )		
Deferred income tax liabilities	(2,447,672 )	(214,642 )	(280,945 )	(47,235 )		
Other non-current liabilities	(1,688,306 )	(10,291 )	(253,671 )	–		
Short-term borrowings	(8,082,200 )	(600,000 )	(1,920,000 )	–		
Tax payables	(270,531 )	(10,311 )	(54,302 )	(419 )		
Dividends payables	(136,955 )	–	–	–		
Salary and welfare payables	(41,667 )	(2,969 )	(22,462 )	(717 )		
Payables and other liabilities	(9,725,591 )	(2,668,626 )	(3,083,130 )	(606,115 )		
Total identifiable net assets	16,319,629	404,107	2,570,630	22,382		

The fair value of the identifiable assets and liabilities acquired in the acquisition were assessed based on independent valuation prepared by external valuers.

41 BUSINESS COMBINATIONS (Cont'd)

(b) A subsidiary transferred from a joint venture

Shanxi Xiaoyi Economic Development Zone Huaneng Energy Service Co., Ltd ("Shanxi Xiaoyi Energy") was previously a joint venture of the Company. In 2017, non-controlling shareholder with 49% equity interests in Shanxi Xiaoyi Energy entered into a voting in concert agreement with the Company whereby it agreed to vote the same in respect of significant financial and operating decisions made by the Company effective from 15 February 2017. As a result, the Company acquired control of Shanxi Xiaoyi Energy since 15 February 2017.

	Acquisition Date
Non-controlling interests	10
Fair value of pre-existing interest in Shanxi Xiaoyi Energy	10,200
Less: Fair value of total identifiable net assets	10,210
Goodwill	-

Shanxi Xiaoyi Energy is a limited liability company established on 8 October 2016 in Xiaoyi, Shanxi Province. Shanxi Xiaoyi Energy is primarily engaging in selling of electricity, construction, operation and maintenance of power distribution and regional transmission and distribution grid. Financial information of Shanxi Xiaoyi Energy is as follows:

	From acquisition date to 31 December 2017 acquiree's Net Revenue	Profit
Shanxi Xiaoyi Energy	704	228

The identifiable assets and liabilities of Shanxi Xiaoyi Energy as at the acquisition date are as follows:

	Fair Value
Bank balances and cash	10,211
Accounts payable and other liabilities	(1 )
Total identifiable net assets	10,210

## 41 BUSINESS COMBINATIONS (Cont'd)

## (c) Acquisition of Ruzhou Xuji Wind Power Generation Co., Ltd.

The Company has entered an Agreement on establishing Huaneng Ruzhou Clean Energy Co., Ltd. ("Ruzhou Clean Energy") with Beijing Xuji New Energy Technology Co., Ltd. ("Beijing Xuji") in 2017. The Company committed to contribute RMB76 million for 95% equity of Ruzhou Clean Energy. Beijing Xuji contributed the net identifiable assets of its wholly-owned subsidiary, Ruzhou Xuji Wind Power Generation Co., Ltd. ("Xuji Wind Power") which amounted to RMB4 million, for 5% equity of Ruzhou Clean Energy.

	Acquisition Date
Consideration	4,000
Less: Fair value of total identifiable net assets	4,000
Goodwill	-

Xuji Wind Power was established on 23 November 2015 in Ruzhou, Henan Province, and is mainly engaged in wind power generation and photovoltaic power generation. On the acquisition date, the project is under construction. From the acquisition date to 31 December 2017, Xuji Wind Power had not commenced operation.

	From acquisition date to 31 December 2017 acquiree's Net RevenueProfit
Xuji Wind Power	-            -

The identifiable assets and liabilities of Xuji Wind Power as at the acquisition date are as follows:

	Fair Value
Other receivables and assets	16,080
Property, plant and equipment	11,893
Accounts payable and other liabilities	(23,973)
Total identifiable net assets	4,000

## 42NON-CONTROLLING INTERESTS

The following table summarizes the information relating to each of the Company and subsidiaries that have material non-controlling interests (“NCI”):

	Qinbei Power	Beijing Cogeneration	Luohuang Power	Weihai Power	Jinling Power	Yueyang Power	Shidongkou Power	
NCI percentage	40	% 59	% 40	% 40	% 40	% 45	% 50	%
31 December 2017								
Non-current assets	10,553,775	6,841,918	4,055,507	4,664,868	5,049,079	4,875,004	3,712,623	
Current assets	1,738,000	1,257,485	887,225	633,012	494,312	987,812	494,073	
Non-current liabilities	(3,053,535 )	(394,590 )	(242,944 )	(81,048 )	(1,541,444)	(1,042,093)	(731,640 )	
Current liabilities	(5,821,543 )	(2,501,516)	(2,064,897)	(2,462,363)	(1,854,441)	(2,590,470)	(1,919,701)	
Net assets	3,416,697	5,203,297	2,634,891	2,754,469	2,147,506	2,230,253	1,555,355	
Carrying amount of NCI	1,380,594	3,050,283	1,032,938	1,101,787	859,024	1,019,016	777,678	
Revenue	4,587,612	4,262,547	2,303,079	3,421,115	3,423,688	3,149,190	2,117,052	
Net (loss)/profit	(169,261 )	541,602	(60,758 )	324,335	269,949	47,224	164,557	
Total comprehensive (loss)/income	(169,261 )	541,602	(60,758 )	324,335	269,949	47,224	164,557	
(Loss)/profit allocated to NCI	(67,704 )	319,545	(24,303 )	129,734	107,980	21,251	82,278	
Other comprehensive (loss)/income allocated to NCI	–	–	–	–	–	–	–	
Cash flow from operating activities	970,585	1,071,888	195,282	681,568	731,714	426,437	311,668	
Cash flow from investment activities	(252,441 )	(1,190,093)	(383,004 )	(231,142 )	(47,518 )	(242,288 )	(93,434 )	
Cash flow from financing activities	(613,010 )	70,299	156,483	(405,196 )	(680,226 )	(191,231 )	(384,317 )	
Net increase/(decrease) in cash and cash equivalents	105,134	(49,605 )	(31,239 )	45,230	3,970	(7,082 )	(166,083 )	
Dividends paid to NCI	150,000	532,966	–	160,000	179,023	65,675	133,700	

## 42NON-CONTROLLING INTERESTS (Cont'd)

	Qinbei Company	Beijing Cogeneration	Luohuang Power	Weihai Power	Jinling Power	Yueyang Power	Shidongkou Power
NCI percentage	40	% 59	% 40	% 40	% 40	% 45	% 50
31 December 2016							
Non-current assets	11,210,604	5,821,110	3,966,880	4,988,112	5,426,759	4,958,325	3,917,340
Current assets	1,472,192	1,041,957	864,069	508,493	649,446	826,089	380,641
Non-current liabilities	(2,206,586)	(152,911)	(284,064)	(104,952)	(1,773,332)	(1,150,021)	(1,055,640)
Current liabilities	(6,475,340)	(1,665,750)	(1,601,236)	(2,504,410)	(1,835,090)	(1,828,581)	(1,584,142)
Net assets	4,000,870	5,044,406	2,945,649	2,887,243	2,467,783	2,805,812	1,658,199
Carrying amount of NCI	1,614,264	2,928,015	1,157,242	1,154,897	987,135	1,260,591	829,099
Revenue	5,006,349	4,476,729	2,436,586	3,217,209	3,734,108	2,716,817	1,915,915
Net profit	457,311	788,899	122,508	507,900	655,568	243,913	297,211
Total comprehensive income	457,311	788,899	122,508	507,900	655,568	243,913	297,211
Profit allocated to NCI	182,924	465,450	49,003	203,160	262,227	109,761	148,606
Other comprehensive income allocated to NCI	–	–	–	–	–	–	–
Cash flow from operating activities	1,400,042	973,352	550,346	1,045,828	1,293,565	568,379	890,615
Cash flow from investment activities	(312,604)	(540,151)	(189,599)	(273,117)	(37,274)	(62,622)	(258,892)
Cash flow from financing activities	(1,247,836)	(344,718)	(319,643)	(786,471)	(1,255,955)	(521,249)	(462,075)
Net (decrease)/increase in cash and cash equivalents	(160,398)	88,518	41,104	(13,760)	336	(15,492)	169,648
Dividends paid to NCI	433,090	687,679	120,000	366,983	308,923	–	273,900

#### 43 SUBSEQUENT EVENTS

(a) After the end of the reporting period, the directors proposed a final dividend. Further details are disclosed in Note 24.

(b) On 28 September 2017, Huaneng Group entered into a guarantee agreement with Industrial and Commercial Bank of China Limited (“ICBC”), to provide guarantee amounted USD100 million for short-term loans of Huaneng Shandong Ruyi (Pakistan) Energy (Private) Ltd., a subsidiary of Ruyi (Hong Kong) Energy, which is a joint venture of Shandong Power. According to the “Proposal of Shandong Power’s takeover of the guarantee agreement for short-term loans of the Sahiwal Project in Pakistan”. Shandong Power is expected to issue the confirmation letter upon the approval from the general meeting of shareholders, which officially confirms with ICBC, Huaneng Group and Shandong Ruyi Technology Group Co., Ltd. that it will take over the obligation of Huaneng Group under the aforementioned guarantee agreement thereon.

On January 30 2018, the first extraordinary general meeting of the Company approved the proposal. At the date on which financial statements were approved for issue, Shandong Power is in the process of takeover the guarantee agreement. Huaneng Group are still held responsible for the guarantee agreement before the confirmation letter is issued.

(c) The Company issued super short-term bonds with face value of RMB4 billion bearing annual interest rate of 4.35% in February 2018. The bonds are denominated in RMB and mature in 90 days, with a par value of RMB100.

The Company issued super short-term bonds with face value of RMB2 billion bearing annual interest rate of 4.35% in March 2018. The bonds are denominated in RMB and mature in 90 days, with a par value of RMB100.

(d) On 5 February 2018, the Public Offering Review Committee of the China Securities Regulatory Commission reviewed the application of the Company for the non-public issuance of A Shares. According to the review results, the Company’s application for non-public issuance of A Shares was approved.



## 44 STATEMENT OF FINANCIAL POSITION

	As at 31 December	
	2017	2016
<b>ASSETS</b>		
Non-current assets		
Property, plant and equipment	53,607,732	56,765,893
Investments in associates and joint ventures	14,170,132	14,839,245
Investments in subsidiaries	74,995,916	56,546,799
Loans to subsidiaries	20,987,987	15,810,480
Investment property	145,548	–
Available-for-sale financial assets	1,573,702	3,393,357
Land use rights	1,339,468	1,343,839
Deferred income tax assets	571,085	256,926
Goodwill	106,854	106,854
Other non-current assets	319,807	242,702
Total non-current assets	167,818,231	149,306,095
Current assets		
Inventories	2,091,519	2,473,285
Other receivables and assets	5,566,961	4,118,627
Accounts receivable	5,948,977	4,838,651
Loans to subsidiaries	2,445,837	7,632,040
Bank balances and cash	964,340	2,438,374
Total current assets	17,017,634	21,500,977
Total assets	184,835,865	170,807,072
<b>EQUITY AND LIABILITIES</b>		
Capital and reserves attributable to equity holders of the Company		
Share capital	15,200,383	15,200,383
Capital surplus	23,348,988	24,167,249
Perpetual corporate bonds	5,068,550	–
Surplus reserves	8,140,030	8,140,030
Retained earnings	35,034,741	32,348,672
Total equity	86,792,692	79,856,334
Non-current liabilities		
Long-term loans	14,734,234	6,694,726
Long-term bonds	15,993,833	12,182,971
Derivative financial liabilities	22,283	69,904
Other non-current liabilities	1,030,721	1,055,083
Total non-current liabilities	31,781,071	20,002,684

EQUITY AND LIABILITIES (Continued)	As at 31 December	
	2017	2016
Current liabilities		
Accounts payable and other liabilities	7,325,154	7,195,926
Taxes payables	234,223	287,379
Short-term bonds	11,068,357	27,311,103
Short-term loans	41,555,000	31,430,000
Current portion of long-term loans	2,059,056	1,428,910
Current portion of long-term bonds	3,997,033	3,294,736
Current portion of other non-current liabilities	23,279	–
Total current liabilities	66,262,102	70,948,054
Total liabilities	98,043,173	90,950,738
Total equity and liabilities	184,835,865	170,807,072

#### 45 COMPARATIVE INFORMATION

In view of the change of presentation to focus on key information of the consolidated financial statements, certain comparative figures have been adjusted to conform to current year's presentation.

These financial statements were approved for issue by the Board of Directors on 13 March 2018 and were signed on its behalf.

Cao Peixi   Liu Guoyue  
Director   Director

## FINANCIAL STATEMENTS RECONCILIATION BETWEEN PRC GAAP AND IFRS

The financial statements, which are prepared by the Company and its subsidiaries in conformity with the Accounting Standards for Business Enterprises (“PRC GAAP”), differ in certain respects from that of IFRS. Major impact of adjustments for IFRS, on the net consolidated profit and equity attributable to equity holders of the Company, are summarized as follows:

	Consolidated profit attributable to equity holders of the Company For the year ended		Total equity attributable to equity holders of the Company As at 31 December	
	2017	2016 Restated	2017	2016 Restated
Consolidated net profit/equity attributable to equity holders of the Company under PRC GAAP	1,793,151	10,382,413	75,533,342	88,361,031
Impact of IFRS adjustments:				
Differences in accounting treatment on business combinations under common control and depreciation and amortization of assets acquired in business combinations under common control (a)	(785,338 )	(2,929,168 )	14,804,864	(5,343,588 )
Difference on depreciation related to borrowing costs capitalized in previous years (b)	(27,016 )	(27,016 )	182,469	209,485
Amortization of the difference in the recognition of housing benefits of previous years (c)	(653 )	(866 )	(140,042 )	(139,389 )
Others	(105,300 )	(84,593 )	(285,534 )	(223,730 )
Applicable deferred income tax impact of the GAAP differences above (d)	355,943	114,960	849,177	493,234
Profit/Equity attributable to non-controlling interests on the adjustments above	349,049	1,064,697	(3,302,710 )	2,645,952
Consolidated net profit/equity attributable to equity holders of the Company under IFRS	1,579,836	8,520,427	87,641,566	86,002,995

- (a) Differences in accounting treatment on business combinations under common control and depreciation and amortization under common control

Huaneng Group is the parent company of HIPDC, which in turn is also the ultimate parent of the Company. The Company carried out a series of acquisitions from Huaneng Group and HIPDC in previous years. As the acquired power companies and plants and the Company were under common control of Huaneng Group before and after the acquisitions, such acquisitions are regarded as business combinations under common control.

In accordance with PRC GAAP, under common control business combination, the assets and liabilities acquired in business combinations are measured at the carrying amounts of the acquirees in the consolidated financial statements of the ultimate controlling party on the acquisition date. The difference between carrying amounts of the net assets acquired and the consideration paid is adjusted to equity account of the acquirer. The operating results for all periods presented are retrospectively restated as if the current structure and operations resulting from the acquisition had been in existence since the beginning of the earliest year presented, with financial data of previously separate entities consolidated. The cash consideration paid by the Company is treated as an equity transaction in the year of acquisition. The subsequent adjustment of contingent consideration after the acquisition date is also accounted for as an equity transaction.

For the business combination occurred prior to 1 January 2007, in accordance with Previous PRC GAAP, when equity interests acquired is less than 100%, the assets and liabilities of the acquirees are measured at their carrying amounts. The excess of consideration over the proportionate share of the carrying amounts of the net assets acquired was recorded as equity investment difference and amortized on a straight-line basis for not more than 10 years. When acquiring the entire equity, the entire assets and liabilities are accounted for in a method similar to purchase accounting. Goodwill arising from such transactions is amortized over the estimated useful lives on a straight-line basis. On 1 January 2007, in accordance with PRC GAAP, the unamortized equity investment differences and goodwill arising from business combinations under common control were written off against undistributed profits.

Under IFRS, the Company and its subsidiaries adopted the purchase method to account for the acquisitions above. The assets and liabilities acquired in acquisitions were recorded at fair value by the acquirer. The excess of acquisition cost over the proportionate share of fair value of net identifiable assets acquired was recorded as goodwill. Goodwill is not amortized but is tested annually for impairment and carried at cost less accumulated impairment losses. The operating results of the acquirees are consolidated in the operating results of the Company and its subsidiaries from the acquisition dates onwards. The contingent consideration not classified as equity are measured at fair value at each reporting date with the changes in fair value recognised in profit or loss, if such changes are not measurement period adjustments.

As mentioned above, the differences in accounting treatment under PRC GAAP and IFRS on business combinations under common control affect both equity and profit. Meanwhile, due to different measurement basis of the assets acquired, depreciation and amortization in the period subsequent to the acquisition will be affected which will also affect the equity and profit or loss upon subsequent disposals of such investments. Such differences will be gradually eliminated following subsequent depreciation, amortization and disposal of related assets.

(b) Effect of depreciation on the capitalization of borrowing costs in previous years

In previous years, under Previous PRC GAAP, the scope of capitalization of borrowing costs was limited to specific borrowings, and thus, borrowing costs arising from general borrowings were not capitalized. In accordance with IFRS, the Company and its subsidiaries capitalized borrowing on general borrowing used for the purpose of obtaining qualifying assets in addition to the capitalization of borrowing costs on specific borrowings. From 1 January 2007 onwards, the Company and its subsidiaries adopted PRC GAAP No. 17 prospectively. The current adjustments represent the related depreciation on capitalized borrowing costs included in the cost of related assets under IFRS in previous years.

(c) Difference in the recognition of housing benefits to the employees of the Company and its subsidiaries in previous years

The Company and its subsidiaries once provided staff quarters to the employees of the Company and its subsidiaries and sold such staff quarters to the employees of the Company and its subsidiaries at preferential prices set by the local housing reform office. Difference between cost of the staff quarters and proceeds from the employees represented the housing losses, and was borne by the Company and its subsidiaries.

Under Previous Accounting Standards and Accounting System (“Previous PRC GAAP”), in accordance with the relevant regulations issued by the Ministry of Finance, such housing losses incurred by the Company and its subsidiaries are fully charged to non-operating expenses in previous years. Under IFRS, such housing losses incurred by the Company and its subsidiaries are recognized on a straight-line basis over the estimated remaining average service lives of the employees.

(d) Deferred income tax impact on GAAP differences

This represents related deferred income tax impact on the GAAP differences above where applicable.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the under-signed, thereunto duly authorized.

HUANENG POWER INTERNATIONAL, INC.

By /s/ Huang Chaoquan

Name: Huang Chaoquan

Title: Company Secretary

Date: April 18, 2018